iSPECIMEN®

Transforming Biospecimen Procurement

An online marketplace for human biospecimens

2022 Annual Report

450 Bedford Street | Lexington, MA 02420 | 781-301-6700

Dear Fellow Stockholders,

It is an exciting time to be associated with iSpecimen.

In September 2022, iSpecimen commenced on a strategic corporate review and predictive revenue realignment in resources. We have been making meaningful progress towards understanding and tapping into the full potential of our entire organization. Our efforts have yielded results, as evidenced by our record-breaking revenue in Q4 2022 of $3.2 million, a 28% increase over Q4 2021.

For 2023, in addition to our core business and as part of a very deliberately developed strategic plan, we are undertaking several revenue enhancement projects in areas such as sequencing, remnants, and normal blood, as well as the acceleration of on-site iSpecimen project coordinators at selected suppliers' sites to facilitate improved specimen feasibility, identification, coordination, utilization, and fulfillment. iSpecimen plans to continue to invest, where necessary, throughout 2023, to accelerate these revenue growth initiatives.

We plan to make a significant portion of our investment in technology for the 2023 fiscal year, during the first half of the year. We believe that this demonstrates our commitment to our vision to be transformational in our industry with our online marketplace. Our technology efforts to improve the iSpecimen marketplace platform in 2023 will include updating search functionality, improving the user interface, increasing automation, and enhancing matchmaking. I'm pleased to report that, as of the date of this letter, all of these efforts remain on track. To complete these updates, we are leveraging our significant technology investments to date in our data processing and pipelines.

Executing these plans is critical to the success of iSpecimen. It is important that we execute iSpecimen's mission to accelerate life science research and development via a single global marketplace platform that connects researchers to subjects, specimens, and data. To do so, we will expend all of our efforts to ensure that our marketplace platform provides a comprehensive solution with ease of use so that researchers are able to search for desired biospecimens, suppliers can fully utilize their biospecimens, and additional adjacent opportunities can be unlocked for us. As we move forward, all of our activities, initiatives, and projects in 2023 are focused on this mission.

I would like to extend my deepest gratitude to the entire iSpecimen team for their dedication, hard work, and belief in our collective vision. The team's continued support and efforts inspire me as we make progress executing on our strategic plans and key initiatives for 2023.

Regards,

Tracy Curley
Chief Executive Officer

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K/A

(Amendment No. 1)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For The Transition Period From To

Commission file number: 001-40501

iSpecimen Inc.

(Exact name of registrant as specified in its charter)

Delaware	**27-0480143**
(State of other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
450 Bedford Street, Lexington, Massachusetts	**02420**
(Address of principal executive offices)	(Zip code)

Registrant's telephone number, including area code: (781) 301-6700

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name Of each exchange on which registered
Common Stock, par value $0.0001 per share	**ISPC**	**The Nasdaq Stock Market LLC**

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.
Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the Registrant has submitted electronically; every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.0405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☒ Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

Based on the closing price as reported on the Nasdaq Capital Market, the aggregate market value of the Registrant's Common Stock held by non-affiliates on June 30, 2022 (the last business day of the Registrant's most recently completed second fiscal quarter) was approximately $13,041,157. Shares of Common Stock held by each executive officer and director and by each stockholder affiliated with a director or an executive officer have been excluded from this calculation because such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of March 16, 2023, there were 9,016,558 shares of Common Stock, par value $0.0001 per share, of the Registrant issued and outstanding.

Documents Incorporated by Reference
Not applicable.

EXPLANATORY NOTE

This Amendment No. 1 on Form 10-K/A (the "Amendment") is being filed by iSpecimen Inc. (the "Company") to amend and restate its Annual Report on Form 10-K for the year ended December 31, 2022, originally filed with the Securities and Exchange Commission (the "SEC") on March 21, 2023 (the "Original Form 10-K", and, as amended by this Amendment, the "Annual Report") to make certain corrections to (i) the Company's disclosure on Controls and Procedures in Part II, Item 9 of the Annual Report and (ii) the information in the Summary Compensation Table, and the footnotes thereto, in Part III, Item 11 of the Annual Report.

In addition, the Company is including in this Amendment a currently dated Consent of Wolf & Company, P.C., its auditor, attached hereto as Exhibit 23.1, and currently dated certifications from its Principal Executive Officer and Principal Financial and Accounting Officer, as required by Sections 302 and 906 of the Sarbanes-Oxley Act of 2002, attached hereto as Exhibits 31.1, 31.2 and 32.2, respectively. The exhibits listed in Part IV-Item 15 "Exhibits and Financial Statement Schedules" are filed herewith in accordance with Rule 12b-15 of the Securities Exchange Act of 1934, as amended.

Except for the changes described above and the filing of the currently dated audtior's consent and certifications added to the list of Exhibits in Part IV, this Amendment makes no other substantive changes to the Original Form 10-K. This Amendment does not reflect events occurring after the filing of the Original Form 10-K or modify disclosures affected by subsequent events. Terms used but not otherwise defined in the Amendment have such meaning as ascribed to them in the Original Form 10-K.

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SPECIAL NOTE

As used in this Annual Report on Form 10-K ("Annual Report"), unless the context otherwise requires, the terms the "Company," "iSpecimen," "we," "us," and "our" refer to iSpecimen, Inc., a Delaware corporation. Each reference to a fiscal year in this Annual Report refers to the fiscal year ending in the calendar year indicated (for example, fiscal 2022 refers to the fiscal year ended December 31, 2022).

CAUTIONARY STATEMENT

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). These forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from the results projected in any forward-looking statement. In addition to the factors specifically noted in the forward-looking statements, other important factors, risks and uncertainties that could result in those differences include, but are not limited to, those discussed under Item 1A to Part I "Risk Factors" in this Annual Report. The forward-looking statements are made as of the date of this Annual Report, and we assume no obligation to update the forward-looking statements, or to update the reasons why actual results could differ from those projected in the forward-looking statements. You should consult all of the information set forth in this Annual Report and the other information set forth from time to time in our reports filed with the Securities and Exchange Commission (the "SEC") pursuant to the Securities Act and the Exchange Act, including our reports on Forms 10-Q and 8-K.

You can identify some of these forward-looking statements by words or phrases such as "may," "will," "expect," "anticipate," "aim," "estimate," "intend," "plan," "believe," "is/are likely to," "potential," "continue" or other similar expressions. We have based these forward-looking statements largely on our current expectations and projections about future events that we believe may affect our financial condition, results of operations, business strategy and financial needs. These forward-looking statements include statements relating to:

- our ability to enter into contracts with healthcare providers to gain access to specimens, subjects, and data on favorable terms;
- our ability to obtain new customers and keep existing customers;
- development of our technology to adequately keep pace to support expansion of our existing line of business or our entry into new lines of businesses;
- market adoption rate of our marketplace technology;
- our ability to continue to expand outside of the United States in compliance with local laws and regulations;
- acceptance of the products and services that we market;
- the viability of our current intellectual property;
- government regulations and our ability to comply with government regulations;
- our ability to retain key employees;
- adverse changes in general market conditions for biospecimens;
- our ability to generate cash flow and profitability and continue as a going concern;
- our future financing plans; and
- our ability to adapt to changes in market conditions (including as a result of the COVID-19 pandemic) which could impair our operations and financial performance.

These forward-looking statements involve numerous risks and uncertainties. Although we believe that our expectations expressed in these forward-looking statements are reasonable, our expectations may later be found to be incorrect. Our actual results of operations or the results of other matters that we anticipate could be materially different from our expectations. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties, and other factors, which are, in some cases, beyond our control and which could materially affect results. Factors that may cause actual results to differ materially from current

expectations include, among other things, those listed under the section titled "Risk Factors" and elsewhere in this Annual Report. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those implied or projected by the forward-looking statements. No forward-looking statement is a guarantee of future performance. You should read this Annual Report and the documents that we reference in this Annual Report and have filed with the Securities and Exchange Commission (the SEC) thereto completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements.

You should read this Annual Report and the documents that we reference herein and have filed or incorporated by reference as exhibits hereto completely and with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

Our business, operating results or financial condition could be materially adversely affected by any of the following risks associated with any one of our businesses, as well as the other risks highlighted elsewhere in this Annual Report. The trading price of our common stock could decline due to any of these risks.

Our business is subject to numerous risks as described in this section. Some of these risks include:

Risks Associated with Our Business

- We have incurred losses since inception and anticipate that we will continue to incur losses for the foreseeable future. We are not currently profitable, and we may never achieve or sustain profitability;

- We may identify material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If we fail to remediate any material weaknesses or if we otherwise fail to establish and maintain effective control over financial reporting, our ability to accurately and timely report our financial results could be adversely affected;

- We may require additional capital in the future and an inability to meet future capital needs could adversely impact our ability to operate;

- We have a relatively short operating history which can lead to difficulty in accurately forecasting future results;

- Our growth strategy may not prove viable and we may not realize expected results;

- The continued COVID-19 pandemic could continue to adversely affect our business;

- We rely upon relatively few customers for a significant portion of revenue and do not have a recurring revenue business model. A loss of large customers could affect our ability to operate;

- Sustainable future revenue growth is dependent upon the development of technology solutions that enable scale and address new markets;

- Customers and customer prospects may be averse to using a self-service marketplace to procure specimens and may continue to require iSpecimen personnel in the procurement process, impacting our scalability and profitability;

- Our supply chain may not provide adequate resources to quickly respond to requests for specimens and delays in the procurement process can affect our reputation, revenue, and profitability;

- Recent changes in our management may lead to instability and negatively affect our business;

- Specimen collection from human subjects, including the possible occurrence of adverse events during or after tissue collection, could provide exposure to claims and litigation;

- Our senior management team has limited experience managing a public company;

- Our revenue may be adversely affected if we are required to charge sales tax or other transaction taxes on all or a portion of our past and future sales; and

- We currently maintain all of our cash with one financial institution and, therefore, our cash could be adversely affected if the financial institution in which we hold our cash fails.

Risks Related to Regulatory Environment

- Failure to comply with applicable federal and state laws around data protection, of research subjects, import/export regulations, occupational health and safety biohazards and dangerous goods, environmental, and other regulations could result in fines, penalties, and litigation, and have a material adverse effect upon our business;

- Failure to comply with applicable international laws around data protection (such as the EU General Data Protection Regulation), protection of research subjects, import/export regulations, occupational health and safety, biohazards and dangerous goods, environmental and other regulations could result in fines, penalties, and litigation, and have a material adverse effect upon our business;

- Failure to comply with laws and regulations related to the protection of research subjects could result in fines, penalties, and litigation, and have a material adverse effect upon our business; and

- Product safety and product liability, including bio-hazard risks, could provide exposure to claims and litigation.

Risks Related to Our Securities

- If we are not able to comply with the applicable continued listing requirements or standards of The Nasdaq Stock Market LLC, our common stock could be delisted from Nasdaq;

- The sale of substantial shares of our common stock may depress our stock price;

- Our directors, officers and principal stockholders have significant voting power and may take actions that may not be in the best interests of our other stockholders;

- Our bylaws, as amended, designate certain courts as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees; and

- Limitations on director and officer liability and indemnification of our officers and directors by us may discourage stockholders from bringing suit against an officer or director.

PART I

Item 1. Business

Our Mission, Vision, and Core Values

iSpecimen's mission is to accelerate life science research, discovery and development with a global marketplace platform that connects researchers to subjects, specimens, and associated data. Our vision is to create an "Amazon-like" global Marketplace of patients, biospecimens, and data for research to improve the quality of human life. We implement employee programs that foster a company culture predicated on the core values of corporate and individual growth, results and accountability, team before self; a can-do positive attitude, and the perseverance to succeed.

Overview

iSpecimen is technology-driven company founded to address a critical challenge: how to connect life science researchers who need human biospecimens for their research, with the billions of biospecimens available (but not easily accessible) in healthcare provider organizations worldwide. Our ground-breaking iSpecimen Marketplace platform was designed to solve this problem and transform the biospecimen procurement process to accelerate medical discovery.

The iSpecimen Marketplace brings new capabilities to a highly fragmented and inefficient biospecimen procurement market. Our technology consolidates the biospecimen buying experience in a single, online marketplace that brings together healthcare providers who have biospecimens and researchers across industry, academia, and government institutions who need them. We are seeking to be transformative in the world of biospecimen procurement.

The iSpecimen Marketplace offers single-source access to millions of human biospecimens and patients across a diverse network of specimen providers — quickly and compliantly — saving researchers time and money in their specimen procurement process while making it easier and more efficient for providers to get their specimens in the hands of researchers who need them. We have adopted many of the same ease-of-use characteristics of these business to consumer, or B2C marketplaces, from simple guided searches, to the ability to refine search criteria with sliders and checkboxes, to the ability to add chosen items to a cart in order to purchase them, to online order management. Our two-sided marketplace platform makes it easy for researchers and healthcare providers to connect and transact, introducing efficiencies into what is otherwise a very time-consuming and manual process.

The platform is built upon a robust healthcare data set comprised of information about available specimens and research subjects, which then enables the search and matchmaking process. It receives de-identified specimen and patient data from electronic medical records, laboratory information systems, biobank inventory systems, and other healthcare data sources (either in real time via data feeds or regularly via file extracts) and harmonizes this "big data" across all participating organizations into a common dataset. The data is then easily searchable by researchers using our intuitive, web-based user interface. Researchers can use their unique study inclusion and exclusion criteria as selection filters to search the de-identified healthcare data to find matching specimens currently available in laboratories and biobanks in our network. Researchers can then select the specific specimens they need for their studies, add them to a cart, request quotes, place orders, and track and manage their specimen requests and associated data across projects. When specimens are not available that meet their research criteria, researchers can, with a click of a button, request a quote for a custom specimen collection and this custom specimen request will be distributed across our network of biospecimen providers.

Biospecimen providers also gain efficiencies using the iSpecimen Marketplace, not only by giving providers instant access to a large researcher base, but because the technology orchestrates the bioprocurement workflow from specimen request to fulfilment. Specimen providers gain access to intuitive dashboards to view requests, create proposals, and track and manage their orders.

In addition to providing the technology platform to connect researchers and healthcare providers, iSpecimen handles all marketing, sales, contracting, and compliance functions across both sides of the marketplace.

We market to and develop relationships with researchers and specimen providers alike to bring them together into a single platform. We contract once with each participating customer and with each supplier organization and a single agreement then enables all users in that organization to instantly connect and work with all other organizations in the iSpecimen network. We also audit our suppliers to confirm they have proper Institutional Review Board ("IRB") (or equivalent) protocols in place where required by law.

As of December 31, 2022, we had more than 6,703 external registered users on the iSpecimen Marketplace platform, representing more than 2,622 unique internet domains. Collectively, these users logged into the iSpecimen Marketplace more than 135,266 times and performed nearly 17,679 specimen searches yielding more than 1,985 quote requests since its launch.

Our iSpecimen Marketplace platform has compiled de-identified healthcare data provided by our healthcare supply partners' approximately 17 million patient records, 89 million clinical specimen records, one million banked specimen records, 700 million laboratory test results, and 1,000,000 medical conditions as of December 31, 2022 — to allow researchers to easily search for and select research subjects, specimens, and associated data they need to drive their research programs. It then orchestrates and manages the biospecimen procurement workflows of both researchers and suppliers to bring efficiency to the entire buying process. Through the iSpecimen Marketplace, researchers gain instant access to millions of specimens anytime, anywhere, while participating supply organizations gain an opportunity to contribute compliantly to medical research while increasing their revenue and sustainability.

Planned Developments of our Marketplace

While the iSpecimen Marketplace currently supports our business model of providing access to search, find, and acquire human biospecimens and associated data from "inquiry to invoice" and positions us for future expanded business model exploration, there are a number of areas in which the iSpecimen Marketplace functionality could be enhanced to better support our stakeholders, including our prospects and customers, iSpecimen sales and operations staff, and our supply partners. We believe with additional investment in technology development resources, we could make significant progress in scaling our iSpecimen Marketplace and, by the end of 2024, in addition to increased patient and specimen data integration, we expect to continue to improve the matchmaking across the platform and have capabilities such as more direct support for our prospective collections, deeper search and workflow capabilities, increased automation, and direct pricing availability in the platform.

We plan to continue technology investment to better connect healthcare researchers with our network of suppliers to enable the acquisition of human biospecimens and data to help accelerate research and expand the impact of our iSpecimen Marketplace platform from "inquiry to invoice" through the following key approaches:

- *Enhance the customer experience*. By working with our prospects and customers to understand their needs, we strive to provide a platform that more easily enables them to specify and find human biospecimens and data that meet the requirements of their research.

- *Increase our supplier engagement*. By continuing to engage with our supply partners to deliver solutions that make their interactions with us more fulfilling, we become more seamlessly integrated into their workflows and daily operations.

- *Improve operational efficiency*. By measuring the results of our operational workflows, we endeavor to reduce the friction and manual efforts in our processes and systems.

We continue to prioritize and release updated versions of the iSpecimen Marketplace platform in alignment with these areas and believe that continuing to focus on these approaches will enable us to scale our business model more effectively. As part of this continued platform evolution, iSpecimen continues to explore adjacencies that leverage the platform including a data as a product model.

Our Technology

Technology Components

The iSpecimen Marketplace technology is comprised of four major functional areas: search, workflow, data, administrative compliance and reporting. We continue to invest in the evolution of these areas to improve customer and supplier engagement with the platform; provide operational efficiencies for our suppliers, our customers, and our internal operations; and increase the liquidity of products and services obtained through the platform. Our core business objective is to retain and grow both researcher and supplier usage of our platform to support biospecimen procurement, as well as to position our Company to explore other adjacent business opportunities that can benefit from the use of the iSpecimen Marketplace.

- *Search*. The primary purpose of the iSpecimen Marketplace is to matchmake between those with access to subjects, specimens, and data, and those with a need for them to power their research.

By entering subject and sample selection requests through the iSpecimen Marketplace, researchers can instantly search across the available medical records of large populations within iSpecimen's healthcare provider network to create customized patient and specimen cohorts. Researchers can specify their criteria and either refine and review results to select specific specimens instantly, or they can request that iSpecimen find patients, specimens, and associated data to satisfy their needs when specimens do not currently exist in our network. Using our own proprietary algorithms, we enable researchers to explore both what is currently available and what is likely to be available based on historic statistical analysis of data. This allows researchers to quickly and easily determine how we can fulfill their requirements, which is especially useful for project planning and budgeting.

Our search capabilities are what most notably distinguishes the iSpecimen Marketplace from other business-to-business, or B2B bioprocurement marketplaces. Whereas some other bioprocurement marketplaces support a search that generates a list of *service providers* that the researcher must then contact to inquire about specimen availability, the iSpecimen Marketplace goes a step further and returns a list of available *specimens and data* that actually meet the researcher's specific requirements. Researchers can then select the individual specimens, add them to a cart, and request a quote for these exact specimens. By incorporating user experiences that researchers are accustomed to from their online consumer shopping experiences, such as faceted searches and the ability to add items to a cart, the iSpecimen Marketplace brings B2C ease of use to the B2B space.

- *Workflow.* Our workflow engine supports the unique bioprocurement workflows of our suppliers, customers, and internal iSpecimen operations users. For our suppliers, our ability to easily integrate into their environments and automate key parts of their bioprocurement workflow enables us to maintain a level of engagement and responsiveness necessary to successfully deliver on specimen requests from our research customers. We make it easy for suppliers to list their specimens in our iSpecimen Marketplace by receiving their data in the most commonly used data transmission formats for healthcare data, such as HL7 feeds (a healthcare data interchange standard), JSON files (a standard data interchange format), and CSV files (a comma separated values file used for tabular data), and then by harmonizing this data into standard terminology sets that allows their specimens to be searchable by our research customers. We provide these onboarding services at no charge to our supply partners. Additionally, our marketplace technology enables suppliers to track and manage all their specimen requests from feasibility assessment through the ordering and fulfillment process in a single web application, thereby streamlining their bioprocurement workflow. Because the work that we do with our suppliers is often a secondary concern to their primary mission of providing patient care, we believe that seamlessly integrating into their workflow is critical to its use and ongoing success.

In addition to supporting our suppliers' workflow requirements, our workflow engine orchestrates customers' bioprocurement workflows from specimen requests through fulfillment. Customers can not only search for and select specimens, but they can track and manage their specimen quote requests, place orders, track the progress of orders as they are fulfilled and shipped, and download packing lists, data sheets, and other accompanying data.

Finally, the Marketplace technology acts as the command and control center for internal iSpecimen operations users and allows them to easily federate and manage the sourcing of specimens and data for all requested projects across a large and growing supply chain. The technology tracks and manages requests for specimens from inquiry-to-invoice and provides a single place for internal users to manage all specimen requests, orders, shipments, and data. Additionally, because our technology easily scales to support a growing supply network and customer base, we have satisfied projects of all types and sizes — from small specimen requests to projects with more than a thousand samples from specific patient cohorts. As of December 31, 2022, we have delivered more than 190,000 specimens in support of nearly 2,670 unique projects since inception.

- *Data.* We power search and orchestrate the procurement workflow through our ability to acquire, ingest, generate, and use big data from our healthcare provider partners. Working with a global, centralized set of healthcare providers, we receive this data in a variety of different formats and quality levels. We de-identify, normalize, and harmonize our supplier network's data for usage in our iSpecimen Marketplace, ensuring the highest level of patient privacy and compliance with HIPAA and all other applicable regulations that govern the research use of patient specimens and data. As of December 31, 2022, the iSpecimen Marketplace had ingested and harmonized

data on approximately 17 million patients, 89 million clinical specimens, one million banked specimens, 700,000 million laboratory test results, and 1 million medical conditions.

In addition, our platform gathers usage data that enables us to granularly understand supply and demand as well as provide value-added insights to our business partners. For example, our biobanking partners often have access to more samples than they can economically store.

Understanding which samples are likely to be the most useful to researchers helps guide the biobanks' operational practices to optimize their supply chain (for example, providing them with information on the medical conditions and specimen types that are in highest demand can help guide their collection practices). Our ability to deliver relevant insights further increases the engagement with our platform and positions us as a valuable partner.

As we continue to ingest and generate more data, there are additional business opportunities to leverage our platform and continue to evolve the iSpecimen Marketplace using modern approaches such as robotic process automation and artificial intelligence/machine learning techniques to further improve the efficiency and effectiveness of the platform and enhance the value of the data. Our ability to leverage network effects will enable us to realize increasing returns from our investments and expand into adjacent markets such as clinical trial patient recruitment, data as a product, and software-as-a-service (SaaS).

- *Administrative, Compliance, and Reporting.* Administrative, compliance, and reporting functions are critical components to enable users to properly evaluate and manage the bioprocurement process. Our administrative capabilities include functions such as user management to assign users and roles and password management to ensure passwords are updated regularly, among other capabilities. Compliance management includes manual and technology-based processes that allow iSpecimen to track and manage unique regulatory and legal requirements across customers and suppliers (such as consent requirements versus consents granted, required specimen and data uses versus allowable specimen and data uses, resale or distribution requirements versus resale or distribution rights) to make sure that customer requirements and supplier requirements match before transferring specimens and data. Additionally, we conduct regular audits of supply sites capabilities and confirm that supply sites have IRB (or equivalent) protocols in place where required by law. Our reporting tools turn operational data into useful information by enabling users to view operational data in tables and other visualizations. Together, they help manage and streamline administrative, compliance, and reporting functions.

Our Products and Services

The iSpecimen Marketplace currently supports the supply chain management and bioprocurement process for specimens and associated data. We derive our revenue by procuring specimens from our healthcare provider network and then distributing these annotated biospecimens to our research client base. Revenue flows from the researchers who pay our Company to provide the specimens and we share that revenue back with the healthcare providers who supplied them. Revenue share back to the supplying organization is generally 20% to 50%, depending upon the sample type, collection requirements, and data provided. We are flexible and allow our suppliers to work with us using a number of revenue share constructs, including a fixed percent revenue share arrangement (whereby we share a fixed percentage of the revenue back with them), a fixed pricing schedule (whereby they set their pricing per specimen type), or on a project-based pricing (whereby the supply site sets fees on a per project basis). We have derived substantially all of our revenue from biospecimen procurement and to date, have not charged our customers or suppliers fees for the use of the iSpecimen Marketplace platform, or for marketing, sales, contracting, or compliance functions that we provide as part of the specimen procurement process.

We generally operate in a "just in time" fashion, meaning we procure specimens from our suppliers and distribute specimens to our customers after we obtain an order for specimens from a research client. Generally, we do not speculatively purchase and bank samples in anticipation of future, unspecified needs. We believe our approach offers many advantages over a more traditional inventory-based supplier business model where biorepositories take inventory risks, and where turnover and cash conversion cycles can be lengthy, depending on market demand for certain specimen types.

Currently, we provide access to the following types of human biospecimens from healthy and diseased-state subjects:

- Biofluids — such as whole blood, plasma, serum, urine, saliva, sputum, nasopharyngeal material, and cerebral spinal fluid;

- Solid tissue — such as fresh, fixed, and cryopreserved tissue; and formalin-fixed paraffin embedded blocks, slides, and curls; and

- Hematopoietic stem and immune cells — such as bone marrow, cord blood, whole blood, or sub-components of these tissues such as peripheral blood mononuclear cells (including normal or mobilized leukapheresis collections) and other isolated cell types ($CD34^+$,T cells, NK cells, B cells, and monocytes).

For each of the biospecimen types, we offer:

- Remnant specimens — specimens collected originally for clinical testing purposes but are no longer needed for clinical care of that patient. These samples typically are sourced from clinical laboratories and pathology laboratories prior to their disposal; and

- Research use only specimens — specimens collected specifically for research via a direct intervention with a research subject, under a protocol that has been reviewed and approved by an ethics committee such as an IRB and with such research subject's consent. These samples are typically sourced at healthcare providers or commercial partners that are a part of our supply network.

The cross product of all these categories (i.e. remnant or research use only and biofluids, tissues, or hematopoietic stem or immune cells) describes the product types we use to track and manage the business. These groupings include:

- Remnant biofluids — These leftover clinical samples are procured from our clinical lab partners and are typically available days after specimen collection. They are generally priced to the researcher per specimen, depending upon specimen type, rarity, and requested data. These specimens contributed to approximately 15% and 8% of our revenue in 2022 and 2021, respectively.

- Remnant tissue — These leftover anatomic pathology samples are procured from our pathology lab partners and typically are available years after they were first collected for clinical care. They are generally priced depending upon specimen type, rarity, and requested data.

- Remnant hematopoietic stem and immune cells — Remnant hematopoietic stem and immune cells includes bone marrow, cord blood, whole blood, or their viable cellular components, that are left over from a clinical testing process. These samples may be obtained from clinical and anatomic pathology labs.

- Research use only biofluids — Research use only biofluids are collected directly from subjects, with their consent, and under an IRB (or equivalent) protocol. We obtain these samples via a variety of sources, including our biorepository and clinical research center partners. They are generally priced to the researcher per collection, depending upon specimen type, rarity, and requested data. These specimens contributed to approximately 38% and 52% of our revenue in 2022 and 2021, respectively.

- Research use only tissue — Research use only tissues are collected directly from subjects, with their consent, and under an IRB (or equivalent) protocol. They are typically collected during a clinically required surgical procedure. We obtain these specimens from our biorepository partners, anatomic pathology laboratories, or clinical research centers that have relationships with surgical facilities. These samples are priced to the researcher per sample, depending upon specimen type, rarity, and requested data. These specimens contributed to approximately 43% and 37% of our revenue in 2022 and 2021, respectively.

- Research use only hematopoietic stem and immune cells — Research use only hematopoietic stem and immune cells includes bone marrow, cord blood, whole blood, or their cellular components, which are collected from subjects with their consent and under an IRB (or equivalent) protocol. Some of the aforementioned products are collected from healthy subjects or diagnosed (diseased) subjects and may be offered to researchers in fresh or cryopreserved format. They are prospectively collected primarily from our blood donor center partners or picked from banked inventory maintained by our supply site partners. The collection of these samples may require subjects to undergo apheresis procedures, bone marrow extraction procedures, and/or hematopoietic stem cell

(HSC) mobilization therapies. These products are generally priced to the researcher per collection depending upon collection type, specimen type, rarity (subject phenotype or attributes selected), required procedures, and requested data. Research use only hematopoietic stem and immune cells were a relatively new product to us in 2019. These specimens accounted for approximately 2% of our revenue in 2022 and 2021.

For each of these product types, biospecimens may already exist in laboratory archives or banked in our network of biorepositories ("banked") or may be collected in the future from our network of healthcare providers and commercial specimen providers ("prospectively-collected" or "custom collections").

Our Supply Partners

Critical to the success of the iSpecimen Marketplace is the network of healthcare providers who make their patients, samples, and data available to researchers. This supply network was built over a ten-year period and as of December 31, 2022, our supply network consisted of approximately 200 unique healthcare organizations and biospecimen providers under agreement, including healthcare systems, community hospitals, clinics, private practice groups, commercial laboratories, blood centers, commercial biobanks, clinical research sites, and cadaveric donation centers.

Our suppliers are located in 18 countries across the Americas, Europe, and Asia and our cost of revenue for the years ended December 31, 2022 and 2021, break out as follows geographically:

	December 31,	
	2022	2021
Americas	90.52 %	92.52 %
Europe, Middle East, and Africa ("EMEA")	6.91 %	6.51 %
Asia Pacific ("APAC")	2.57 %	0.98 %

There was one supplier that accounted for 12.3% of our total cost of revenue during the year ended December 31, 2022. There were four suppliers that accounted for 11.3% ,10.5% ,10.4% and 10.4% of our total cost of revenue during the year ended December 31, 2021.

Each supplier organization may give us access to one or more of the following environments within their organization where specimens may be obtained:

- Clinical labs — This environment provides access to remnant biofluids and is typically found in hospitals, commercial laboratories, clinics, and private practice groups. As of December 31, 2022, approximately 50 of our healthcare supply sites provided us with access to remnant biofluids originating in clinical labs;

- Pathology labs — This environment provides access to remnant tissue and remnant hematopoietic stem and immune cells and typically exists within hospitals or commercial laboratories. As of December 31, 2022, approximately 25 of our healthcare supply sites provided us with access to remnant tissue or cells originating in pathology labs;

- Biorepositories — These organizations typically reside within larger healthcare systems or commercial organizations. Generally, they collect and store specimens for unspecified future research purposes. As of December 31, 2022, approximately 60 of our supply sites provided us with access to specimens stored in biorepositories;

- Blood donor centers — These organizations typically collect large volumes of blood and derivatives for therapeutic or research purposes. They own and operate donor centers and may manufacture broad selection of isolated cell types (fresh or cryopreserved) from consented donors for research use. As of December 31, 2022, seven of our supply sites provided us with access to large volume blood products;

- Cadaveric donation centers — These organizations receive whole cadavers and provide access to cadaveric tissues, biofluids, and stem cells, specifically for research purposes. As of December 31, 2022, two of our supply sites provided us with cadaveric tissues and biofluids; and

- Clinical research centers — These organizations generally reside within healthcare facilities such as hospitals or clinics, or they operate as standalone entities providing access to subjects for research programs. Subjects may be approached and consented to provide specimens when they are in for healthcare appointments (i.e. patient encounters) or may be called in to specifically participate in research projects. As of December 31, 2022, approximately 180 of our healthcare supply sites provided us with access to patients directly from over 1,000 hospitals and thousands of clinics and practice groups.

Supply sites may provide specimens from one or all these environments, depending on their practices and capabilities. Each supply site can select how it will work with our Company.

In addition to obtaining specimens and data directly from healthcare organizations, we work with several commercial biobanks and biospecimen brokers who have their own network of healthcare provider supply partners and wish to make their samples available to our research clients as well. While these organizations are generally considered our competitors, they are willing to work with us because we provide value by acting as both a distribution channel for them and a supply partner to them to increase their revenues. Moreover, the inclusion of competitors' specimens in our iSpecimen Marketplace platform further strengthens our competitive position and value to our customers by further de-fragmenting our customers' buying experience.

Our Customers

Our customer base is primarily comprised of three main segments: biopharmaceutical companies, in vitro diagnostic ("IVD") companies, and government/academic institutions. As of December 31, 2022, we have distributed our specimens to approximately 631 customers such as the Centers for Disease Control and Prevention. Since entering the regenerative medicine market late 2019, we have acquired 33 customers representing 4% of our total revenue in 2021, and 2% in 2022.

From our inception through December 31, 2022, we have distributed more than 190,000 specimens to 21 countries and our geographical revenues distribution for the years ended December 31, 2022 and 2021, were as follows:

	December 31,	
	2022	2021
Americas	89.54 %	92.7 %
Europe, Middle East, and Africa (EMEA)	7.43 %	6.69 %
Asia Pacific (APAC)	2.78 %	0.61 %

During the year ended December 31, 2022, there were two customers that accounted for approximately 14% and 12% of our total revenue generated. During the year ended December 31, 2021, no customers represented greater than 10% of the Company's revenues. We continuously engage with all customers when we receive inbound requests from them, whether they are within or outside of the Americas. Year-over-year, our top customers have been different because their specimen needs tend to be project-based and depending upon where they are in their research and development cycle, they may not need large numbers of specimens each year. Regardless, our customer retention rates are high, with 22 of our top 25 customers (88%) in 2021 also procuring specimens in 2022.

Biospecimens have broad utility within the healthcare and life science industries, as they are collected and used throughout nearly every stage of diagnostic and therapeutic product discovery and development. For diagnostic products, they are used consistently for preclinical discovery, clinical validation, and post-market validation, as well as surveillance. For therapeutic products, these samples are most often used during preclinical research involving drug target identification and validation, compound screening, lead optimization, predictive toxicology, and pharmacokinetic studies. They are also used for biomarker companion diagnostic discovery and development, which has been shown to reduce the costs of drug clinical trials by 30 to 60% according to Ark Research. In the case of regenerative medicine applications, hematologic samples are used for research and development of engineered cell therapies (e.g. CAR-T, CAR-NK), stem cell therapies (e.g. hematopoietic stem cells, mesenchymal stem cells), exosome therapies, identification of cell immunophenotypes for allogeneic therapies, and for developing and scaling-up cell therapy manufacturing processes.

Given recent advances in technology that now allow for the identification of molecular determinants of disease, the role of the patient's biospecimen has become even more important in all these endeavors and is essential to the development of precision medicine. This pursuit of precision medicine by the healthcare and life science industries has further increased the already high demand for human biospecimens and the clinical data that describe them.

Our Competitors

We compete with a highly fragmented landscape of organizations who have access to human biospecimens. The competitive organizations, including:

- Healthcare providers, who may offer access to clinical laboratory specimens, pathology laboratory specimens, biorepository specimens, or patients directly for research;
- Commercial biobanks, who purchase and maintain inventories of specimens from healthcare providers in anticipation of future requests from researchers. Some of these organizations offer online catalogs that can be searched for specimens within their own biobanks;
- Specimen brokers, who act as a middleman between healthcare providers and researchers on a transaction-by-transaction basis;
- Commercial specimen providers who operate their own donor centers, specimen procurement groups, and cell manufacturing facilities. Some of these organizations offer online catalogs that can be searched for specimens within their own biobanks; and
- Research services marketplaces that provide access to a list of biospecimen providers but not a list of available biospecimens. These organizations allow a researcher to fill out a specimen request form online which then gets distributed to the biospecimen providers in their marketplace. They do not support searches for precise specimens in the services marketplace.

In each of these cases, the landscape is extraordinarily fragmented, and our management estimates that most biospecimen providers have less than 1% market share each, and no single biospecimen provider has more than a 10% market share. Most competitors are smaller organizations with limited specimen procurement abilities. However, there are several larger biospecimen providers who are consolidating the industry by acquiring smaller specimen providers to enable them to provide broader access to specimens and research subjects. These organizations are well-capitalized by private equity and while they still lack a technology-based approach that enables them to search the inventories across their biospecimen provider network, because of their broad specimen access, banked inventory, and available cash, they currently represent our biggest competitive threat.

Specimen providers (e.g. Discovery Life Sciences and StemExpress) maintain internal biobanks and enable researchers to search online for specimens that reside within their own biobanks. Other research services marketplaces (e.g. Science Exchange) allow researchers to describe a specimen request which then gets broadcast to a network of specimen providers (i.e. no searching for specimens, but rather the identification of specimen providers who may or may not have matching specimens and the distribution of the specimen request to them). As such, we believe that there are no other online human biospecimen marketplaces that operate in a manner similar to our business. In addition, we believe that over the long term, the iSpecimen technology-based approach will allow us to scale faster than our competitors who rely upon manual efforts to procure specimens. Nonetheless, we believe we will continue to face competition from: healthcare providers that have their own inventory of biospecimens and thus offer lower prices by eliminating us and others as middlemen; commercial biobanks that have their own inventory of biospecimens and thus may deliver samples more quickly when a researcher's needs align with their existing inventory; specimen brokers with a specific niche (e.g. infectious disease); and commercial specimen providers with their own donor centers who may more predictably collect and deliver specimens.

Our Intellectual Property

Intellectual property rights are an important component of our business. While we currently do not have any patents protecting our intellectual property, we rely on a combination of copyright, trademark, and trade secret laws in the United States and other jurisdictions, as well as confidentiality and non-disclosure agreements and other contractual protections with employees and third parties to protect our intellectual property rights, including our proprietary technology, brand, and know-how. We believe factors such as the technological and creative skills of our people; our existing and evolving partnerships; the creation of new features, functionality, and services; and the frequent enhancements to our platform have helped us to establish and will help us maintain our technology leadership position.

Regulations

iSpecimen works with the healthcare industry and with clinical researchers, both highly regulated environments in the United States and other countries. Government departments and agencies, at the federal, state, and local levels have regulations related to research activities that involve human subject research as well as regulations about the collection, storage, and dissemination of personal and healthcare data related to individuals. To support compliance with regulations, we have both internal personnel and external resources who provide us with expertise in various areas of compliance including a Chief Information Security Officer, Chief Privacy Officer, contracts manager, biospecimen and data privacy counsel (external), general counsel (external), IRB (external), and other employees with expertise and oversight of site compliance, lab compliance, and operational compliance.

The following is a general overview of the major laws and regulations pertaining to our business in the United States:

- 45 CFR Part 46 — Federal Policy for the Protection of Human Subjects
- HIPAA and 45 CFR Parts 160, 162, and 164 — HIPAA Privacy Rule, Security Rule, and Breach Notification Rule
- 21 CFR Part 11 — Food and Drug Regulations — Electronic Records, Electronic Signatures
- 21 CFR Part 50 — FDA Regulations — Protection of Human Subjects
- 21 CFR Part 56 — FDA Regulations — Institutional Review Boards
- Other Information Laws and Regulations
- Other Applicable Laws

Most countries have their own corresponding rules that we are also required to follow.

45 CFR Part 46 — Federal Policy for the Protection of Human Subjects — "The Common Rule"

The Common Rule refers to regulations issued by the U.S. Department of Health and Human Services ("HHS") and other federal agencies that fund or participate in research, which regulations protect individuals participating in research. The Common Rule defines "Human Subjects Research" as research involving a living individual about whom an investigator is conducting research when information or biospecimens are obtained through intervention or interaction with the individual, or where the research uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens. For this type of research, the Common Rule stipulates: (i) when this research must be reviewed and approved by an IRB (as well as when it may be exempt from IRB review and approval); (ii) the requirements for an IRB's membership, authority, review procedures, record keeping, and approval criteria; (iii) when informed consent must be obtained from a research subject for participation in research and the elements that must be communicated in an informed consent form (as well as when consent may be waived by an IRB); and (iv) rules related to special requirements for vulnerable populations (such as prisoners and pregnant women).

iSpecimen is involved with both Human Subject Research and non-Human Subject Research. The collection of Research Use Only ("RUO") specimens (i.e., samples collected specifically for research via a direct intervention with the research subject and not collected as part of routine clinical care) is considered Human Subject Research. In those cases, iSpecimen and our suppliers are subject to the Common Rule. Therefore, all research use only specimens collected in the United States need to be collected under an IRB-approved protocol, with informed consent (unless an IRB waives consent under appropriate regulatory standards).

When iSpecimen is the study sponsor (i.e. specimens are collected under our IRB protocol), we work with a commercial IRB (currently Advarra) to approve our protocol, informed consent forms, subject recruitment material, and collection sites. These protocols and associated material are reviewed regularly by our IRB in accordance with the Common Rule. When iSpecimen is not the study sponsor (i.e., when research use only specimens are collected at participating healthcare providers under their own IRB-approved protocols), we audit the site before we start procuring specimens to ensure that appropriate IRB approvals are in place.

For international specimen collection sites, we rely on those sites to ensure they are collecting specimens in accordance with the laws in their own jurisdictions, in addition to following basic U.S. rules related to Human Subjects Research.

Finally, iSpecimen participates in Non-Human Subject Research, specifically when we collect clinical remnant samples (i.e., those specimens that were collected originally as part of clinical care). According to the Common Rule, as long as the physical sample and any associated dataset is de-identified before being used for research, the use of clinical remnant samples is not considered Human Subject Research and therefore does not need IRB review and approval, nor does it require patient consent. For these samples, iSpecimen leaves it up to each supplier to determine whether the supplier seeks patients' consent or whether the supplier will inform its patients about the supplier's use of remnant samples, or allows its patients to opt-out of their use. In all cases, we track any use limitations that attached to a particular specimen. For researchers who only want samples from patients who have consented to allow use in research, we only distribute specimens meeting that criteria to those researchers.

Health Insurance Portability and Accountability Act, as amended by the Health Information Technology for Economic and Clinical Health ("HITECH") Act, all as implemented by 45 CFR Part 160, 162 and 164 (collectively, "HIPAA").

HIPAA includes several applicable rules, including the *Standards for Privacy of Individually Identifiable Health Information* ("Privacy Rule"), the *Security Standards for the Protection of Electronic Protected Health Information* ("Security Rule"), and the *Breach Notification Rule* ("Breach Notification Rule").

The Privacy Rule addresses the allowable uses and disclosures of an individual's PHI by Covered Entities, defined by HHS as (1) health plans, (2) healthcare clearinghouses, and (3) healthcare providers who electronically transmit any health information in connection with transactions for which HHS has adopted standards (such as electronic billing). The Privacy Rule also applies to Business Associates, which include persons or entities that performs certain functions or activities that involve the use or disclosure of PHI on behalf of, or provide certain services to, a Covered Entity. HIPAA requires Covered Entities to obtain HIPAA Business Associate Agreements with their Business Associates.

The Security Rule establishes a national security standard for protecting ePHI. The Security Rule requires Covered Entities and Business Associates to implement physical, administrative, and technical safeguards to protect ePHI.

The Breach Notification Rule pertains to Covered Entities and Business Associates that have access to PHI and requires them to provide notification following a use or disclosure of PHI that does not comply with the Privacy Rule that compromises the security or privacy of the PHI (a "Breach").

Covered Entities and Business Associates that fail to comply with the HIPAA standards may be subject to civil money penalties or criminal prosecution.

iSpecimen has implemented many protocols and processes to comply with HIPAA and other data privacy and related laws and regulations. First, to reduce the likelihood of any Breach, iSpecimen removes all ePHI prior to storing information in our datacenter so that we do not possess PHI that is subject to HIPAA. Secondly, to the extent any PHI inadvertently remains in our datacenter, we have implemented physical, administrative, and technical safeguards to comply with the HIPAA Security Rule. We have implemented more than eighty HIPAA privacy and security policies at the Company to help ensure compliance with HIPAA Privacy, Security and Breach Notice rules. Thirdly, we regularly undergo HIPAA gap analyses and security testing using external, independent firms to find weaknesses and vulnerabilities in our technology and our data protection policies and procedures and remediate as needed. Finally, iSpecimen executes Business Associate Agreements or Data Use Agreements with our healthcare provider partners if they might share ePHI with us. To date, iSpecimen has never had a Breach of PHI and has never been investigated by HHS nor found to be out of compliance with HIPAA.

21 CFR — FDA Regulations

The Food and Drug Administration ("FDA") is an HHS agency that regulates clinical investigations of products under its jurisdiction, such as drugs, biological products, and medical devices. The FDA has its own set of rules related to the protection of human subjects in research which may differ from the Common Rule. However, FDA does harmonize its regulations with the Common Rule whenever permitted by law (see section 1002 of the 21st Century Cures Act, Public Law 114-255). iSpecimen follows the FDA regulations related

to the protection of research subjects, so that its customers may submit data to the FDA resulting from research performed using data and specimens provided to the researcher by iSpecimen.

21 CFR Part 11 Electronic Records; Electronic Signatures

21 CFR Part 11 is relevant when submissions to the FDA include records in electronic form that are created, modified, maintained, archived, retrieved, or transmitted under any records requirements set forth in FDA regulations. At a high level, Part 11 requires organizations to implement good business practices by defining the criteria under which electronic records and signatures are considered to be accurate, authentic, trustworthy, reliable, confidential, and generally equivalent to paper records and handwritten signatures on paper. These rules stipulate a range of features that must be in place in computer systems that handle electronic data; standard operating procedures relating to information technology systems and processes; system validation processes and procedures to ensure that electronic systems operate as intended.

Although iSpecimen defines and implements many relevant policies, processes, and technical controls, the iSpecimen Marketplace has not been certified or audited for 21 CFR Part 11 compliance. In addition, we do not require the originating systems from whom we receive data to be 21 CFR Part 11 compliant. While we do not represent to customers or suppliers that our systems are 21 CFR Part 11 compliant, our clients may still submit data to the FDA that was received, stored, and transmitted in our systems.

The vast majority of the specimens used by our customers are for projects that do not require 21 CFR Part 11 compliance, and our customers are responsible for determining whether they require Part 11-compliant data for the particular use. For specimens that are collected with informed consent, we audit informed consent differently for supply sites that use their own IRB or ethics committee and those supply sites that use the IRB we contract. In the event we are required to contact a client about a shipped specimen that is not supported by informed consent, which had not happened as of December 31, 2022, the client would then determine whether it could use the specimen without informed consent. In addition, we contract with an outside IRB for IRB services, which agrees to perform the services in accordance with all applicable laws and regulations governing independent institutional review boards, and to indemnify us for its failure to comply with applicable laws, rules, and regulations. The failure of our Company or our supply sites to comply with international, federal, state, and local laws and regulations could subject us to denial of the right to conduct business, fines, criminal penalties, and/or other enforcement actions which could have a material adverse effect on our business.

21 CFR Part 50 — Protection of Human Subjects

21 CFR Part 50 contains the general standards for obtaining informed consent and for human participation in clinical investigations as well as additional safeguards for children involved in clinical investigations, when the investigations are regulated by the FDA. The regulations specify the requirements for informed consent, exceptions to these requirements, elements of informed consent, and documentation of informed consent. Additionally, the requirements detail additional regulations for investigations involving children. Informed consent is not required to use de-identified specimens and data for certain FDA-regulated research, as set forth in guidance documents issued by the FDA.

To the extent our suppliers seek informed consent from individuals to use specimens and data for research, we will provide our clients, upon request, with copies of our or our suppliers' template informed consent forms and IRB approval prior to obtaining samples from us. However, gaps may exist in our or our suppliers' protocols and informed consent forms that make them incompatible with this regulation and we may fail to properly audit and identify these gaps.

21 CFR 56 Institutional Review Boards

21 CFR Part 56 contains the general standards for the composition, operation, and responsibility of an IRB that reviews clinical investigations regulated by the FDA. These regulations are intended to protect the rights and welfare of human subjects involved in such investigations and indicate the required organization and membership of an IRB; the IRB's function and operations; record-keeping and reporting; and administrative actions for non-compliance.

iSpecimen utilizes an outside IRB to review the iSpecimen specimen collection protocol. While we believe the IRB composition and operations to be 21 CFR Part 56 compliant, there may be gaps that make them incompatible with this regulation.

Other Information Laws and Regulations

Other information laws and regulations include all applicable laws concerning the privacy and/or security of personal information including, but not limited to, state data breach notification laws; personal data protection laws such as the California Consumer Privacy Act of 2018, Nevada Senate Bill 220 (an amendment to the state's existing online privacy policy statute) and Maine's Act to Protect the Privacy of Online Consumer Information; and all applicable Payment Card Industry Security Standards with respect to account data protection.

Currently, iSpecimen collects personal data on customers, suppliers, investors, employees, research subjects, Marketplace registrants, and other individuals who interact with iSpecimen personnel or our websites. We believe we are in compliance with these data protection rules but there remains inherent risk of a data breach of iSpecimen's systems or any of our technology service and SaaS providers (such as those organizations who provide us with customer relationship management software, marketing automation software, online file storage, web services, email systems, accounting systems, and data aggregation and visualization services).

Other Applicable Laws

In addition to the above-described regulation by United States federal and state government related to Human Subject Research and data privacy and security, there are many other U.S. and international rules that are applicable to iSpecimen. The following list contains some of the other federal and state laws and regulations that could directly or indirectly affect our ability to operate the business:

- Occupational Safety and Health regulations and requirements;
- Centers for Disease Control Import Permit Program rules related to biological agents;
- Shipping rules such as IATA Dangerous Goods regulations;
- State and local laws and regulations for the disposal and handling of medical waste and biohazardous material;
- Export laws such as the U.S. Department of Commerce's Bureau of Industry and Security Export Administration Regulations, U.S. State Department's Directorate of Defense Trade Controls, and the U.S. Department of the Treasury's Office of Foreign Assets Control in export licensing;
- Import laws such as the Customs and Border Protection Trade Act of 2002 and the Customs Modernization Act;
- The federal Anti-Kickback Statute, which prohibits, among other things, any person from knowingly and willfully offering, soliciting, receiving or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs;
- Federal, state, and local tax and tariff rules;
- Other laws and regulations administered by the FDA;
- Other laws and regulations administered by HHS;
- State and local laws and regulations governing human subject research and clinical trials; and
- Other laws and regulations of which we are unaware.

These laws cover areas where we may not have expertise and, in many areas, these laws are actively evolving. We, or our other third-party customers, suppliers and/or distribution partners, may not be able to maintain regulatory compliance in such countries or may incur significant costs in obtaining or maintaining our foreign regulatory compliance.

International Regulatory Environment

Because iSpecimen procures specimens from and distributes specimens to countries outside of the United States, we are subject to international rules related to the protection of human subjects in research, data privacy and security, import and export regulations, tariffs, and foreign rules similar to any of the aforementioned U.S. rules, as well as those of which we are unaware.

One of the more prominent international regulations is the General Data Protection Regulation ("GDPR') which took effect in May 2018. The GDPR regulates the collection, use, disclosure, transfer, and/or other processing of personal data of identified or identifiable individuals located in the European Economic Areas, including the European Union ("EU"). This data specifically includes personal health data that generally is provided as part of biospecimen collection studies. The GDPR imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates for processing (with some exceptions), allowing individuals to revoke consents granted, enabling individuals the right to have their data erased (with some exceptions), amended, or transferred to another data controller (known as "data portability"), providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, limiting the transfer of data to countries outside of the EU, providing notification of data breaches, and taking certain measures when engaging third-parties who may also use or process the data.

In addition, EU member states may make their own further laws and regulations limiting the processing of personal data, including biometric, genetic, or health data.

The GDPR increases our obligations with respect to data collected by our EU suppliers. We generally rely upon our contractual terms with these organizations as a means for obligating them to provide us data in accordance with the GDPR regulations. In addition to utilizing contractual terms to obligate specimen suppliers to conform with GDPR, we generally request the international supplier fills out a pre-contract questionnaire to understand their GDPR compliance before engaging in the contracting process and then perform a post-contract audit that also asks about GDPR applicability and the site's conformance to the GDPR. Audit questionnaires are distributed every two years after the initial site audit.

COVID-19 and its Impact

In response to the COVID-19 pandemic, we have put in place additional health and safety protocols. We continue to monitor and revise these protocols as appropriate to address the evolving nature of the pandemic. While we have seen a return to business as usual in our industry, we continue to monitor the future impact of the COVID-19 pandemic on the Company, which includes such factors as length of time of the pandemic; the responses of federal, state and local government; the impact of future variants that may emerge; vaccination rates among the population; the efficacy of the COVID-19 vaccines; the longer-term impact of the pandemic on the economy and consumer behavior; and the effect on our employees, vendors and suppliers. We will continue to monitor and evaluate the ongoing COVID-19 pandemic and will work to respond appropriately to the impact of COVID-19 on our business, as well as customers' and suppliers' businesses.

Employees

As of December 31, 2022, we had seventy-five employees (not including co-ops or summer interns), nine of whom were engaged in research and development activities, twenty-two of whom were engaged in sales and marketing activities, twenty-one of whom were engaged in operations and fulfillment activities, ten of whom were engaged in supply development and management activities, and six of whom were engaged in general and administrative functions. Our employees are primarily located in Lexington, Massachusetts with twenty-three remote sales, marketing, and supply development personnel located elsewhere in the U.S.

Item 1A. Risk Factors

In analyzing our Company, you should consider carefully the following risk factors, together with all of the other information included in this Annual Report. Factors that could cause or contribute to differences in our actual results include those discussed in the following subsection, as well as those discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere throughout this Annual Report. Each of the following risk factors, either alone or taken together, could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our

Company. The risks and uncertainties described below are not the only ones we face. Additional risks not currently known to us or other factors not perceived by us to present significant risks to our business at this time also may impair our business operations.

Risks Related to Our Business

We have incurred losses since inception and anticipate that we will continue to incur losses for the foreseeable future. We are not currently profitable, and we may never achieve or sustain profitability.

We were founded in 2009 and completed our first commercial sale in 2012. We did not start generating revenues until 2016. We are not profitable and have incurred losses in each period since our inception in 2009. For the year ended December 31, 2022 and 2021, we reported net losses of $10,245,922 and $8,961,815, respectively. We had an accumulated deficit of $48,265,324 as of December 31, 2022.

We expect to continue to incur losses for the foreseeable future, and we expect these losses to increase as we continue to invest in the growth of our business. We may encounter unforeseen expenses, difficulties, complications, delays, and other unknown factors that may adversely affect our business. The magnitude of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate and grow revenue. Even if we achieve profitability in a future period, we may not be able to sustain profitability in subsequent periods. Our prior losses and expected future losses have had and will continue to have adverse effects on our stockholders' equity (deficit) and working capital.

In the future, we may identify material weaknesses in our internal controls over financial reporting that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If we fail to remediate any material weaknesses or if we otherwise fail to establish and maintain effective control over financial reporting, our ability to accurately and timely report our financial results could be adversely affected.

We are required to comply with the SEC's rules implementing Sections 302 and 404 of the Sarbanes-Oxley Act, which requires management to certify financial and other information in our quarterly and annual reports and provide an annual management report on the effectiveness of our controls over financial reporting. Although we are required to disclose changes made in our internal controls and procedures on a quarterly basis, we are not required to make our first annual assessment of our internal controls over financial reporting pursuant to Section 404 until the later of (i) the year following our first annual report required to be filed with the SEC or (ii) the date we are no longer an emerging growth company. This assessment will need to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting, as well as a statement that our independent registered public accounting firm has issued an opinion on the effectiveness of our internal control over financial reporting, provided that our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting until our first annual report required to be filed with the Securities and Exchange Commission, or SEC, following the later of the date we are deemed to be an "accelerated filer" or a "large accelerated filer," each as defined in the Exchange Act, or the date we are no longer an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). We could be an emerging growth company for up to five years.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our financial statements will not be prevented or detected on a timely basis.

We may identify future material weaknesses in our internal controls over financial reporting or fail to meet the demands that will be placed upon us as a public company, including the requirements of the Sarbanes-Oxley Act, and we may be unable to accurately report our financial results, or report them within the timeframes required by law or stock exchange regulations. We cannot assure that additional material weaknesses will not exist or otherwise be discovered, any of which could adversely affect our reputation, financial condition and results of operations.

We may likely require additional capital in the future and an inability to meet future capital needs could adversely impact our ability to operate.

We require substantial capital to fund our business growth and we will likely need additional capital in the future to fund our operations. In addition to investing in personnel growth commensurate with business growth, we believe we must continue to invest in the development of our iSpecimen Marketplace platform to enhance and improve its performance, functionality, ease of use, and reliability

to carry out our business strategies. New industry standards, the availability of alternative products, and evolving life science research needs could render our products and services obsolete and/or new third-party marketplace technology may be introduced that makes it easier for our competitors to create their own marketplace platforms. Our success will depend, in part, on our ability to develop new products and services and make corresponding technology enhancements that address the increasingly sophisticated and varied needs of our suppliers and customers and respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis. We cannot be certain that additional financing will be available to us if required on favorable terms or at all. To the extent that we cannot raise capital if needed, we may not be able to continue operations.

We have a relatively short operating history which can lead to difficulty in accurately forecasting future results.

While we had a small amount of revenue beginning in 2012, we did not have any full-time sales and marketing personnel to build our commercial operations until 2016. As a result of our relatively short history of revenue generation, our ability to accurately forecast future results is limited and is impacted by a number of factors, including:

- Our revenue is transactional and not recurring. Researchers pay us to provide specimens when they have a need for specimens. We do not currently charge our customer or supply chain for access to the iSpecimen Marketplace;

- Our revenue is significantly concentrated and varies by customer year-over-year. There were two customers that represented approximately 14% and 12% of our revenue in 2022. In 2021, there were no customers that accounted for more than 10% of our revenue;

- Researcher needs may change over the lifetime of a project, based on the stage of the project. A research customer in one time period may not have a need for specimens again in the next;

- Research projects get terminated or suspended for a variety of reasons, including funding issues or unexpected results. Any termination or suspension of a project may cause a corresponding cancellation or delay in purchase orders we have received for specimens;

- Suppliers may not accurately estimate how long it will take them to fulfill specimen requests, making it more difficult to accurately forecast when we will recognize revenue on these specimen requests; and

- We created our first sales team in the fourth quarter of 2019, which we have continued to expand, and therefore we have limited historical selling data per salesperson upon which to generate future revenue forecasts.

Many of these are outside of our control and all of which may change from time to time. Our historical revenue results should not be taken as predictive of future performance. There are many risks that could impact future performance resulting in variations in expected results which could lead to a negative business impact.

Our growth strategy may not prove viable and we may not realize expected results.

Our business strategy is to grow by improving and expanding iSpecimen's Marketplace platform. This growth is expected to come through: (i) expansion of our platform capabilities to drive increased acquisition of annotated biospecimens through the platform, (ii) further expansion of our customer and supplier base in and outside the United States, and (iii) expansion into new lines of business such as patient recruitment and data licensing. Expansion of our existing business and entry into new lines of business will require a significant investment in technology development, supply development, operations, and marketing and sales. We may not achieve market expansion and acceptance and we may incur problems introducing new solutions and services. We may experience losses related to these investments, which could have a material adverse effect on our results of operations.

Our growth strategy involves a number of risks and uncertainties, including:

- We may not successfully enter into contracts with healthcare providers to gain access to specimens, subjects, and data on terms favorable to us or at all. This can limit our ability to grow in existing lines of business and expand into new lines of business;

- We may not obtain new customers or may lose existing customers if we cannot offer products and services that they need on a timely basis or at all;

- We may fail in the development of our technology and it may not adequately keep pace to support an expansion of our existing line of business or our entry into new lines of businesses;

- The market adoption rate of our marketplace technology may be too slow, and we may fail to get our customers and suppliers to transact for products and services using our technology;

- We may fail to continue to expand outside of the United States, especially if we are required to comply with laws and regulations that differ from geographies in which we currently operate;

- We may fail to gain market acceptance for new products or services; and/or

- We may lose to competitors, some of whom may have greater resources than we do. This competition may intensify due to the ongoing consolidation in the biospecimen industry, which may increase our costs to pursue opportunities.

If we fail to properly evaluate and execute existing and new business opportunities properly, we may not achieve anticipated benefits and may incur increased costs. There can be no assurance that we will be able to successfully capitalize on growth opportunities, which may adversely impact our business model, revenues, results of operations, and financial condition.

The continued COVID-19 pandemic could continue to adversely affect our business.

We are subject to the risks arising from the COVID-19 outbreak's social and economic impacts on the healthcare services industry. In response to this risk, we have put in place additional health and safety protocols. We continue to monitor and revise these protocols as appropriate to address the evolving nature of the pandemic. While we have seen a return to business as usual in our industry, we continue to monitor the future impact of the COVID-19 pandemic on the Company, which includes such factors such as length of time of the pandemic; the responses of federal, state and local government; the impact of future variants that may emerge; vaccination rates among the population; the efficacy of the COVID-19 vaccines; the longer-term impact of the pandemic on the economy and consumer behavior; and the effect on our employees, vendors and suppliers. We will continue to monitor and evaluate the ongoing COVID-19 pandemic and will work to respond appropriately to the impact of COVID-19 on our business, as well as customers' and suppliers' businesses.

International operation expansion could expose us to additional risks which could harm our business, prospects, results of operation, and financial condition.

We operate internationally and expect to expand internationally. For example, we procure specimens from sites outside of the United States and we also distribute samples to organizations located around the world. As of December 31, 2022, we had customers in 21 countries, supply sites in 18 countries, and two international distributors. International expansion exposes us to additional risks, including:

- changes in local political, economic, social, and labor conditions, which may adversely affect our business;

- risks associated with trade restrictions and foreign import requirements, including the importation and exportation of our solutions, as well as changes in trade, tariffs, restrictions or requirements;

- heightened risks of unethical, unfair or corrupt business practices, actual or claimed, in certain geographies;

- fluctuations in currency exchange rates, which may make doing business with us less appealing as our contracts are generally denominated in U.S. dollars;

- greater difficulty in enforcing contracts;

- lack of brand awareness that can make commercializing our products more difficult and expensive;
- management communication and integration problems resulting from cultural differences and geographic dispersion;
- the uncertainty and limitation of protection for intellectual property rights in some countries;
- increased financial accounting and reporting burdens and complexities as a result of being a public company;
- lack of familiarity with local laws, customs and practices, and laws and business practices favoring local competitors or partners;
- potentially different pricing environments, longer payment cycles in some countries, increased credit risk, and higher levels of payment fraud;
- uncertainty regarding liability for products and services, including uncertainty as a result of local laws and lack of legal precedent;
- different employee/employer relationships, existence of workers' councils and labor unions, and other challenges caused by distance, language, and cultural differences, making it harder to do business in certain jurisdictions;
- compliance with complex foreign and U.S. laws and regulations applicable to international operations may increase the cost of doing business in international jurisdictions. These numerous and sometimes conflicting laws and regulations include internal control and disclosure rules, data privacy requirements, research ethics and compliance laws, anti-corruption laws, and anti-competition regulations, among others. Violations of these laws and regulations could result in fines and penalties, criminal sanctions against us, our officers, or our employees, prohibitions on the conduct of our business and on our ability to offer our products and services in one or more countries, and could also materially affect our brand, our international expansion efforts, our ability to attract and retain employees, our business, and our operating results; and
- instability, disruption or destruction in a significant geographic region, regardless of cause, including war, terrorism, riot, civil insurrection or social unrest; and natural or man-made disasters, including famine, flood, fire, earthquake, storm or disease, including without limitation, the war between Russia and Ukraine which started in February 2022, regions from which we obtain specimen supplies.

The occurrence of any one of these risks could harm our international business and, consequently, our results of operations. Additionally, operating in international markets requires significant management attention and financial resources. We cannot be certain that the investment and additional resources required to operate in other countries will produce desired levels of revenue or profitability.

We, or the third parties who provide services for us, may be adversely affected by external events for which our business continuity plans may not adequately prepare us.

The occurrence of severe weather, natural disasters, health epidemics, acts of war or terrorism, military conflicts such as the war between Russia and Ukraine, and other adverse external events or conditions that impact us or the operations of third parties who provide services for us have the potential to significantly impact our ability to conduct business. Although we have business continuity plans in place, including an emergency succession plan, there is no guarantee that our plans can be successfully implemented. Even if we were to successfully implement our continuity plans, we may incur substantial expenses and there is no guarantee that our business, financial condition, and results of operations will not be materially impacted.

We rely upon our technology solution for the operation of our business and if our technology platform contains defects or fails to perform as expected, we may need to suspend its availability and divert development resources, and our business and reputation may be harmed.

Technology as complex as ours may contain unknown and undetected errors or performance problems. There could be numerous reasons for performance and quality issues including new and updated features, defects in integrated commercial and open source technologies, outages and disruptions in the cloud infrastructure on which our platform relies, human error or malfeasance, scale constraints, design flaws, and bad actions by external factors including security and performance related incidents. Many serious defects are frequently found during the period immediately following introduction and initial release of new capabilities or enhancements to existing platforms. Although we attempt to resolve errors that we believe would be considered serious by our users before making our platforms available to them, our products are not error-free. If a significant failure occurs that prevents our customers, suppliers, or our Company from using the iSpecimen Marketplace, our operations may be disrupted, and it may be difficult or, in certain cases, impossible for us to continue our business for a period of time until the failure is corrected. Any performance or quality problem could result in lost revenues or delays in user acceptance that would be detrimental to our business and reputation. We may not be able to detect and correct errors before releasing our product commercially. Undetected errors or performance problems in our existing or future products may be discovered in the future and known errors, considered minor by us, may be considered serious by our customers, resulting in a loss of customers and a decrease in our revenues.

Sustainable future revenue growth is dependent upon the development of technology solutions that enable scale and address new markets.

Our iSpecimen Marketplace technology consists of four major functional areas: data ingestion and harmonization, search, workflow management, and administration, compliance and reporting. Each of these functional areas need continual development to both enable our current business to scale and to enable us to enter new markets. Our intention is to focus most of our engineering resources on the development of the iSpecimen Marketplace platform for the foreseeable future. In fiscal year 2022, we incurred $4,449,206 in technology expenses, and capitalized $2,975,686 for internally developed software. While we are spending, and expect to continue to spend, a significant amount of time and resources on the development of this platform, we cannot provide any assurances of our iSpecimen Marketplace's short or long-term success or growth. While we believe that the net proceeds from our initial public offering closed in June 2021 and in our private placement offering closed in December 2021 will be sufficient to fund our current operating plans, there is no assurance that the resources being allocated for the platform will be sufficient to complete planned additional capabilities, or that such completion will result in significant revenues or profit for us. If our customers or suppliers do not perceive this platform to be of high value and quality, we may not be able to retain them or acquire new customers or suppliers.

Our platform may become technologically obsolete or commoditized.

We must continue to enhance and improve the performance, functionality, ease of use, and reliability of our iSpecimen Marketplace platform or it may become obsolete or commoditized. New industry standards, the availability of alternative products, and evolving life science research needs could render our products and services obsolete and/or new third-party marketplace technology may be introduced that makes it easier for our competitors to create their own marketplace platforms. Our success will depend, in part, on our ability to develop new products and services that address the increasingly sophisticated and varied needs of our suppliers and customers and respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis. The development of our technology involves significant technical and business risks. We may fail to use new technologies effectively or to adapt our proprietary technology and systems to user requirements or emerging industry standards. If we are unable to adapt to changing market conditions, user requirements, or emerging industry standards, we may not be able to increase our revenue and expand our business. Additionally, if existing or future competitors develop or offer products or services that provide significant performance, price, creative or other advantages over this platform, demand for our services through the iSpecimen Marketplace may decrease and our business, prospects, results of operations and financial condition could be adversely affected.

If our security measures are breached, or if our services are subject to attacks that degrade or deny the ability of users to access our platforms, our platforms and applications may be perceived as not being secure, customers and suppliers may curtail or stop using our services, and we may incur significant legal and financial exposure.

Our platforms and the network infrastructure that are hosted by third-party providers involve the storage and transmission of healthcare data as well as proprietary information about organizations and programs, and security breaches could expose us to a risk of loss of this

information, litigation, and potential liability. Our security measures may be breached due to the actions of outside parties, employee error, malfeasance, security flaws in the third party hosting service that we rely upon, or any number of other reasons and, as a result, an unauthorized party may obtain access to our suppliers' or customers' data. Although we have never had any breach of data in our third-party provider's environment, any future breach or unauthorized access could result in significant legal and financial exposure, damage to our reputation, and a loss of confidence in the security of our platforms and applications that could potentially have an adverse effect on our business. Because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures on a timely basis. If an actual or perceived breach of our security occurs, the market perception of the effectiveness of our security measures could be harmed and we could lose suppliers and customers and we may have difficulty obtaining merchant processors or insurance coverage essential for our operations.

We, and the third-party providers upon which we rely, have experienced, and may in the future experience, cybersecurity threats, including threats or attempts to disrupt our information technology infrastructure and unauthorized attempts to gain access to sensitive or confidential information. Our and our third-party vendors' technology systems may be damaged or compromised by malicious events, such as cyberattacks (including computer viruses, malicious and destructive code, phishing attacks, and denial of service attacks), physical or electronic security breaches, natural disasters, fire, power loss, telecommunications failures, personnel misconduct, and human error. Such attacks or security breaches may be perpetrated by internal bad actors, such as employees or contractors, or by third parties (including traditional computer hackers, persons involved with organized crime, or foreign state or foreign state-supported actors). Cybersecurity threats can employ a wide variety of methods and techniques, which may include the use of social engineering techniques, are constantly evolving, and have become increasingly complex and sophisticated; all of which increase the difficulty of detecting and successfully defending against them. Furthermore, because the techniques used to obtain unauthorized access or sabotage systems change frequently and generally are not identified until after they are launched against a target, we and our third-party providers may be unable to anticipate these techniques or implement adequate preventative measures. Although prior cyberattacks directed at us have not had a material impact on our financial results, and we are continuing to bolster our threat detection and mitigation processes and procedures, we cannot guarantee that future cyberattacks, if successful, will not have a material impact on our business or financial results. While we have security measures in place to protect our information and our customers' information and to prevent data loss and other security breaches, there can be no assurance that in the future we will be able to anticipate or prevent security breaches or unauthorized access of our information technology systems or the information technology systems of the third-party providers upon which we rely. Despite our implementation of network security measures and internal information security policies, data stored on personnel computer systems is also vulnerable to similar security breaches, unauthorized tampering or human error.

Many governments have enacted laws requiring companies to provide notice of data security incidents involving certain types of data, including personal data. If an actual or perceived breach of security measures, unauthorized access to our system or the systems of the third-party providers that we rely upon, or any other cybersecurity threat occurs, we may face direct or indirect liability, costs, or damages, contract termination, our reputation in the industry and with current and potential customers may be compromised, our ability to attract new customers could be negatively affected, and our business, financial condition, and results of operations could be materially and adversely affected.

We maintain cybersecurity insurance and other types of insurance, subject to applicable deductibles and policy limits, but our insurance may not be sufficient to cover all costs associated with a potential data security incident. We also cannot be sure that our existing general liability insurance coverage and coverage for cyber liability or errors or omissions will continue to be available on acceptable terms or will be available in sufficient amounts to cover one or more large claims or that the insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could harm our financial condition.

Changes in demand for our products and services could affect profitability.

We are fundamentally a matchmaking service provider between researchers who have needs for access to subjects, samples, and data, and healthcare providers and other organizations that have them. Any change that either reduces the demand for our services or changes the composition of the demand could adversely impact our financial results.

Overall customer demand could change for many reasons outside of our control, reducing demand or making it more difficult to match up to our supply chain's capabilities. These reasons include:

- general economic downturn that impacts the research and development budgets of biopharma;
- changes in the disease landscape, like COVID-19, that affect the types of products and services needed;
- changes in drugs and therapies and the desire to study subjects on these drugs and therapies;
- changes in diagnostic tests performed (like genomic sequencing) that drive the need for subjects and samples with these new or novel test results;
- changes in data requirements, such as the need to know specific outcomes data;
- overall changes in biomarker research, such as emerging liquid biopsy or cell therapy research, that drives the need for different products and services;
- leadership changes within our customers resulting in loss of sponsorship;
- new (alternative) products introduced by competitors and/or developed by customers, which may have potential to reduce or replace the need for certain types of biospecimens that we provide;
- competitive forces, which make it easier for customers to find products and services elsewhere; and/or
- cancellation or delay of research programs, due to funding issues or preliminary research result issues.

If we fail to address these factors in a timely manner or at all, our financial results could be adversely affected.

Additionally, overall customer demand could decrease if we fail to:

- provide high quality products and services;
- provide products and services at a competitive price;
- deliver products and services in a reasonable amount of time;
- offer high levels of customer service;
- offer adjacent services that researchers want to procure along with our existing products and services;
- adequately invest in sales and marketing programs and teams to drive demand or operational support to fulfill requests;
- develop a large and diverse supply network to satisfy demand; or
- provide a technology solution that simplifies the biospecimen procurement process for researchers and specimen providers alike.

Challenges or unanticipated costs in establishing the sales, marketing, and distribution capabilities necessary to successfully commercialize our products globally could affect profitability.

To generate revenue, we need to expand our sales, marketing, and distribution capabilities to support our operations in North America, Europe, and Asia Pacific and proceeds raised in our initial public and in our private placement offering closed in December 2021 has allowed to enhance our sales, marketing, and distribution capabilities. It may be expensive and difficult for us to develop a global sales and marketing presence and therefore, we will likely seek distributors to the life sciences industry to market and sell some of our products and services outside of the United States. We have started the process of identifying potential distributors to market and sell our products and services to key geographic areas outside the United States. We may not be able to provide adequate compensation to these distributors for them to spend time and resources marketing and selling our products and some of our products may be too complex for them to adequately represent them. In addition, any third-party distributors with whom we work may not successfully sell our products and services, thereby exposing us to potential expenses in exiting such distribution agreements. We, and any distributors, must also market our services in compliance with federal, state, local and international laws relating to the provision of incentives and inducements. Violation of these laws can result in substantial penalties.

We incur credit risk with our customers, and we may provide them with products and services for which we do not get paid.

Our customers generally place orders for our products and services using a purchase order and we invoice our customers after they have received the products or services from us. During this procurement process, we become obligated to pay our suppliers for any products or services we procure from them on behalf of our customers regardless of whether our customers ultimately pay us for these products or services. Therefore, we bear the responsibility for the credit risk of our customers. We mitigate this credit risk through procedures that evaluate the creditworthiness of customers prior to accepting a purchase order from them. However, our procedures may not successfully identify all those who ultimately fail to pay us for our products and services and any non-payments may negatively impact our revenues, results of operations, and financial condition.

Our customer mix increases the risk of customers not paying our invoices.

We derive, and believe that we may continue to derive, a significant portion of our revenues from privately held, investor-backed biopharma companies that are not profitable and have little operating history. These organizations may be at a higher risk of not paying for provided products and services on a timely basis or at all. If these companies fail to pay our invoices, our profitability will be adversely impacted.

We rely upon relatively few customers for a significant portion of revenue and do not have a recurring revenue business model. A loss of large customers could affect our ability to operate.

We have derived, and believe that we may continue to derive, a significant portion of our revenue from a limited number of customers that vary each year. While for the year ended December 31, 2022, two customers represented 14% and 12% of the Company's revenues, for the year ended December 31, 2021, no customer represented more than 10% of our revenue. We do not have a recurring revenue model and our customers may buy less of our products or services depending on their research and development cycles, internal budget cycles, product and service requirements, and competitive offerings. A major customer in one year may not purchase any of our products or services in another year, which may adversely affect our financial performance.

Customers and customer prospects may be averse to using a self-service marketplace to procure specimens and may continue to require iSpecimen personnel in the procurement process, impacting our scalability and profitability.

The iSpecimen Marketplace functions as a lead generation system to capture customer requests for specimens and as a workflow engine to allow customers, suppliers, and our Company to track and manage specimen requests. Currently, it does not fully support self-service eCommerce because key capabilities required to satisfy these transactions across all of our product lines, such as a pricing engine and patient-level search, have yet to be incorporated. Therefore, currently all customer requests for specimens require assistance from iSpecimen sales personnel. At a minimum, our sales personnel are involved in the generation of customer quotes, but they often also act in a consulting role to help develop specimen request specifications on more complex projects or to perform searches on the customer or customer prospect's behalf.

While we continue to invest in capabilities to support customer self-service in the iSpecimen Marketplace, and will be utilizing the proceeds of our initial public and in our private placement offering closed in December 2021 for this effort, we do not know when we will consider these capabilities to be fully developed. Additionally, we do not know if researchers will utilize the iSpecimen Marketplace to transact without the intervention of iSpecimen personnel which could limit our scalability. We may continue to invest in software which may never provide a return on its investment and diverts resources from the development of software that drives other parts of our procurement workflow.

Our business may be materially and adversely impacted by the reduction, delay or cancellation of orders from our customers.

Our contracts with our customers generally allow them to reduce, delay, or cancel the unfulfilled portion of their specimen order with a two-week notice. Customers may reduce, delay, or cancel their unfulfilled orders due to a variety of reasons including they make changes to project requirements and the open request no longer meets their needs; their budgets change or projects get cancelled; they place orders with multiple specimen providers and cancel open orders when they have procured sufficient quantity of samples across all their sources; or we are unable to fulfill the entire order before the project deadline. For orders received and closed (either fully fulfilled, reduced, or cancelled) for 2022 and 2021, we fulfilled approximately 73.0% and 73.5%, respectively, of the total value of these orders. Our business, financial condition, results of operations and cash flows may be materially and adversely impacted by the reduction, delay or cancellation of orders.

We have entered into contracts with U.S. government agencies and contractors which subjects us to federal contract and audit risks.

We entered into contracts with U.S. government agencies and contractors, representing approximately 8.3% and 1.6% of our total revenue for 2022 and 2021, respectively, that may contain unfavorable termination provisions and are subject to audit and modification by the government at its sole discretion, which subjects us to additional risks. These risks include the ability of the U.S. government to unilaterally:

- suspend or prevent us for a set period of time from receiving new contracts or extending existing contracts;
- terminate our existing contracts;
- reduce the scope and value of our existing contracts;
- audit and object to our contract-related costs and fees, including allocated indirect costs; and
- change certain terms and conditions in our contracts.

The U.S. government may terminate any of its contracts with us either for its convenience or if we default by failing to perform in accordance with the contract schedule and terms. Termination for convenience provisions may enable us to recover only our costs incurred or committed, and settlement expenses and profit on the work completed prior to termination. Termination for default provisions may not permit these recoveries and make us liable for excess costs incurred by the U.S. government in procuring undelivered items from another source.

As a U.S. government contractor and subcontractor, we may become subject to periodic audits and reviews. Based on the results of these audits, the U.S. government may adjust our contract-related costs and fees, including allocated indirect costs. As part of any such audit or review, the U.S. government may review the adequacy of, and our compliance with, our internal control systems and policies, including those relating to our purchasing, property, compensation, and/or management information systems. In addition, if an audit or review uncovers any improper or illegal activity, we may be subject to civil and criminal penalties and administrative sanctions, including termination of our contracts, forfeiture of profits, suspension of payments, fines and suspension or prohibition from doing business with the U.S. government.

We could also suffer serious harm to our reputation if allegations of impropriety were made against us. Although we have not had any government audits and reviews to date, future audits and reviews could cause adverse effects.

Sustainable future revenue growth is dependent on growth in the capabilities of our supply network which we may not be able to achieve.

Our business is fundamentally a match-making business between healthcare providers who have access to subjects, samples, and data and life science researchers who need them. Currently, we receive more requests for our products and services than we have access to in our supply network and we are therefore supply constrained. Although we have allocated proceeds of our initial public offering closed in June 2021 and our private placement offering closed in December 2021 to supply development and commensurately grow our supply network capabilities to keep pace with demand, this supply-demand imbalance could increase in the future if we do not continue or increase our investment in this area.

Additionally, demand for specimens we receive is becoming more specific, requiring access to a greater population of subjects, samples, and data to find those that meet a researcher's inclusion and exclusion criteria. It takes a larger network of subjects, samples, and data to access a wide enough population of subjects to meet a growing number of requests with more stringent criteria. Delays, difficulties, or unanticipated costs in developing our supply network capabilities necessary to successfully procure products and services could adversely affect revenue and profitability.

Sustainable future revenue growth is dependent upon gaining access to more healthcare data from our supply network and a failure to obtain this data may adversely affect our growth.

Key to our growth strategy is the accessibility and availability of deep medical record data from our healthcare provider supply sites. This data is used to automate the process of matching researchers to subjects, samples, and data, and also used to automate the procurement workflow. Currently, we have gained access to laboratory data to support the distribution of clinical lab specimens as well as biorepository data to support the distribution of banked specimens. However, we have not gained access to deeper medical record data sets from a broad set of healthcare providers to support custom specimen collections, clinical trial recruitment, or data licensing. Should we fail in our ability to access deeper healthcare data, we may not be able to effectively compete in our served markets or grow as anticipated and our business may suffer.

The adoption cycle of our supply network tends to be very lengthy, which may adversely affect our ability to scale rapidly and increase revenues.

The business development cycle for the adoption of our technology solution at healthcare provider supply partners can take up to 18 months or more from initial contact with the prospect through execution of a contract. We may spend significant resources to attempt to secure a new supply partner without successfully engaging the supply partner. Even if we are successful in securing a new supply partner, once a contract is executed, implementation of our technology in the supply partner's environment can take another several months to a year or more. Because of the lengthy adoption cycle, we may fail to expand our supply network quickly enough to reach our revenue growth targets.

Potential adverse effect from changes in the healthcare industry, including consolidations and regulatory changes, could affect access to subjects, samples, and data and affect our growth.

Changing healthcare-related legislation and regulation may impact the fiscal stability and sustainability of our supply partners. Additionally, many healthcare providers are consolidating to create larger healthcare systems and/or integrated healthcare delivery systems. These changes can divert resources at our healthcare provider supply sites away from the evaluation or implementation of the iSpecimen solution to the adoption of new infrastructure, policies, and procedures to support the changes, thereby extending their timeline to adopt the iSpecimen solution. We cannot predict whether or when future healthcare reform initiatives at the international, federal, or state level, consolidations, or other initiatives affecting healthcare providers' businesses will be proposed, enacted, or implemented or what impact those initiatives may have on our business, results of operations, and financial condition.

Our supply chain may not provide adequate resources to quickly respond to requests for specimens and delays in the procurement process can affect our reputation, revenue, and profitability.

Many of the healthcare providers in our supply network are not-for-profit organizations whose primary business is to provide clinical care to patients. Supporting biospecimen research may be an adjunct activity for them. These organizations may lack adequate resources

to quickly respond to our requests for specimens now and into the future. Should we and our customers experience slow turnaround times on specimen requests, our reputation may be damaged and there may be an adverse impact on our revenue and profitability.

We do not control the end-to-end quality of specimens and data collected in our supply chain and quality issues can affect our reputation, revenue, and profitability.

We rely upon our supply sites and their quality control processes to provide us with products and services that meet order specifications. In certain situations, products are shipped directly from the supply sites to our customers. When we receive products from our supply sites, we perform a visual inspection of the products, but we do not perform an in-depth quality control check to ensure that products meet all specifications.

Instead, we rely upon our customers to perform quality checks themselves and offer refunds or replacements for products that do not meet specification. We receive products from supply sites and ship them to our customers. In 2022, the percent of specimens that met specifications was 99% for clinical remnant specimens, 99% for banked research specimens and 99% for custom research collections. In 2021, the percent of specimens that met specifications was 98% for clinical remnant specimens, 99% for banked research specimens and 97% for custom research collections. Refunds and replacements for our products that did not meet specifications for 2022 were nominal. Any issues with quality from our supply sites can adversely affect our reputation, revenue, and profitability.

Reliance on relatively few supply partners for significant supplies and services could affect our ability to operate and grow.

We have derived, and believe that we may continue to derive, a significant portion of our revenues from products we procure from a limited number of supply sites. For the year ended December 31, 2022, there were two suppliers who each accounted for 12% of our total cost of revenue and two other suppliers who, together, accounted for an additional 16% of our total cost of revenue. For the year ended December 31, 2021, there were two suppliers who each accounted for 11% of our total cost of revenue and two other suppliers who, together, accounted for an additional 20% of our total cost of revenue. Any change in the ability of a major supply site to provide us with products and services (such as financial health of the supply site, key leadership, research focus, information technology, competitive demand for specimens from third-parties, pricing structures, contract status and changes in the general economy) may adversely affect our financial performance.

Our supply partners' inventories may become obsolete, which could have a material adverse effect upon our ability to generate revenue.

During the year ended December 31, 2022, approximately 56% of our revenue was derived from specimens that were procured from our supply partners' existing sample inventories in their biobanks. These inventories may become obsolete due to changes in regulatory requirements such as a requirement for new consent form disclosures; changes in researcher requirements for the types of specimens, subjects, and data they need for their studies; and/or general degradation in the quality of stored specimens. Any change in regulations, researcher needs, or specimen quality could render our supply partners' inventories obsolete and may adversely affect our financial performance.

Specimen collection from human subjects, including the possible occurrence of adverse events during or after tissue collection, could provide exposure to claims and litigation.

There are inherent risks associated with collecting specimens from human subjects. Although specimen collections are completed by certified staff according to established industry standards, specimen donors vary in their ability to tolerate specimen collection protocols and such donors may potentially have an adverse health reaction either during or following a specimen collection. Research subjects or their legally authorized representative may file claims related to a specimen collection and these claims could result in litigation that could be expensive, and time consuming to defend or result in judgements that exceed the resources of the Company and its insurance coverage.

We procure specimens and data from organizations outside of the U.S. and as such, we rely upon these organizations to collect and distribute specimens and data in accordance with their local regulations as well as our contractual requirements. A failure by our sites to comply with both applicable regulations and our contractual requirements could introduce us to compliance risk.

Some of the organizations from which we procure specimens and data reside outside of the U.S. in jurisdictions that may have data protection rules, human research protection rules, and other pertinent rules that relate to the collection and distribution of specimens and data that vary from U.S. regulations. We, as an organization are not knowledgeable about all the pertinent rules and regulations of all of the jurisdictions in which these sites operate, and therefore we rely upon our contractual relationships with supply sites to ensure that they have legal responsibility for compliance with their own jurisdiction-specific regulations.

Should any site fail to comply with the applicable regulations, we may suffer reputational risks if we have distributed specimens and data from that site. Additionally, any compliance failure on the part of our supply sites that impacts our research customers' ability to utilize specimens and data they previously obtained from us, as well as utilize any research results, they derived from these specimens and data, may subject us to claims by these customers. These claims could result in litigation that could be expensive to defend or result in judgements that exceed our resources and our insurance coverage. Any such litigations and judgement could adversely affect our business, financial condition, and results of operations.

We may experience delays or interruption in the shipments of our specimens due to factors outside of our control, and such disruption could lead to lost revenue and customer satisfaction issues.

We distribute biological specimens to customers around the world. These specimens need to be delivered over a range of temperatures from ambient to cryogenic and delivery timeframes that can be as quick as hours. We rely on third-party shipping materials (such as thermal containers) as well as shipping services (such as FedEx) to transport specimens to our customers. Shipping materials may be defective and third-party shipping services, including international shipping services, could become disrupted by adverse weather conditions, natural disasters, military conflicts, flight cancellations, ground logistics issues, customs delays, and other service interruptions. Any defect in our shipping materials or delays in shipping service times could cause damage to these specimens and render them unusable by our customers. If we are unable to deliver our specimens in a timely matter and without damage, our revenue could be negatively impacted and our reputation with our customers could suffer, resulting in material harm to our business.

The Company's business was negatively impacted during the first half of 2022 by the ongoing war between Russia and Ukraine. At the start of the war, the Company had approximately $1 million of purchase orders that were slated to be fulfilled by the Company's supply network in Ukraine and Russia. This supply network shut down quickly at the start of the war. Ukrainian suppliers were disabled due to war conditions and evacuations and some of the Company's Russian suppliers were disabled by sanctions. While the Company mobilized to shift these purchase orders to other suppliers in the network, the process of getting specimen collections from other supply sites took time, which caused a delay in the fulfillment of such purchase orders.

As of December 31, 2022, the Company's supply sites in Russia that had not been under sanctions were now accessible and the Company's supply sites in Ukraine had mostly reopened. However, due to the uncertainty caused by the ongoing war, Ukraine suppliers may again become inaccessible to the Company. Therefore, as long as the uncertainty continues, the Company does not use them as sole specimen sources at a purchase order level. Alternate suppliers do not have the same favorable unit economics or specimen collection rates. The short and long-term implications of the war are difficult to predict at this time. The imposition of more sanctions and counter sanctions may have an adverse effect on the economic markets generally and could impact the Company's business and the businesses of the Company's supply partners, especially those in Ukraine and Russia. Because of the highly uncertain and dynamic nature of these events, it is not currently possible to estimate the impact of the war on the Company's business and the companies from which the Company obtains supplies and distributes specimens.

Recent changes in our management may lead to instability and negatively affect our business.

In September 2022, Christopher Ianelli, our former President and Chief Executive Officer, vacated his positions with the Company and, in October 2022, Jill Mullan, our former Chief Operating Officer, vacated her position with the Company. Dr. Ianelli's employment with the Company and Ms. Mullan's employment with the Company were each terminated on October 24, 2022. In September 2022, our board of directors appointed then Chief Financial Officer, Tracy Curley, to serve as our Interim Chief Executive Officer, while continuing to serve as Chief Financial Officer. In January 2023, the board of directors appointed Ms. Curley to serve as our full-time Chief Executive Officer and she continues to also serve as our Chief Financial Officer. Since October 2022, Ms. Curley has assumed all

the responsibilities formerly held by our Chief Executive Officer, Chief Operating Officer and Chief Financial Officer. We cannot be certain that the changes in management and the challenges of one officer serving solely in the three highest executive positions of the Company will not negatively affect our business in the future or that additional changes in management will not occur. Additionally, we may be negatively impacted by a lack of internal control processes as a result of our having one officer serving in the positions of both principal executive officer and principal financial officer of the Company. We are currently in the process of searching for a new Chief Financial Officer to replace Ms. Curley in her position as Chief Financial Officer, but there can be no assurance as to when we will be able to complete such search or that the transition to a new Chief Financial Officer will not, itself, lead to instability and/or negatively affect our business.

Our future success depends on our ability to retain our key personnel and to attract, retain and motivate qualified personnel.

Our future success will depend upon our ability to retain our key management and other personnel and will also depend in large part on our ability to attract and retain additional qualified software developers, bioinformaticists, operations personnel, sales and marketing personnel, and business development personnel. Competition for these types of employees is intense due to the limited number of qualified professionals and the high demand for them, particularly in the Boston, Massachusetts area where our headquarters are located. We have in the past experienced difficulty in recruiting qualified personnel, especially in the area of sales. Failure to attract, assimilate, and retain personnel would have a material adverse effect on our business and potential growth.

Our senior management team has limited experience managing a public company.

Our senior management team has limited experience managing a public company, and regulatory compliance may divert its attention from the day-to-day management of our business. Our management team may not successfully or efficiently manage our continued transition to a public company that will be subject to significant regulatory oversight and reporting obligations under the federal securities laws. In particular, these obligations will require substantial attention from our senior management and could divert their attention away from the day-to-day management of our business, which could materially and adversely impact our business operations.

Our competitors may have greater resources than us and may outspend us to grow more quickly.

Our competitors are highly fragmented and comprise of thousands of biobanks, healthcare providers, and commercial biospecimen organizations. We expect to continue to experience significant and increasing levels of competition in the future, especially from several larger biospecimen providers who have consolidated via mergers and acquisitions and who are well-capitalized by private equity. These organizations are currently acquiring smaller biospecimen businesses and have larger customer bases, their own collection centers, biospecimen inventories, larger marketing and sales budgets, and an international presence. They may also be developing their own technology solution that could be better or less costly to develop than our own iSpecimen Marketplace, thereby eliminating one of our key competitive advantages. They may continue to outspend us to grow more quickly and we may not be able to successfully compete with a competitor that has greater resources; hence such competition may adversely affect our business.

We may lose business to competitors which have or develop their own biorepositories and/or collection centers that can meet customers' needs.

Many of our competitors have their own biorepository of specimens that they have collected or procured over time. These inventories, when they meet a customer's needs for product, almost always provide our competitors with a time-to-delivery advantage because they can directly fulfill requests from their own inventories, whereas we must procure products through our supply network after an order has been received from our customers. Additionally, some competitors have their own collection facilities and direct access to eligible research subjects which also provides a time-to-delivery advantage. We have lost and will continue to lose business to competitors when they can provide samples more quickly than we can from our supply network.

We may face pricing pressure from competitors who may lower prices to reduce biorepository inventories or because they have more favorable specimen acquisition costs.

Many competitors invest in biorepositories of specimens and data. These competitors may be incented to drop prices in order to more quickly recoup their inventory carrying costs, especially when they have held inventory for longer periods of time. This may cause downward pricing pressure on us. Additionally, some competitors may have cost advantages on some types of collections either because

of more favorable supply relationships or because they have their own collection centers, and they can likewise exert pricing pressure in the market. Lower prices will adversely impact our revenue and gross margins.

Our overall business results may suffer from an economic downturn.

We rely upon researchers from biopharma companies as the primary source of our revenue. During an economic downturn, the biopharma industry typically experiences a drop in the annual growth rate of research and development spending and allocates fewer resources towards it. An economic downturn could adversely affect the demand for our products and services and have a corresponding impact on our revenue and profitability. A prolonged economic downturn may cause us to reduce investment in the longer-term growth of our Company in order to reduce short term costs.

Our operations and performance depend on economic conditions in the United States and other countries where we do business. Deterioration in general economic conditions, whether due to COVID-19 or otherwise, could negatively affect our and our customers' purchasing power.

Our results of operations and financial condition may be adversely impacted from high inflation rates.

We have experienced negative effects from inflation in certain areas of our business due to the recent high rates of inflation in the U.S. and around the world. Inflation is causing the cost of employee salaries to rise and our salaries account for a significant portion of our overall operating costs. Additionally, costs of supplies and other sales, marketing and general and administrative costs have increased due to inflation.

Inflation has not had a significant adverse impact on the cost of specimens due to our long-term contracts maintained with vendors, which include revenue sharing plans. However, if inflation continues, it may have an adverse impact on the costs of our samples in the future.

Our timely fulfillment of customer orders may be adversely impacted due to constraints in the supply chain.

Our operations are heavily reliant on specimen availability and delays or shortages in obtaining specimens caused by constraints in the supply chain, may adversely impact the timing and extent of our ability to fulfill our customer orders which could adversely impact our results of operations and financial condition.

We may have difficulty managing growth in our business, which could adversely affect our financial condition and results of operations.

Significant growth in the size and scope of our operations could place a strain on our financial, technical, operational, and management resources. The failure to continue to upgrade our technical, administrative, operating and financial control systems, or the occurrences of unexpected expansion difficulties, could have a material adverse effect on our financial condition and our ability to timely execute our business plans.

Our revenue may be adversely affected if we are required to charge sales tax or other transaction taxes on all or a portion of our past and future sales.

States and other jurisdictions have varying policies regarding when a company has a taxable presence in their locale. There are many factors to consider when determining if a locale nexus exists and if yes, whether products and services offered by the Company are subject to sales tax. To date, we have not paid any sales tax in any state on the provision of services to distribute biospecimens. However, it is possible that we could owe sales tax on past sales or in the future if laws and policies, court decisions, Federal law, or our decisions about where and when sales tax is owed changes.

Our ability to utilize net operating loss carryforwards may be limited, resulting in income taxes sooner than currently anticipated.

As of December 31, 2022, we had federal net operating loss carryforwards ("NOLs") of approximately $40.8 million for federal income tax purposes of which approximately $13 million expires at various periods through 2037 and approximately $27.8 million can be carried forward indefinitely. These NOLs may be used to offset future taxable income, to the extent we generate any taxable income, and thereby

reduce or eliminate our future federal income taxes otherwise payable. Section 382 of the Internal Revenue Code of 1986, as amended, or the Code, imposes limitations on a corporation's ability to utilize NOLs if it experiences an ownership change as defined in Section 382. In general terms, an ownership change may result from transactions increasing the ownership of certain stockholders in the stock of a corporation by more than 50% over a three-year period. In the event that an ownership change has occurred, or were to occur, utilization of our NOLs would be subject to an annual limitation under Section 382 determined by multiplying the value of our stock at the time of the ownership change by the applicable long-term tax-exempt rate as defined in the Code. Any unused annual limitation may be carried over to later years. We may be found to have experienced an ownership change under Section 382 as a result of events in the past or the issuance of shares of common stock in the future. If so, the use of our NOLs, or a portion thereof, against our future taxable income may be subject to an annual limitation under Section 382, which may result in expiration of a portion of our NOLs before utilization.

A pandemic, epidemic, or outbreak of an infectious disease in the United States or worldwide could adversely affect our business.

Outbreaks of pandemic, epidemic, or infectious diseases, such as the current COVID-19 pandemic, Ebola virus, Middle East Respiratory Syndrome, Severe Acute Respiratory Syndrome, or the H1N1 virus, could disrupt the operations of our business, much as with the current COVID-19 pandemic. Our supply chain's ability to collect specimens from subjects may be disrupted if medical resources are re-allocated to focus on the treatment of disease, medical personnel work remotely, or patient appointments are cancelled or move to virtual appointments. Our customers' demand for specimens may be reduced if research projects are cancelled, paused, or temporarily slowed due to an economic downturn caused by a widespread health crisis or our customers move to remote work environments where they cannot use our products and services.

Limitations on travel may disrupt our supply development and customer development initiatives. Our ability to fulfill requests for products and services, develop our technology, and market and sell our solutions may be impacted if there is a closure of our facilities.

We may acquire other businesses, products, or technologies that could disrupt our business, reduce our financial resources, or cause dilution to our stockholders.

Although we have not identified such an opportunity, as part of our business strategy, we may, in the future, pursue acquisitions of businesses and assets or pursue strategic alliances and joint ventures that leverage our core technology and industry experience to expand our offerings, increase our customer base, or increase our supply base. We have no experience with acquiring other companies and limited experience with forming strategic alliances and joint ventures. We may not be able to find suitable partners or acquisition candidates, and we may not be able to complete such transactions on favorable terms, if at all. If we make any acquisitions, we may not be able to integrate these acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. Any future acquisitions also could result in significant write-offs or the incurrence of debt and contingent liabilities, any of which could have a material adverse effect on our financial condition, results of operations, and cash flows. Integration of an acquired company also may disrupt ongoing operations and require management resources that would otherwise focus on developing our existing business. We may experience losses related to acquisitions of other companies, which could have a material adverse effect on our results of operations. We may not identify or complete these transactions in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any acquisition, technology license, strategic alliance, or joint venture.

To finance any acquisitions or joint ventures, we may choose to issue shares of our common stock as consideration, which would dilute the ownership of our stockholders. If the price of our common stock is low or volatile, we may not be able to acquire other companies or fund a joint venture project using our stock as consideration. Alternatively, it may be necessary for us to raise additional funds for acquisitions through public or private financings. Additional funds may not be available on terms that are favorable to us, or at all.

We currently maintain all of our cash with one financial institution and, therefore, our cash could be adversely affected if the financial institution in which we hold our cash fails.

We currently maintain all of our cash with one financial institution. At the current time, our cash balance with this financial institution is in excess of the Federal Deposit Insurance Corporation insurance ("FDIC") insurance limit. If this bank fails in the future, we may not be able to immediately (or ever) recover our cash in excess of the FDIC insurance limits which would adversely impact our operating liquidity and could negatively impact our operations, results of operations and financial performance.

Risks Related to Intellectual Property

We use third-party technology licenses as part of our technology solution.

The iSpecimen Marketplace uses third parties for certain technology to support development, delivery, and operations of the platform including product management, software development, cloud hosting, data processing, content mapping, and security services and may need to license additional technology in the future for use in the ongoing operations as part of our technology solution. Most of the software (including source code) and other materials we use are distributed under a "free," "open source," or similar licensing model. We also use software and services from commercial providers. However, we believe all of them are generally commercially available to us from other parties. We continue to evaluate partners whose capabilities can help us deliver our iSpecimen Marketplace solution in areas such as functionality, efficiency, and security and expect to continue to leverage and consider additional third-party capabilities in our ongoing Marketplace development. However, there is no assurance that these third-party technology licenses will continue to be available to us on acceptable commercial terms or at all which could significantly harm our business, financial condition, and operating results.

We use open source licenses as part of our technology solution, which may subject us to claims from third parties claiming ownership and unauthorized use.

We use open source software in our software solutions and technology-enabled services. We may encounter claims from third parties claiming ownership and unauthorized use of the software purported to be licensed under the open source terms, demanding release of derivative works of open source software that could include our proprietary source code, or otherwise seeking to enforce the terms of the applicable open source licenses. These claims could result in litigation that could be expensive to defend. If we become liable to third parties for such claims, we could be required to make our software source code available under the applicable open source license, utilize or develop alternative technology, or cease using, selling, offering for sale, licensing, implementing or supporting the applicable solutions or technology-enabled services. In addition, use of certain open source software may pose greater risks than use of third-party commercial software, as most open source licensors and distributors do not provide commercial warranties or indemnities or controls on the origin of the software.

We may become subject to third parties' claims alleging infringement of their patents and proprietary rights, which could be costly, time consuming, and prevent the use of our technology solution.

We cannot assure you that third parties will not claim our current or future products or services infringe their intellectual property rights. Any such claims, with or without merit, could cause costly litigation that could consume significant management time. As the number of product and services offerings in our market increases and functionalities increasingly overlap, companies such as ours may become increasingly subject to infringement claims. These claims also might require us to enter into royalty or license agreements. If required, we may not be able to obtain such royalty or license agreements or obtain them on terms acceptable to us.

We do not have any patents protecting our intellectual property and if we are unable to protect the confidentiality of our trade secrets, know-how and other proprietary and internally developed technology, our business could be adversely affected.

Our success depends upon our proprietary technology. We do not have registered patents on any of our technology because we do not believe that we could obtain blocking patents and that the costs of patent monitoring and prosecution outweigh the benefits. Instead, we rely upon software copyright laws, service marks, trade secret laws, confidentiality procedures, and contractual provisions to establish and protect our proprietary rights as well as the skills, knowledge and experience of our technical and operational personnel, our consultants and advisors, and contractors. Because we operate in a highly competitive industry, we rely in part on trade secrets to protect our proprietary technology and processes. However, trade secrets are difficult to protect.

We enter into confidentiality or non-disclosure agreements with our corporate partners, employees, consultants, collaborators, and other advisors. These agreements generally require that the receiving party keep confidential and not disclose to third-parties confidential information developed by the receiving party or made known to the receiving party by us during the course of the receiving party's relationship with us. These agreements also generally provide that inventions conceived by the receiving party in the course of rendering services to us will be our exclusive property, and we enter into assignment agreements to protect our rights. These confidentiality, inventions and assignment agreements may be breached and may not effectively assign intellectual property rights to us. Our trade secrets also could be independently discovered by competitors, in which case we may not be able to prevent the use of such trade secrets

by our competitors. The enforcement of a claim alleging that a party illegally obtained and was using our trade secrets could be difficult, expensive and time consuming and the outcome would be unpredictable. In addition, effective protection of intellectual property rights is unavailable or limited in certain foreign countries. The failure to obtain or maintain meaningful trade secret protection could adversely affect our competitive position.

Risks Related to Regulatory Environment

Failure to comply with federal and state data protection regulations could result in fines, penalties, and litigation, and have a material adverse effect upon our business.

Because we may gain access to protected healthcare or personal data, we must comply with various data protection regulations worldwide, including the Health Insurance Portability and Accountability Act of 1996, as amended by HITECH, and their implementing regulations at 45 CFR Parts 160-164 (collectively, "HIPAA"). As part of the operation of our business, we act in the capacity of a HIPAA business associate with respect to protected health information ("PHI"), we receive from our healthcare provider partners. As a HIPAA business associate, we are required to protect the privacy and confidentiality of PHI, and we are required to comply with HIPAA security regulations requiring certain administrative, physical, and technical safeguards to ensure the confidentiality, integrity, and availability of electronic PHI ("ePHI"). To comply with our regulatory and contractual obligations, which may change over time, we may have to reorganize processes and invest in new technologies. We also are required to train personnel regarding data protection requirements. If we, or any of our employees or agents, are unable to maintain the privacy, confidentiality, and security of the PHI that is entrusted to us, we could be subject to civil and criminal fines and sanctions imposed by the HHS or state regulatory authorities, and we could be found to have breached our HIPAA business associate agreements with our healthcare provider suppliers. In addition to the HIPAA requirements that we are subject to, we may be subject to similar state laws and regulations, which regulate the collection, handling, processing, and storage of sensitive personal information. While we have never had a data breach, we cannot guarantee that it will not happen in the future nor can we guarantee that we will always be in compliance with these regulations. Failure to comply with federal, state and local laws and regulations could subject the Company to denial of the right to conduct business, fines, criminal penalties, and/or other enforcement actions which would have a material adverse effect on its business. In addition, compliance with future legislation could impose additional requirements on the Company which may be costly.

Failure to comply with international laws related to data protection, such as the GDPR could result in fines, penalties, and litigation, and have a material adverse effect upon the Company's business.

We may be required to comply with international laws, such as the EU GDPR. The GDPR took effect in May 2018 and regulates the collection, storage, use, disclosure, transfer, and/or other processing of personal data of identified or identifiable individuals located in the European Economic Area ("EEA"), including the EU. This data specifically includes personal health data that generally is provided as part of biospecimen collection studies. The GDPR imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates for processing (with some exceptions), allowing individuals to revoke consents granted, enabling individuals the right to have their data erased (with some exceptions), amended, or transferred to another data controller (known as "data portability"), providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, limiting the transfer of data to countries outside of the EU, providing notification of data breaches, and taking certain measures when engaging third-parties who may also use or process the data. In addition, EU member states may make their own further laws and regulations limiting the processing of personal data, including biometric, genetic or health data.

The GDPR covers areas where we may not have expertise and the GDPR and the regulatory guidance enforcing GDPR may be actively evolving. We, or our other third-party customers, suppliers and/or distribution partners, may not be able to maintain regulatory compliance with the GDPR or may incur significant costs in obtaining or maintaining regulatory compliance. Any action brought against us for violations of this law, even if successfully defended, could cause us to incur significant legal expenses, reputational risks, and divert our management's attention from the operation of our business. In addition, compliance with future legislation could impose additional requirements on the Company which may be costly.

Failure to comply with federal and state laws around environmental, health and safety, biohazards and dangerous goods, and imports/exports could result in fines, penalties, and litigation, and have a material adverse effect upon our business.

Because we receive, store, and ship specimens, we are subject to regulation under federal, state, and local laws and regulations relating to the protection of the environment and human health and safety, including laws and regulations relating to the handling, transportation, and disposal of specimens and infectious and hazardous waste materials, as well as regulations relating to the safety and health of laboratory employees. Our laboratory is subject to applicable federal and state laws and regulations relating to biohazard disposal of all laboratory specimens, and we utilize outside vendors for disposal of such specimens. In addition, the federal Occupational Safety and Health Administration has established extensive requirements relating to workplace safety for healthcare employers whose workers may be exposed to blood-borne pathogens such as HIV, COVID-19, and the hepatitis B virus. These requirements, among other things, require work practice controls, protective clothing and equipment, training, medical follow-up, vaccinations, and other measures designed to minimize exposure to, and transmission of, blood-borne pathogens. There are also federal laws related to import and export of biospecimens and related data.

Failure to comply with federal, state and local laws and regulations could subject us to denial of the right to conduct business, fines, criminal penalties, and/or other enforcement actions which would have a material adverse effect on our business. In addition, compliance with future legislation could impose additional requirements on us which may be costly.

Failure to comply with other international laws around environmental, health and safety, biohazards and dangerous goods, imports/exports, and other regulations could result in fines, penalties, and litigation, and have a material adverse effect upon our business.

Because we procure specimens from and distribute specimens to countries outside of the United States, we are subject to international and foreign rules similar to any of the aforementioned U.S. rules, including those related to environmental, health and safety, biohazards, and imports/exports. We may be unaware of those international and foreign rules.

These laws cover areas where we may not have expertise and, in many areas, these laws are actively evolving. We, or our other third-party customers, suppliers and/or distribution partners, may not be able to maintain regulatory compliance in such countries or may incur significant costs in obtaining or maintaining our foreign regulatory compliance. Any action brought against us for violations of these laws or regulations, even if successfully defended, could cause us to incur significant legal expenses, reputational risks, and divert our management's attention from the operation of our business. In addition, compliance with future legislation could impose additional requirements on us which may be costly.

Failure to comply with laws and regulations related to the protection of research subjects could result in fines, penalties, and litigation, and have a material adverse effect upon our business.

We are subject to regulation under international, federal, state, and local laws and regulations relating to the protection of research subjects. Federally-funded human-subject research in the United States, including the collection of identifiable human biospecimens, is governed by 45 CFR Part 46, also known as the Health and Human Services Policy for Protection of Human Research Subjects or the "Common Rule." Use of biospecimens in certain other research is subject to FDA regulations for the Protection of Human Subjects and Institutional Review Boards at 21 CFR Parts 50 and 56. Research funded by the National Institutes of Health ("NIH") may be subject to grant or contract requirements, as well as NIH Certificates of Confidentiality. When collecting specimens for research in the United States, iSpecimen and its collection sites are responsible for ensuring that specimens are collected in accordance with these regulations. In addition, other countries have their own regulations around the ethical collection of human specimens for research. While we believe that we are in compliance with these laws, we may not be aware of all such laws or may fail to properly audit and identify gaps in compliance. Similarly, we may find errors in our technology and processes and may fail to properly match the compliance requirements of our researchers to the compliance requirements of our suppliers. Failure of our Company or our suppliers to comply with international, federal, state, and local laws and regulations could subject us to denial of the right to conduct business, fines, criminal penalties, and/or other enforcement actions which could have a material adverse effect on our business.

Our lack of knowledge of all the laws and regulations related to our business operations may result in our failure to abide by these rules.

In addition to the above-described laws and regulations, there are many other federal, state and international laws and regulations applicable to iSpecimen. The following list contains some of the other laws and regulations that could directly or indirectly affect our ability to operate the business:

- Occupational Safety and Health regulations and requirements;
- Centers for Disease Control Import Permit Program rules related to biological agents;
- Shipping rules such as IATA Dangerous Goods regulations;
- State and local laws and regulations for the disposal and handling of medical waste and biohazardous material;
- Export laws such as the U.S. Department of Commerce's Bureau of Industry and Security Export Administration Regulations, U.S. State Department's Directorate of Defense Trade Controls, and the U.S. Department of the Treasury's Office of Foreign Assets Control in export licensing;
- Import laws such as the Customs and Border Protection Trade Act of 2002 and the Customs Modernization Act;
- The federal Anti-Kickback Statute, which prohibits, among other things, any person from knowingly and willfully offering, soliciting, receiving or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs;
- Federal, state, and local tax and tariff rules;
- Other laws and regulations administered by the FDA;
- Other laws and regulations administered by HHS; and
- State and local laws and regulations governing human subject research and clinical trials.

These laws cover areas where we may not have expertise and, in many areas, these laws are actively evolving. We, or our other third-party customers, suppliers and/or distribution partners, may not be able to maintain regulatory compliance or may incur significant costs in obtaining or maintaining regulatory compliance. Any action brought against us for violations of these laws or regulations, even if successfully defended, could cause us to incur significant legal expenses, reputational risks, and divert our management's attention from the operation of our business. In addition, compliance with future legislation could impose additional requirements on us which may be costly.

Failure to comply with governmental export and import regulations could result in fines, penalties, and litigation, and have a material adverse effect upon the Company's business.

Our products and services are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, and various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls. Exports of our products and services must be made in compliance with these laws and regulations. If we fail to comply with these laws and regulations, we and certain of our employees could be subject to substantial civil or criminal penalties, including the possible loss of export or import privileges; fines, which may be imposed on us and responsible employees or managers; and, in extreme cases, the incarceration of responsible employees or managers.

In addition, changes in our products and services or changes in applicable export or import laws and regulations may create delays in the introduction and sale of our products and services to international markets, prevent our customers from procuring our products and

services or, in some cases, prevent the export or import of our products and services to certain countries, governments or persons altogether. Any change in export or import laws and regulations, shift in the enforcement or scope of existing laws and regulations, or change in the countries, governments, persons or technologies targeted by such laws and regulations could also result in decreased use of our products and services, or in our decreased ability to export or sell our products and services to existing or potential customers. Any decreased use of our products and services or limitation on our ability to export or sell our products and services could adversely affect our business, financial condition and results of operations.

Product safety and product liability, including bio-hazard risks, could provide exposure to claims and litigation.

Specimens may have hazardous properties and may carry transmissible infectious agents. There are inherent risks in connection with the handling, storage, disposal, distribution, and/or use of the specimens.

Although we believe that our safety procedures for handling and disposing of such materials comply with the standards prescribed by federal, state and local regulation and regulations of foreign jurisdictions, the risk of accidental contamination or injury from these materials cannot be completely eliminated. Individuals who use or come in contact with the specimens may file claims related to their use and these claims could result in litigation that could be expensive to defend or result in judgements that exceed our resources and our insurance coverage. Any such litigations and judgement could adversely affect our business, financial condition and results of operations.

Risks Related to the Our Securities

If we are not able to comply with the applicable continued listing requirements or standards of The Nasdaq Stock Market LLC, our common stock could be delisted from Nasdaq.

Our common stock is currently listed on Nasdaq. In order to maintain that listing, we must satisfy minimum financial and other continued listing requirements and standards, including those regarding director independence and independent committee requirements, minimum stockholders' equity, minimum share price, and certain corporate governance requirements. There can be no assurances that we will be able to comply with the applicable listing standards of The Nasdaq Stock Market LLC.

In the event that our common stock is delisted from Nasdaq and is not eligible for quotation on another market or exchange, trading of our common stock could be conducted in the over-the-counter market or on an electronic bulletin board established for unlisted securities, such as the Pink Sheets or the OTC Markets. In such event, it could become more difficult to dispose of, or obtain accurate price quotations for, our common stock, and there would likely also be a reduction in our coverage by securities analysts and the news media, which could cause the price of our common stock to decline further. Also, it may be difficult for us to raise additional capital if we are not listed on a major exchange.

In the event that our common stock is delisted from Nasdaq, U.S. broker-dealers may be discouraged from effecting transactions in shares of our common stock because it may be considered a penny stock and thus be subject to the penny stock rules.

The SEC has adopted a number of rules to regulate a "penny stock" that restricts transactions involving stock which is deemed to be a penny stock. Such rules include Rules 3a51-1, 15g-1, 15g-2, 15g-3, 15g-4, 15g-5, 15g-6, 15g-7, and 15g-9 under the Exchange Act. These rules may have the effect of reducing the liquidity of penny stocks. "Penny stocks" generally are equity securities with a price of less than $5.00 per share (other than securities registered on certain national securities exchanges or traded on Nasdaq if current price and volume information with respect to transactions in such securities is provided by the exchange or system). Our shares of common stock may, in the future constitute, a "penny stock" within the meaning of the rules. The additional sales practice and disclosure requirements imposed upon U.S. broker-dealers may discourage such broker-dealers from effecting transactions in shares of our common stock, which could severely limit the market liquidity of such shares of common stock and impede their sale in the secondary market.

A U.S. broker-dealer selling a penny stock to anyone other than an established customer or "accredited investor" (generally, an individual with a net worth in excess of $1,000,000 or an annual income exceeding $200,000, or $300,000 together with his or her spouse) must make a special suitability determination for the purchaser and must receive the purchaser's written consent to the transaction prior to sale, unless the broker-dealer or the transaction is otherwise exempt. In addition, the "penny stock" regulations require the U.S. broker-dealer to deliver, prior to any transaction involving a "penny stock", a disclosure schedule prepared in accordance with SEC standards

relating to the "penny stock" market, unless the broker-dealer or the transaction is otherwise exempt. A U.S. broker-dealer is also required to disclose commissions payable to the U.S. broker-dealer and the registered representative and current quotations for the securities. Finally, a U.S. broker-dealer is required to submit monthly statements disclosing recent price information with respect to any "penny stock" held in a customer's account and information with respect to the limited market in "penny stocks".

You should be aware that, according to the SEC, the market for "penny stocks" has suffered in recent years from patterns of fraud and abuse. Such patterns include (i) control of the market for the security by one or a few broker-dealers that are often related to the promoter or issuer; (ii) manipulation of prices through prearranged matching of purchases and sales and false and misleading press releases; (iii) "boiler room" practices involving high-pressure sales tactics and unrealistic price projections by inexperienced sales persons; (iv) excessive and undisclosed bid-ask differentials and markups by selling broker-dealers; and (v) the wholesale dumping of the same securities by promoters and broker-dealers after prices have been manipulated to a desired level, resulting in investor losses. Our management is aware of the abuses that have occurred historically in the penny stock market. Although we do not expect to be in a position to dictate the behavior of the market or of broker-dealers who participate in the market, management will strive within the confines of practical limitations to prevent the described patterns from being established with respect to our securities.

The sale of substantial shares of our common stock may depress our stock price.

As of December 31, 2022, we had 8,925,808 shares of common stock outstanding; outstanding stock options to purchase 297,559 shares of common stock at an average price of $2.69 per share; outstanding restricted stock units of 267,505 shares issuable upon vesting at an average price of $5.43; outstanding warrants to purchase 102,500 shares of common stock at an average price of $9.00 per share. Additionally, the number of shares of common stock that are outstanding after our initial public offering also includes up to an aggregate of 1,312,500 shares of common stock underlying the warrants to be offered and sold by the selling stockholders of the Company. We have reserved 608,000 shares to issue stock options, restricted stock or other awards under our 2021 Stock Incentive Plan (as defined below). Sales of a substantial number of shares of our common stock could cause the price of our common stock to fall and could impair our ability to raise capital by selling additional securities.

Our directors, officers and principal stockholders have significant voting power and may take actions that may not be in the best interests of our other stockholders.

As of December 31, 2022 our officers, directors and principal stockholders each holding more than 5% of our common stock collectively controls approximately 41.5% of our outstanding common stock. As a result, these stockholders, if they act together, will be able to control the management and affairs of our Company and most matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This concentration of ownership may have the effect of delaying or preventing a change of control, impeding a merger, consolidation or other business combination transaction involving us and discouraging a potential acquiror from making a tender offer or otherwise attempting to obtain control of the Company and might adversely affect the market price of our common stock. This concentration of ownership may not be in the best interests of our other stockholders.

Certain provisions of our certificate of incorporation, as amended, and our bylaws, as amended, may make it more difficult for a third party to affect a change-of-control.

Our certificate of incorporation, as amended, authorizes the Board of Directors to issue up to 50,000,000 shares of preferred stock. The preferred stock may be issued in one or more series, the terms of which may be determined at the time of issuance by the Board of Directors without further action by the stockholders.

These terms may include preferences as to dividends and liquidation, conversion rights, redemption rights and sinking fund provisions. The issuance of any preferred stock could diminish the rights of holders of our common stock, and therefore could reduce the value of such common stock. In addition, specific rights granted to future holders of preferred stock could be used to restrict our ability to merge with, or sell assets to, a third party. The ability of the Board of Directors to issue preferred stock could make it more difficult, delay, discourage, prevent or make it more costly to acquire or effect a change-in-control, which in turn could prevent our stockholders from recognizing a gain in the event that a favorable offer is extended and could materially and negatively affect the market price of our common stock. In addition, our certificate of incorporation, as amended, provides for a staggered Board of Directors. As a consequence, only a minority of the Board of Directors will be considered for election at every annual meeting of stockholders, which may make the removal of management more difficult and may discourage transactions that otherwise could involve payment of a premium over prevailing market prices for our securities. Additional provisions that may discourage unsolicited takeover proposals include (i) board

vacancies may be filled by a majority of the remaining board members, (ii) the board may adopt, repeal, rescind, alter or amend our bylaws without stockholder approval, (iii) stockholders holding more than 15% of the outstanding shares may call a special meeting, (iv) a director may be removed from office only by the affirmative vote of a majority of the issued and outstanding stock entitled to vote; and (v) no cumulative voting in the election of directors, which would allow holders of less than a majority of the stock to elect some directors.

Our bylaws, as amended, designate certain courts as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our bylaws, as amended, provide that, unless we consent in writing to an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) will be the exclusive forum for: (i) any derivative action or proceeding brought on behalf of the Company; (ii) any action asserting a claim for breach of a fiduciary duty owed by any director, officer, employee, or agent of ours to us or our stockholders; (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, the certificate of incorporation, or the bylaws; and (iv) any action asserting a claim governed by the internal affairs doctrine (the "Delaware Forum Provision"). Our bylaws further provide that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act (the "Federal Forum Provision"). In addition, our bylaws provide that any person or entity purchasing or otherwise acquiring any interest in shares of our common stock is deemed to have notice of and consented to the Delaware Forum Provision and the Federal Forum Provision.

Section 27 of the Exchange creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the Delaware Forum Provision will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. We note, however, that there is uncertainty as to whether a court would enforce this provision and that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder.

We recognize that the Delaware Forum Provision and the Federal Forum Provision in our bylaws may impose additional litigation costs on stockholders in pursuing any such claims, particularly if the stockholders do not reside in or near the State of Delaware. Additionally, the Delaware Forum Provision and the Federal Forum Provision may limit our stockholders' ability to bring a claim in a forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees even though an action, if successful, might benefit our stockholders. In addition, while the Delaware Supreme Court ruled in March 2020 that federal forum selection provisions purporting to require claims under the Securities Act be brought in federal court were "facially valid" under Delaware law, there is uncertainty as to whether other courts will enforce the Federal Forum Provision. If the Federal Forum Provision is found to be unenforceable, we may incur additional costs associated with resolving such matters. The Federal Forum Provision may also impose additional litigation costs on stockholders who assert that the provision is not enforceable or invalid. The Court of Chancery of the State of Delaware and the United States District Court may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than our stockholders.

Limitations on director and officer liability and indemnification of our officers and directors by us may discourage stockholders from bringing suit against an officer or director.

Our certificate of incorporation, as amended, and bylaws, as amended, provide that, to the fullest extent permitted by Delaware law, as it presently exists or may be amended from time to time, a director shall not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director. Under Delaware law, this limitation of liability does not extend to, among other things, acts or omissions which involve intentional misconduct, fraud or knowing violation of law, or unlawful payments of dividends. These provisions may discourage stockholders from bringing suit against a director or officer for breach of fiduciary duty and may reduce the likelihood of derivative litigation brought by stockholders on our behalf against a director or officer.

We are responsible for the indemnification of our officers and directors.

Should our officers and/or directors require us to contribute to their defense, we may be required to spend significant amounts of our capital. Our certificate of incorporation, as amended, and bylaws, as amended, also provide for the indemnification of our directors,

officers, employees, and agents, under certain circumstances, against attorney's fees and other expenses incurred by them in any litigation to which they become a party arising from their association with or activities on behalf of our Company. This indemnification policy could result in substantial expenditures, which we may be unable to recoup. If these expenditures are significant or involve issues which result in significant liability for our key personnel, we may be unable to continue operating as a going concern.

We do not expect to pay dividends in the foreseeable future. Any return on investment may be limited to the value of our common stock.

We have never paid cash dividends on our common stock and do not anticipate doing so in the foreseeable future. The payment of dividends on our common stock will depend on earnings, financial condition and other business and economic factors affecting us at such time as our Board of Directors may consider relevant. If we do not pay dividends, our common stock may be less valuable because a return on an investment will only occur if our stock price appreciates.

We may need additional capital, and the sale of additional shares of common stock or other equity securities could result in additional dilution to our stockholders.

While we believe that the net proceeds from our initial public offering closed in June 2021 and our private placement offering closed in December 2021 are sufficient to fund our current operating plans, if the estimates and assumptions upon which we have based this believe proves to be wrong we may need to raise additional funds sooner than expected. Until such time, if ever, as we can generate substantial revenue, we may finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements, or other sources. We do not currently have any committed external source of funds. In addition, we may seek additional capital due to favorable market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect rights as a common stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through collaborations, strategic alliances, or licensing arrangements with third parties, we may be required to relinquish valuable rights to our technologies or future revenue streams or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate technology development or future commercialization efforts.

Our quarterly revenue tends to fluctuate, making it harder to forecast and meet investor expectations.

Quarterly revenue has been difficult to predict, has historically fluctuated, and may vary from quarter to quarter due to a variety of factors, many of which are beyond our control. Accordingly, comparing our operating results on a period-to-period basis may not be meaningful. Factors that may affect our quarterly revenue and operating results may include: any material changes in demand for our products and services; changes in our supply sites' ability to collect and ship specimens or our ability to retain them; changes in the number, availability, and quality of competing products; our ability to maintain a timely delivery of high quality products and services; the timing and amount of sales and marketing expenses incurred by us to attract new customers; changes in the economic or business prospects of our customers or the economy generally; changes in the pricing policies of our competitors; unforeseen defects in our technology; changes in the regulatory environment; and unforeseen costs necessary to improve and maintain our technology.

These factors affecting our future earnings are difficult to forecast and could harm our quarterly and/or annual operating results. The change in our earnings or general economic conditions may cause the market price of our common stock to fluctuate.

Our stock price may be volatile.

The market price of our common stock is likely to be highly volatile and could fluctuate widely in price in response to various risk factors, including the following:

- changes in our industry;

- ability to enhance our platform or to add new functionality;
- regulatory changes;
- competitive pricing or other pressures;
- failures of our suppliers to deliver product on time;
- loss of supply partners;
- additions or departures of key personnel;
- sales of our common stock;
- our ability to execute our business plan;
- operating results that fall below expectations;
- loss of any strategic relationship including customers, suppliers and channel partners; and/or
- economic and other external factors.

In addition, the securities markets have from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of particular companies. These market fluctuations may also materially and adversely affect the market price of our common stock.

General Risk Factors

Our status as an "emerging growth company" under the JOBS Act may make it more difficult to raise capital when we need to do it or make our common stock less attractive to investors.

Because of the exemptions from various reporting requirements provided to us as an "emerging growth company," and because we will have an extended transition period for complying with new or revised financial accounting standards, we may be less attractive to investors and it may be difficult for us to raise additional capital as and when we need it. Investors may be unable to compare our business with other companies in our industry if they believe that our financial accounting is not as transparent as other companies in our industry. If we are unable to raise additional capital as and when we need it, our financial condition and results of operations may be materially and adversely affected.

We have limited insurance which may not cover claims by third parties against us or our officers and directors.

We have limited directors' and officers' liability insurance and commercial liability insurance policies. Claims by third parties against us may exceed policy amounts and we may not have amounts to cover these claims. Also, due to high self-insured retention costs and deductibles, we may incur significant costs from any claim made against us before insurance policies provide coverage. Any significant claims would have a material adverse effect on our business, financial condition, and results of operations. In addition, our limited directors' and officers' liability insurance may affect our ability to attract and retain directors and officers.

The requirements of being a U.S. public company may strain our resources and divert management's attention.

As a public company, we are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (the "Dodd-Frank Act") and Nasdaq rules. The requirements of these rules and regulations result in significant legal and financial compliance costs, including costs associated with the employment of personnel, making some activities more difficult, time-consuming or costly, and may also place undue strain on our personnel, systems and resources and divert management's attention..

The Exchange Act requires, among other things, that we file annual, quarterly, and current reports with respect to our business and financial condition. The Sarbanes-Oxley Act requires, among other things, that we maintain disclosure controls and procedures and internal control over financial reporting. Ensuring that we have adequate internal financial and accounting controls and procedures in place, as well as maintaining these controls and procedures, is a costly and time-consuming effort that needs to be re-evaluated frequently.

Additionally, various rules and regulations applicable to public companies make it more difficult and more expensive for us to maintain directors' and officers' liability insurance, and we may be required to accept reduced coverage or higher deductibles or incur substantially higher costs to maintain coverage.

Evaluation of internal control and remediation of potential problems will be costly and time consuming and could expose weaknesses in financial reporting.

Section 404 of the Sarbanes-Oxley Act ("Section 404") requires that we evaluate our internal control over financial reporting to enable management to report on the effectiveness of those controls annually. In connection with the Section 404 requirements, we could, as part of that documentation, identify material weaknesses, significant deficiencies, or other areas for further attention or improvement.

Implementing any appropriate changes to our internal controls may require specific compliance training for our directors, officers, and employees, require the hiring of additional finance, accounting and other personnel, entail substantial costs to modify our existing accounting systems, and take a significant period of time to complete. Such changes may not, however, be effective in maintaining the adequacy of our internal controls, and any failure to maintain that adequacy, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and could materially impair our ability to operate our business. Moreover, adequate internal controls are necessary for us to produce reliable financial reports and are important to help prevent fraud. As a result, our failure to satisfy the requirements of Section 404 on a timely basis could result in the loss of investor confidence in the reliability of our financial statements, which in turn could cause the market value of our common stock to decline.

Public company compliance may make it more difficult to attract and retain officers and directors.

The Sarbanes-Oxley Act and new rules subsequently implemented by the SEC have required changes in corporate governance practices of public companies. As a public company, we are expected to follow Sarbanes-Oxley Act regulations and other public company rules, and these rules and regulations will increase our compliance costs and make certain activities more time consuming and costly. As a result, these rules and regulations may make it more difficult and expensive for us to obtain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult and costly for us to attract and retain qualified persons to serve on our Board of Directors or as executive officers.

Item 1B. Unresolved Staff Comments

Not Applicable.

Item 2. Properties

Our principal executive office is located in 450 Bedford Street, Lexington, Massachusetts.

We occupy approximately 8,835 square feet of office and laboratory space in Lexington, Massachusetts under a lease that expires on February 28, 2024. Our laboratory is subject to applicable federal and state laws and regulations relating to the safe handling of laboratory specimens along with biohazard disposal, and we utilize an outside medical and biohazard disposal company for disposal of such specimens. We believe our existing facilities meet our current needs. We will need additional office space in the future as we continue to build our development, commercial and support teams. We believe we can find suitable additional space in the future on commercially reasonable terms.

Item 3. Legal Proceedings

To the knowledge of our management team, there is no material litigation, arbitration or governmental proceeding currently pending against us or any members of our management team in their capacity as such. We may from time to time be involved in various legal proceedings and other matters arising in the normal course of business. We may in the future institute additional, legal proceedings to enforce our rights and seek remedies, such as monetary damages, injunctive relief and declaratory relief. We cannot predict the results of any such disputes, and despite the potential outcomes, the existence thereof may have an adverse material impact on us because of diversion of management time and attention as well as the financial costs related to resolving such disputes.

Item 4. Mine Safety Disclosures

Not Applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock trades on the Nasdaq Capital Market under the symbol "ISPC." Trading commenced on the Nasdaq on June 17th, 2021.

Holders

On March 16, 2023, there were 65 holders of record of our common stock.

Dividends

We currently intend to retain all available funds and any future earnings to fund the development, commercialization, and growth of our business, and therefore we do not anticipate declaring or paying any cash dividends on any class of our common stock in the foreseeable future. Any future determination as to the declaration and payment of dividends, if any, will be at the discretion of our Board of Directors, subject to compliance with contractual restrictions and covenants in the agreements governing our current and future indebtedness. Any such determination will also depend upon our business prospects, results of operations, financial condition, cash requirements and availability, and other factors that our Board of Directors may deem relevant.

Securities Authorized for Issuance under Equity Compensation Plans

The information required by Item 201(d) of Regulation S-K is set forth in Part III of this Annual Report on Form 10-K and is incorporated herein.

Use of Proceeds from Registered Securities

For a description of the use of the proceeds generated in our initial public offering ("IPO"), see Part I, Item 2 of our Quarterly Report on Form 10-Q for the quarter ended September 30, 2021. There has been no material change in the planned use of the proceeds from our IPO as is described in our final prospectus related to the IPO.

Purchases of Equity Securities by the Issuer and Affiliated Parties

None.

Item 6. Reserved.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of the Company's financial condition and results of operations should be read in conjunction with the financial statements and the notes thereto contained elsewhere in this Annual Report. Certain information contained in the discussion and analysis set forth below includes forward-looking statements that involve risks and uncertainties.

Overview

We were incorporated in 2009 under the laws of the state of Delaware. Our mission is to accelerate life science research and development via a single global marketplace platform that connects researchers to subjects, specimens, and associated data. We are headquartered in Lexington, Massachusetts. We operate as one operating and reporting segment.

In addition to creating a single global platform where both specimen providers and researchers can connect, the platform automates the process of searching for and selecting specimens for research. The platform taps into healthcare provider data to gain insights into the available samples in biobanks or laboratories, or to gain insights into the patient populations to support specimen collections directly from research subjects. The platform receives de-identified data from electronic medical records, laboratory information systems, and other healthcare data sources of available specimens and research subjects and harmonizes the data across all participating organizations.

Researchers can search this data using our intuitive, web-based user interface to obtain specimens more efficiently. They can instantly find the specific specimens they need for their studies, request quotes for these specimens or for custom collections directly from research subjects, place orders, and track and manage their specimens and associated data across projects.

Biospecimen providers also gain efficiencies using the iSpecimen Marketplace, not only because the platform provides instant access to a large researcher base, but because the technology orchestrates the bioprocurement workflow from specimen request to fulfilment. Specimen providers access intuitive dashboards to view requests, create proposals, and track and manage their orders.

Finally, the platform helps with administrative and reporting functions for researchers, suppliers, and our internal personnel, including user and compliance management.

The iSpecimen Marketplace is composed of four major functional areas: search, workflow, data, and administration and reporting. We continue to invest in the evolution of these areas to improve engagement with the platform and liquidity across it. Our core business objective is to retain and grow both researcher and supplier usage of our platform to support biospecimen procurement, as well as to position our Company to explore other adjacent business opportunities that can benefit from the use of the iSpecimen Marketplace.

The iSpecimen Marketplace currently supports the supply chain management and bioprocurement process for specimens and associated data. We generate revenue by procuring various specimens from hospitals, laboratories, and other supply sites comprising our network, and delivering them to its medical research customers using its proprietary software to identify and locate the required specimens. Costs paid to acquire specimens from hospitals and laboratories generally varies depending upon the sample type, collection requirements, and data provided. We generally operate in a "just in time" fashion, meaning we procure specimens from our suppliers and distribute specimens to our customers after we obtain an order for specimens from a research client. Generally, we do not speculatively purchase and bank samples in anticipation of future, unspecified needs. We believe our approach offers many advantages over a more traditional inventory-based supplier business model where biorepositories take inventory risks, and where inventory turnover and cash conversion cycles can be lengthy.

On March 30, 2021, we effected a 1-for-5.545 reverse stock split of our issued and outstanding shares of common stock, as well as effected a proportional adjustment to the existing conversion ratios for our redeemable convertible preferred stock. All historical share and per share information shown herein and in our financial statements and related notes have been retroactively adjusted to give effect to the reverse stock split.

On June 16, 2021, we completed an IPO in which we issued and sold 2,250,000 shares of our common stock at a public offering price of $8.00 per share, resulting in aggregate gross proceeds of $18,000,000. On July 1, 2021, we issued and sold 337,500 additional shares of common stock, pursuant to the underwriters' exercise of its overallotment option, at a public offering price of $8.00 per share, for

aggregate gross proceeds of $2,700,000. The net proceeds from the overallotment were $2,500,000 after deducting underwriting discounts of $200,000. Inclusive of the underwriters' option to purchase additional shares, we received approximately $18,200,000 in net proceeds from the IPO after deducting underwriting discounts of $1,900,000 and other offering costs of $600,000.

Upon completion of the IPO, the Company converted a) all 1,291,012 shares of outstanding redeemable convertible preferred stock into 1,291,012 shares of common stock, b) all $5,500,000 of its outstanding principal and all unpaid and accrued interest of approximately $1,300,000 of the then outstanding convertible notes into 1,206,614 shares of common stock at a conversion price of $5.60 per share, and c) $4,000,000 of its outstanding principal and accrued interest of $700,000 of the then outstanding bridge notes as amended ('Bridge Notes"), into 842,429 shares of common stock at a conversion price of $5.60 per share.

On August 13, 2021, we entered into a loan agreement (the "Term Loan") and as a result, received proceeds of $3,500,000. This funding was used to settle the remaining balance of $3,000,000 on the Bridge Notes.

On December 1, 2021, we closed on a private placement offering ("PIPE") for gross proceeds of approximately $21 million, before deducting approximately $1.4 million for underwriting discounts and commissions and estimated offering expenses, for (i) an aggregate of 1,749,999 shares of common stock and (ii) warrants, which are exercisable for an aggregate of up to 1,312,500 shares of common stock.

On November 3, 2022, the Company settled in cash the remaining principal balance plus accrued and unpaid interest of the Term Loan in the amount of $3.4 million. Upon repayment of the Term Loan, the Loan Facility was terminated and the security interest in the assets of the Company was released. As of December 31, 2022, no Bridge Notes remained outstanding.

Impact of the COVID-19 Pandemic on Our Operations

In response to the COVID-19 pandemic, we have put in place additional health and safety protocols. We continue to monitor and revise these protocols as appropriate to address the evolving nature of the pandemic. While we have seen a return to business as usual in our industry, we continue to monitor the future impact of the COVID-19 pandemic on the Company, which includes such factors as length of time of the pandemic; the responses of federal, state and local government; the impact of future variants that may emerge; vaccination rates among the population; the efficacy of the COVID-19 vaccines; the longer-term impact of the pandemic on the economy and consumer behavior; and the effect on our employees, vendors and suppliers. We will continue to monitor and evaluate the ongoing COVID-19 pandemic and will work to respond appropriately to the impact of COVID-19 on our business, as well as customers' and suppliers' businesses.

Inflation and Recession

The Company's financial performance is subject to global economic conditions and their impact on levels of spending by our customer research organizations, particularly discretionary spending for procurement of specimens used for research. Economic recessions may have adverse consequences across industries, including the health and bio-specimen industries, which may adversely affect our business and financial condition. As a result of the ongoing cost-of-living crisis, tightening financial conditions, Russia's invasion of Ukraine, and the lingering COVID-19 pandemic, there is substantial uncertainty about the strength of the global economy, which have increased the uncertainty about the pace of potential recovery. In addition, changes in general market, economic and political conditions in domestic and foreign economies or financial markets, including fluctuation in stock markets resulting from, among other things, trends in the economy, recession and inflation, as are being currently experienced, may result in a decline in researchers' demand for specimens due to the research organization's inability to obtain funding through grants.

We believe that our business will continue to be resilient through a continued economic downturn or recession, or slowing or stalled recovery therefrom, and that we have the liquidity to address the Company's financial obligations and alleviate possible adverse effects on the Company's business, financial condition, results of operations or prospects.

Impact of the Russian-Ukrainian War on Our Operations

Our business was negatively impacted during the first half of 2022 by the ongoing war between Russia and Ukraine. At the start of the war, we had approximately $1 million of purchase orders that were slated to be fulfilled by our supply network in Ukraine and Russia. This supply network shut down quickly at the start of the war. Ukrainian suppliers were disabled due to war conditions and evacuations

and some of our Russian suppliers were disabled by sanctions. While we mobilized to shift these purchase orders to other suppliers in our network, the process of getting specimen collections from other supply sites took time, which has caused a delay in the fulfillment of such purchase orders. Alternate suppliers do not have the same favorable unit economics or specimen collection rates and this impacted our margins. Additionally, it also diverted key resources from operations to resolving the re-fulfillment issues caused by the conflict.

As of December 31, 2022, the supply sites in Russia that had not been under sanctions are now accessible and our supply sites in Ukraine are mostly reopened. However, due to the uncertainty caused by the ongoing war, Ukraine suppliers may again become inaccessible to us. Therefore, as long as the uncertainty continues, our policy is to ensure at a purchase order level, that an order is not solely sourced from the two countries. The short and long-term implications of the war are difficult to predict at this time. The imposition of more sanctions and counter sanctions may have an adverse effect on the economic markets generally and could impact our business and the businesses of our supply partners, especially those in Ukraine and Russia. Because of the highly uncertain and dynamic nature of these events, it is not currently possible to estimate the impact of the war on our business and the companies from which we obtain supplies and distribute specimens.

Known Trends, Demands, Commitments, Events or Uncertainties Impacting Our Business

We are committed to investing in and developing our technology. In the year ended December 31, 2022, we capitalized approximately $2,975,686 of internally developed software costs and have plans to continue investing at this or greater levels in the future. We anticipate that over time, these investments will increase revenue opportunities and result in operational efficiencies, positively impacting our liquidity, capital resources and results of operations in the future with a less than two-year rate of return on the investment.

We continue to experience declines in our COVID-19 revenue. While our non-COVID-19 revenue significantly increased by $1,499,000 or 18.7% from approximately $8,036,000 for the year ended December 31, 2021 to $9,535,000 for the year ended December 31, 2022, our COVID-19 revenue was approximately $867,000 in the year ended December 31, 2022 compared to approximately $3,099,000 for the same period in 2021, a $2,232,000, or 72%, decrease in COVID-19 revenue. We anticipate that our non-COVD-19 revenue will continue to increase while our COVID-19 revenue will continue to decline, which may impact our results of operations at a level that is not currently determinable due to the uncertainty of the continued impact of COVID-19.

As disclosed in a Current Report on Form 8-K filed on September 22, 2022, the Company received notices of departure from the Company's then Chief Executive Officer and its then Chief Operating Officer effective as of October 24, 2022. The Company's Chief Financial Officer was named Interim Chief Executive Officer on September 21, 2022 while also continuing as our Chief Financial Officer, and was subsequently named our Chief Executive Officer ("CEO") on January 9, 2023.

The focus of our new CEO in her first 100 days was to assess the capabilities of the Company's resources with the launch of a significant initiative to reorganize our sales approach, placing a renewed focus on our sales pipeline and positioning it to scale in a post COVID-19 environment. We evaluated our existing commercial and operational structure as well as processes to identify existing shortfalls and identify areas for improvement to drive revenue. Specifically, we conducted a top-down analysis of our commercial organization and our sales fulfillment pipeline. This resulted in 20% of the work force being realigned within the Company to enable the appropriate structure and support of our online marketplace. This realignment was also in support of increasing our cross-functional team communications and collaborations to improve execution.

Additionally, during the first 100 days, our CEO developed strategies, plans, goals and objectives all focused on continuing to invest in the Company on various fronts while achieving a cash flow positive position. The Company has plans to significantly increase spending on technology in 2023 to accelerate development timelines and to increase headcount in strategic areas that will relieve supplier constraint. In addition to the core business of the Company, several revenue enhancement projects have been identified to support the strategy of achieving a cash flow positive position. Those projects are in the areas of sequencing, embedded coordinators, remnants and normal blood as well as several technology launches.

We have identified opportunities to match specimen requests more effectively to the inventory and capabilities of our supplier network and have begun addressing these opportunities. We believe that these efforts will result in a significant increase in the utilization rate of our supplier network, which currently is heavily skewed toward the top 10-15% of our suppliers, although no assurances can be provided. This effort is one of many initiatives designed to significantly reduce or eliminate supplier concentration. We envision that the re-leveling of our network will result in higher match rates, market depth and improved time-to-match.

We are also developing additional survey capabilities at various decision points across the sales process to improve results at those critical customer decision points. We believe that the customer insights gained will result in further improvements to our rates of closing business as well as the overall customer experience, although no assurance can be provided.

As of December 31, 2022, we maintained all of our cash with one financial institution and our cash balance with this financial institution was in excess of the Federal Deposit Insurance Corporation ("FDIC") insurance limit. If this bank fails in the future, we may not be able to immediately (or ever) recover our cash in excess of the FDIC insured limits which would adversely impact our operating liquidity and could negatively impact our operations, results of operations and financial performance.

Since the March 2023 failure and FDIC takeover of SiliconValley Bank and the inability of its customers to readily access their cash deposits there has been a heightened risk and greater focus on the potential failures of other banks in the future. In order to reduce the risks associated with maintaining all of our cash at a single bank we have diversified our investments. As of March 21, 2023, the filing date of this annual report, we have transferred approximately $7.2 million which is not required for immediate use into short-term U.S. Treasury notes and U.S. Treasury bills at a different financial institution. Additionally, we are working with our current bank to place our remaining cash balance into investment products that will fall within FDIC insurance limits, as well as other opportunities to insure the safeguarding of our assets.

Components of Our Results of Operations

Revenue

We generate revenue by procuring various specimens from hospitals, laboratories, and other supply sites, for our medical research customers using our proprietary software, the iSpecimen Marketplace, to identify, locate, and ultimately validate the required specimens to our customers' requested specifications. The Company's performance obligation is to procure a specimen meeting the customer specification(s) from a supplier, on a "best efforts" basis, for our customer at the agreed price per specimen as indicated in the customer contract with the Company. We do not currently charge suppliers or customers for the use of our proprietary software. Each customer will execute a material and data use agreement with the Company or agrees to online purchase terms, each of which includes terms such as specimen and data use, shipment terms, payment and cancellation terms. These are then supplemented by purchase orders that specify specimen requirements including detailed inclusion/exclusion criteria, quantities to be collected, and pricing. Collectively, these customer agreements represent the Company's contracts with its customer. Generally, contracts have fixed unit pricing. For certain specimen orders, a refundable customer deposit may be required prior to order fulfillment depending on project set-up requirements, presented as deferred revenue. The Company expects to recognize the deferred revenue within the next twelve months.

We recognize revenue over time, as we have created an asset with no alternative use and we have an enforceable right to payment for performance completed to date. At contract inception, we review a contract and related order upon receipt to determine if the specimen ordered has an alternative use by us. Generally, specimens ordered do not have an alternative future use to us and our performance obligation is satisfied when the related specimens are accessioned. We use an output method to recognize revenue for specimens with no alternative future use. The output is measured based on the number of specimens accessioned.

Customers are typically invoiced upon shipment. Depending on the quantity of specimens ordered, it may take several accounting periods to completely fulfill a purchase order. In other words, there can be multiple invoices issued for a single purchase order, reflecting the specimens being accessioned over time. However, specimens are generally shipped as soon as possible after they have been accessioned.

Cost of Revenue

Cost of revenue primarily consists of the purchase price to acquire specimens from hospitals and laboratories, inbound and outbound shipping costs, supply costs related to samples; payment processing and related transaction costs, and costs paid to the supply sites to support sample collections. Shipping costs upon receipt of products from suppliers are recognized in cost of revenue.

Additionally, we believe that loss from operations is a more meaningful measure of profitability than gross profit due to the nature of specimens accessioned and the diversity of our pricing.

Technology

Technology costs include payroll and related expenses for employees involved in the development and implementation of our technology; software license and system maintenance fees, outsourced data center costs, data management costs, depreciation and amortization, and other expenses necessary to support technology initiatives. Collectively, these costs reflect the efforts we make to offer a wide variety of products and services to our customers. Technology and data costs are generally expensed as incurred.

A portion of technology costs are related to research and development. Costs incurred for research and development are expensed as incurred, except for software development costs that are eligible for capitalization. Research and development costs primarily include salaries and related expenses, in addition to the cost of external service providers.

Sales and Marketing

Sales and marketing costs primarily consist of payroll and related expenses for personnel engaged in marketing and selling activities, including salaries and sales commissions, travel expenses, public relations and social media costs, ispecimen.com website development and maintenance costs, search engine optimization fees, advertising costs; direct marketing costs, trade shows and events fees, marketing and customer relationship management software, and other marketing-related costs.

Supply Development

We have agreements with supply partners that allow us to procure specimens from them and distribute these samples to customers. Supply development costs primarily include payroll and related expenses for personnel engaged in the development and management of this supply network, related travel expenses, regulatory compliance costs to support the network, and other supply development and management costs.

Fulfillment

Fulfillment costs primarily consist of those costs incurred in operating and staffing operations and customer service teams, including costs attributable to assess the feasibility of specimen requests, creating and managing orders, picking, packaging, and preparing customer orders for shipment, responding to inquiries from customers, and laboratory equipment and supplies.

General and Administrative

General and administrative expenses primarily consist of costs for corporate functions, including payroll and related expenses for human resources, legal, finance, and executive teams, associated software licenses, facilities and equipment expenses, such as depreciation and amortization expense and rent, outside legal expenses, insurance costs, and other general and administrative costs.

Financial Operations Overview and Analysis for the Years Ended December 31, 2022 and 2021

Comparison of the Years Ended December 31, 2022 and 2021

	2022	2021	Change Dollars	Change Percentage
Revenue	$ 10,402,303	$ 11,135,303	$ (733,000)	(7)%
Operating expenses:				
Cost of revenue	4,756,965	5,249,013	(492,048)	(9)%
Technology	2,656,287	1,837,882	818,405	45 %
Sales and marketing	3,445,344	2,422,743	1,022,601	42 %
Supply development	801,125	573,913	227,212	40 %
Fulfillment	1,995,937	1,363,522	632,415	46 %
General and administrative	6,932,727	5,613,476	1,319,251	24 %
Total operating expenses	20,588,385	17,060,549	3,527,836	21 %
Loss from operations	(10,186,082)	(5,925,246)	4,260,836	72 %
Other expense, net				
Interest expense	(238,963)	(2,102,681)	1,863,718	89 %
Change in fair value of derivative liability on convertible notes	—	(271,000)	271,000	100 %
Change in fair value of derivative liability on bridge notes and bridge notes, related parties	—	1,582,700	(1,582,700)	(100)%
Loss on extinguishment of bridge notes and bridge notes, related parties	—	(2,740,425)	2,740,425	100 %
Loss on extinguishment of convertible notes and convertible notes, related parties	—	(260,185)	260,185	100 %
Gain on extinguishment of note payable	—	788,156	(788,156)	(100)%
Other income (expense), net	9,778	(44,531)	54,309	122 %
Interest income	169,345	11,397	157,948	1,386 %
Total other expense, net	(59,840)	(3,036,569)	2,976,729	98 %
Net loss	$ (10,245,922)	$ (8,961,815)	(1,284,107)	(14)%

Revenue

Revenue decreased by approximately $733,000 or 7%, from approximately $11,135,000 for the year ended December 31, 2021 to approximately $10,402,000 for the year ended December 31, 2022. For the year ended December 31, 2022 and 2021, our non-COVID-19 revenue significantly increased by $1,499,000 or 18.7%, from approximately $8,036,000 for the year ended December 31, 2021 to $9,535,000 for the year ended December 31, 2022. However, the increase in non-COVID-19 revenue was offset by a $2,232,000 or 72% decrease in COVID-19 revenue from $3,099,000 in the year ended December 31, 2021 to $867,000 in the year ended December 31, 2022.

Overall, our specimens accessioned during the year ended December 31, 2022, increased by approximately 6,703 or 32% to approximately 27,503 compared to approximately 20,800 of specimens accessioned during the year ended December 31, 2021. However, a change in specimen mix resulted in a decrease in average selling price per specimen of approximately $157 or 29% compared to the same prior year period.

Cost of Revenue

Cost of revenue decreased by approximately $492,000 or 9%, from approximately $5,249,000 for the year ended December 31, 2021 to approximately $4,757,000 for the year ended December 31, 2022. Although there was a 32% increase in the number of specimens accessioned during the year ended December 31, 2022, over the same prior year period, the average cost per specimen decreased by 31% from $252 for the year ended December 31, 2021 to $173 for the year ended December 31, 2022.

Technology

Technology expenses increased by approximately $818,000 or 45% from approximately $1,838,000 for the year ended December 31, 2021 to approximately $2,656,000 for the year ended December 31, 2022. The increase was related to increases in headcount and payroll and related expenses of approximately $624,000, amortization of internally developed software of approximately $223,000, increase in general and administrative expenses of approximately $7,000, offset by a decrease in professional fees unrelated to internally developed software of approximately $36,000.

Sales and Marketing Expenses

Sales and marketing expenses increased approximately $1,023,000 or 42%, from approximately $2,423,000 for the year ended December 31, 2021 to approximately $3,445,000 for the year ended December 31, 2022. The increase was primarily attributable to increases in payroll and related expenses of approximately $747,000 due to hiring of more sales personnel, professional fees of approximately $434,000, general expenses related to sales and marketing of approximately $45,000, offset by decreases of approximately $180,000 website costs capitalized as fixed assets and external marketing efforts of approximately $23,000.

Supply Development

Supply development expenses increased approximately $227,000 or 40%, from approximately $574,000 for the year ended December 31, 2021 to approximately $801,000 for the year ended December 31, 2022. The increase was primarily attributable to increases in payroll and related expenses of approximately $174,000, operating and regulatory compliance costs of approximately $34,000, and general and administrative expenses of approximately $19,000.

Fulfillment

Fulfillment costs increased approximately $632,000 or 46%, from approximately $1,364,000 for the year ended December 31, 2021 to approximately $1,996,000 for the year ended December 31, 2022. The increase was primarily attributable to increases in payroll and related expenses of approximately $576,000 for personnel engaged in pre-sales feasibility assessments and post-sales fulfillment activities, professional fees of approximately $40,000, general and administrative expense of approximately $11,000 and promotions and advertising expenses of approximately $5,000.

General and Administrative Expenses

General and administrative expenses increased approximately $1,319,000 or 24%, from approximately $5,613,000 for the year ended December 31, 2021 to approximately $6,933,000 for the year ended December 31, 2022. The increase was attributable to increases in payroll and related expenses of approximately $74,000, severance costs for our former Chief Executive Officer and former Chief Operating Officer, in the aggregate amount of $782,000, taxes and insurance of approximately $577,000, software and subscriptions costs of approximately $154,000, utilities and facilities expenses of approximately $44,000, marketing and advertising costs of approximately $35,000, other general expenses of approximately $17,000, offset by decreases in bad debt expense of approximately $343,000 and depreciation and amortization expenses of $21,000.

Other Expense, net

Other expense, net decreased by approximately $2,977,000 or 98%, from approximately $3,037,000 for the year ended December 31, 2021 to approximately $60,000 for the year ended December 31, 2022. The decreases in other expense, net, was attributable to the decreases in loss on extinguishment of secured promissory notes the Company issued from 2018 to 2021 to investors and existing stockholders (the “bridge notes”) of approximately $2,740,000, interest expense of approximately $1,864,000, change in fair value of derivative liability on convertible notes (the “convertible notes”) of approximately $271,000, loss on extinguishment of convertible notes and convertible notes, related parties of approximately $260,000, an increase in interest income of approximately $156,000 and an increase in other income, net, of approximately $54,000, offset by decreases in change in fair value of derivative liability on bridge notes and bridge notes, related parties of approximately $1,583,000 and gain in extinguishment of notes payable of approximately $788,000.

Liquidity and Capital Resources

	December 31, 2022	December 31, 2021	Change Dollars	Change Percentage
Balance Sheet Data:				
Cash	$ 15,308,710	$ 27,738,979	$ (12,430,269)	(45)%
Working capital	15,394,634	30,442,955	(15,048,321)	(49)%
Total assets	24,617,653	35,719,598	(11,101,945)	(31)%
Accrued interest	-	8,167	(8,167)	(100)%
Term loan	-	3,422,616	(3,422,616)	(100)%
Total stockholders' equity	20,309,170	29,791,588	(9,482,418)	(32)%

	Years Ended December 31, 2022	Years Ended December 31, 2021	Change Dollars	Change Percentage
Statement of Cash Flow Data:				
Net cash flows used in operating activities	$ (5,817,720)	$ (10,668,410)	$ 4,850,690	45 %
Net cash flows used in investing activities	(3,191,190)	(1,037,917)	(2,153,273)	(207)%
Net cash flows (used in) provided by financing activities	(3,421,359)	38,749,397	(42,170,756)	(109)%
Net change in cash	$ (12,430,269)	$ 27,043,070	$ (39,473,339)	

Capital Resources

As of December 31, 2022, our available cash totaled approximately $15,309,000 which represented decrease of approximately $12,430,000 compared to December 31, 2021. This decrease in cash includes $3,517,000 of cash used for the settlement of the Term Loan and the associated interest in November 2022. As of December 31, 2022, we had working capital of approximately $15,395,000 which represents decrease of approximately $15,048,000 compared to the balance of 30,443,000 as of December 31, 2021.

Since inception, we have relied upon raising capital to finance our operations. We intend to use our existing cash to further develop our technology, grow our supply network, increase our marketing and sales presence, scale our operations, and for working capital and general corporate purposes.

We believe our cash and cash equivalents, together with anticipated cash flow from operations will be sufficient to meet our working capital, and capital expenditure requirements for at least the next 12 months. During the year ended December 31, 2022, our revenue was negatively impacted because of a shutdown of our Ukrainian and Russian supply network at the start of the war between Russia and Ukraine. Additionally, we are continuing to experience a reduction in COVID-19 revenue that has not been more than offset by increases in non-COVID-19 revenue. In the event that revenue, during the next 12 months, continues to fall short of our projections or if our plans or assumptions change, including as a result of the war between Russia and Ukraine or the ongoing impact of COVID-19 or if inflation begins to have a greater impact on our business, or if we decide to move forward with any activities that require more outlays of cash than originally planned, we may need to raise additional capital sooner than expected.

Our ability to obtain capital to implement our growth strategy over the longer term will depend on our future operating performance, financial condition and, more broadly, on the availability of equity and debt financing. Capital availability will be affected by prevailing conditions in our industry, the global economy, the global financial markets, and other factors, many of which are beyond our control. Specifically, as a result of recent volatility and weakness in the public markets, due to, among other factors, uncertainty in the global economy and financial markets, it may be much more difficult to raise additional capital, if and when, it is needed, unless the public markets become less volatile and stronger at such time that we seek to raise additional capital. In addition, any additional debt service requirements we take on could be based on higher interest rates and shorter maturities and could impose a significant burden on our results of operations and financial condition, and the issuance of additional equity securities could result in significant dilution to stockholders.

Cash Flows

Operating Activities

For the year ended December 31, 2022, net cash used in operating activities was approximately $5,818,000, which consisted of a net loss of approximately $10,246,000 offset by non-cash charges of approximately $2,074,000 which included approximately $1,183,000 related to amortization of internally developed software, approximately $679,000 in stock-based compensation, approximately $107,000 in bad debt expense, approximately $22,000 related to depreciation of property and equipment, approximately $77,000 of amortization of debt issuance cost on the Term Loan, and approximately $6,000 of proceeds from issuance of common stock in exchange for services.

Total changes in assets and liabilities of approximately $2,354,000 were primarily driven by a $1,297,946 decrease in accounts receivable, a $148,431 decrease in operating lease right-of-use asset, a $26,601 decrease in prepaid expenses and other current assets, a $1,626,385 increase in accounts payable, a $521,435 increase in accrued expenses, offset by a $588,769 increase in accounts receivable-unbilled, a $522,411 decrease in deferred revenue, a $147,276 decrease in operating lease liability and a $8,167 decrease in accrued interest.

For the year ended December 31, 2021, net cash used in operating activities was approximately $10,668,000, which consisted of a net loss of approximately $8,962,000 offset by non-cash charges of approximately $3,576,000, which primarily includes an approximately $2,740,000 loss on extinguishment of Bridge Notes, approximately $959,000 related to amortization of internally developed software, approximately $870,000 of amortization of discount on Amended Bridge Notes, approximately $622,000 in stock based compensation, an approximately $260,000 loss on extinguishment of Convertible Notes, approximately $161,000 in bad debt expense, approximately $45,000 related to depreciation and amortization of property and equipment, $12,500 of common stock issued in exchange for services, $4,605 of amortization of debt issuance costs on a note payable, and $1,088 of amortization of discount and debt issuance costs on Convertible Notes, partially offset by an approximately $1,312,000 loss on derivative liabilities, and an approximately $788,000 gain on extinguishment on note payable.

Total changes in assets and liabilities of approximately $5,282,000 were primarily driven by a $1,708,922 decrease in accrued interest, a $1,637,124 increase in accounts receivable, a $1,086,259 increase in accounts receivable-unbilled, a $959,754 decrease in accounts payable, and a $218,508 decrease in deferred revenue, offset by a $198,893 increase in accrued expenses, a $90,894 decrease in prepaid expenses and other current assets, and a $38,503 decrease in tax credit receivable.

Investing Activities

Net cash used in investing activities was $3,191,190 and $1,037,917 for the years ended December 31, 2022 and 2021, respectively. Net cash used in investing activities for the year ended December 31, 2022 consisted of $2,975,686 of capitalization of internally developed software and $215,504 for purchase of property and equipment.

Net cash used in investing activities for the year ended December 31, 2021 consisted of $1,035,367 of capitalization of internally developed software, and $2,550 for purchases of property and equipment.

Financing Activities

Net cash used in financing activities was $3,421,359 for the year ended December 31, 2022 which consisted of $3,500,000 for the payoff of the Term loan, which was offset by $78,641 of proceeds from the exercise of stock options.

Net cash provided by financing activities was $38,749,397 for the year ended December 31, 2021 which consisted of $20,999,988 of proceeds received from the issuance of common stock in connection with the PIPE, $18,000,000 of proceeds received from the issuance of common stock in connection with the IPO, $3,500,000 of proceeds received from the issuance of a note payable, $2,497,501 of net proceeds from the issuance of over-allotment shares of common stock, $500,000 of proceeds received from the issuance of Bridge Notes payable, $58,648 of proceeds received from the exercise of stock options, and $992 of proceeds received from the exercise of warrants, which was partially offset by the $3,000,000 payment of principal to the holders of the Bridge Notes, $2,339,816 for the payment of offering costs in connection with the issuance of common stock in connection with the IPO, $1,434,999 for the payment of offering

costs in connection with the issuance of common stock in connection with PIPE, and $32,917 for the payment of debt issuance costs in connection with a note payable.

Effects of Inflation and Supply Chain Shortages

Our operations are heavily reliant on specimen availability, and as a result, we often receive more requests than we can fulfill. While the Company is subject to these types of supply chain constraints that are specific to the specimen industry, we are not affected by the more common supply chain issues currently affecting the economy, specifically surrounding transportation. Due to the small size of the packages that we ship, our carriers have been able to continue making timely deliveries during the year ended December 31, 2022.

We have experienced negative effects of inflation in certain areas of our business due to the high rates of inflation in the world's current economy. This inflation is affecting employee salaries, which account for a significant portion of our operating costs. Additionally, costs of supplies have been affected by inflation, however, these costs are not significant to the Company's results.

Inflation has not had a significant impact on the cost of specimens due to our long-term contracts maintained with vendors, which include revenue sharing plans.

Non-GAAP Financial Measure

To supplement our financial statements, which are prepared and presented in accordance with U.S. Generally Accepted Accounting Principles ("GAAP"), we use adjusted earnings before interest, taxes, depreciation, and amortization ("Adjusted EBITDA"), a non-GAAP financial measure, to understand and evaluate our core operating performance. This non-GAAP financial measure, which may be different than similarly titled measures used by other companies, is presented to enhance investors' overall understanding of our financial performance and should not be considered a substitute for, or superior to, the financial information prepared and presented in accordance with GAAP.

We define our non-GAAP financial measure of Adjusted EBITDA as net loss, excluding income tax benefit, change in fair value of derivative liabilities, loss on extinguishment of Bridge Notes and Related Party Bridge Notes, gain on extinguishment of note payable, interest expense, depreciation and amortization, severance and share-based compensation expense.

We believe that Adjusted EBITDA provides useful information about our financial performance, enhances the overall understanding of our past performance and future prospects, and allows for greater transparency with respect to a key metric used by our management for financial and operational decision-making. We believe that Adjusted EBITDA helps identify underlying trends in our business that otherwise could be masked by the effect of the expenses that we exclude in Adjusted EBITDA. In particular, we believe the exclusion of share-based compensation expense provides a useful supplemental measure in evaluating the performance of our operations and provides better transparency into our results of operations.

We are presenting the non-GAAP measure of Adjusted EBITDA to assist investors in seeing our financial performance through the eyes of management, and because we believe this measure provides an additional tool for investors to use in comparing our core financial performance over multiple periods with other companies in our industry.

Adjusted EBITDA should not be considered in isolation from, or as a substitute for, financial information prepared in accordance with GAAP. There are a number of limitations related to the use of Adjusted EBITDA compared to net loss, the closest comparable GAAP measure. Some of these limitations are that:

- Adjusted EBITDA excludes the change in fair value of the derivative liability, which represents a non-cash charge related to the change in fair value for the embedded features on the Convertible Notes, Bridge Notes, and Related Party Bridge Notes;
- Adjusted EBITDA excludes the loss on the extinguishment of Bridge Notes and Relates Party Bridge Notes;
- Adjusted EBITDA excludes the gain on the extinguishment of note payable;

- Adjusted EBITDA excludes amortization of debt issuance costs and discounts on Convertible Notes which are components to interest expense;

- Adjusted EBITDA excludes accrued severance costs;

- Adjusted EBITDA excludes certain recurring, non-cash charges such as depreciation of leasehold improvements, property and equipment and amortization of internally developed software and, although these are non-cash charges, the assets being depreciated and amortized may have to be replaced in the future; and

- Adjusted EBITDA excludes share-based compensation expense which has been, and will continue to be for the foreseeable future, significant recurring expenses in our business and an important part of our compensation strategy.

The following table presents a reconciliation of Adjusted EBITDA to net loss, the most comparable GAAP financial measure, for each of the periods presented:

	2022	2021
Net loss	$ (10,245,922)	$ (8,961,815)
Depreciation and amortization	1,205,199	1,003,996
Severance costs	701,400	—
Share-based compensation	678,613	622,064
Interest expense	138,912	2,102,681
Loss on extinguishment of bridge notes and bridge notes, related parties	—	2,740,425
Loss on extinguishment of convertible notes and convertible notes, related parties	—	260,185
Gain on extinguishment of note payable	—	(788,156)
Change in fair value of derivative liability on convertible notes	—	271,000
Change in fair value of derivative liability on bridge notes and bridge notes, relates parties	—	(1,582,700)
Adjusted EBITDA	$ (7,521,798)	$ (4,332,320)

Critical Accounting Policies and Estimates

A summary of the significant accounting policies is provided in Note 2 of our financial statements.

Discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities and related disclosure of contingent assets and liabilities, revenue, and expenses at the date of the financial statements. Generally, we base our estimates on historical experience and on various other assumptions in accordance with GAAP that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions.

Critical accounting policies and estimates are those that we consider the most important to the portrayal of our financial condition and results of operations because they require our most difficult, subjective, or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. The following accounting policies involve estimates that are considered critical due to the level of subjectivity and judgment involved, as well as the impact on our financial position and results of operations.

Internally Developed Software

We capitalize certain internal and external costs incurred during the application development stage of internal use software projects until the software is ready for its intended use. Amortization of the asset commences when the software is complete and placed into service and is recorded in operating expenses. We amortize completed internal-use software over its estimated useful life of five years on a straight-line basis. Costs incurred during the planning, training and post-implementation stages of the software development life cycle

are classified as technology and expensed to operations as incurred. Costs that do not meet the capitalization criteria are expensed as incurred.

Share-based Compensation

We record share-based compensation for options granted to employees, non-employees, and to members of the board of directors for their services on the board of directors based on the grant date fair value of awards issued, and the expense is recorded on a straight-line basis over the requisite service period. Forfeitures are recognized when they occur.

We use the Black-Scholes-Merton option pricing model to determine the fair value of stock options. The use of the Black-Scholes-Merton option-pricing model requires management to make assumptions with respect to the expected term of the option, the expected volatility of the common stock consistent with the expected life of the option, risk-free interest rates and expected dividend yields of the common stock. We have concluded that its historical share option exercise experience does not provide a reasonable basis upon which to estimate expected term. Therefore, the expected term was determined according to the simplified method, which is the average of the vesting tranche dates and the contractual term. Due to the lack of company specific historical and implied volatility data, the estimate of expected volatility is primarily based on the historical volatility of a group of similar companies that are publicly traded. For these analyses, companies with comparable characteristics are selected, including enterprise value and position within the industry, and with historical share price information sufficient to meet the expected life of the share-based awards. We compute the historical volatility data using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of its share-based awards. The risk-free interest rate is determined by reference to U.S. Treasury zero-coupon issues with remaining maturities similar to the expected term of the options. We have not paid, and do not anticipate paying, cash dividends on shares of our common stock.

Recent Accounting Standards

For information on recent accounting standards, see Note 2 to our financial statements.

JOBS Act Transition Period

On April 5, 2012, the JOBS Act, was enacted. Section 107 of the JOBS Act provides that an "emerging growth company" can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act of 1933, as amended, or the Securities Act, for complying with new or revised accounting standards. In other words, an "emerging growth company" can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies.

We have elected not to "opt out" of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (i) irrevocably elect to "opt out" of such extended transition period or (ii) no longer qualify as an emerging growth company.

We are in the process of evaluating the benefits of relying on other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, as an "emerging growth company," we intend to rely on certain of these exemptions, including without limitation, (i) providing an auditor's attestation report on our system of internal controls over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act and (ii) complying with any requirement that may be adopted by the PCAOB regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, known as the auditor discussion and analysis. We will remain an "emerging growth company" until the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of $1.235 billion or more; (ii) the last day of 2026; (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the SEC.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not required for smaller reporting companies.

Item 8. Financial Statements and Supplementary Data

Index to Financial Statements
iSpecimen Inc.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of iSpecimen Inc.:

Opinion on the Financial Statements

We have audited the accompanying balance sheets of iSpecimen Inc. (the "Company") as of December 31, 2022 and 2021, the related statements of operations, changes in stockholders' equity (deficit) and cash flows for the years then ended, and the related notes to the financial statements (collectively, the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Wolf & Company, P.C.
Boston, Massachusetts
March 21, 2023

We have served as the Company's auditor since 2014.

iSpecimen Inc.

Balance Sheets

	December 31, 2022	December 31, 2021
ASSETS		
Current assets:		
Cash	$ 15,308,710	$ 27,738,979
Accounts receivable - unbilled	2,327,789	1,739,020
Accounts receivable, net of allowance for doubtful accounts of $230,999 and $269,170 at December 31, 2022 and 2021, respectively	1,597,915	3,002,442
Prepaid expenses and other current assets	300,434	327,035
Tax credit receivable, current portion	140,873	140,873
Total current assets	19,675,721	32,948,349
Property and equipment, net	225,852	32,781
Internally developed software, net	4,503,787	2,710,867
Operating lease right-of-use asset	184,692	—
Security deposits	27,601	27,601
Total assets	$ 24,617,653	$ 35,719,598
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 2,459,063	$ 832,678
Accrued expenses	1,531,238	1,009,803
Accrued interest	—	8,167
Operating lease - current obligation	158,451	—
Deferred revenue	132,335	654,746
Total current liabilities	4,281,087	2,505,394
Operating lease long - term obligation	27,396	—
Term loan	—	3,422,616
Total liabilities	4,308,483	5,928,010
Commitments and contingencies (See Note 8)		
Stockholders' equity		
Common stock, $0.0001 par value, 200,000,000 shares authorized, 8,956,808 issued and 8,925,808 outstanding at December 31, 2022, and 8,764,479 issued and 8,733,479 outstanding at December 31, 2021	892	873
Additional paid-in capital	68,573,774	67,810,289
Treasury stock, 31,000 shares at December 31, 2022 and 2021, at cost	(172)	(172)
Accumulated deficit	(48,265,324)	(38,019,402)
Total stockholders' equity	20,309,170	29,791,588
Total liabilities and stockholders' equity	$ 24,617,653	$ 35,719,598

See accompanying notes to the financial statements.

iSpecimen Inc.

Statements of Operations

	Years Ended December 31,	
	2022	2021
Revenue	$ 10,402,303	$ 11,135,303
Operating expenses:		
Cost of revenue	4,756,965	5,249,013
Technology	2,656,287	1,837,882
Sales and marketing	3,445,344	2,422,743
Supply development	801,125	573,913
Fulfillment	1,995,937	1,363,522
General and administrative	6,932,727	5,613,476
Total operating expenses	20,588,385	17,060,549
Loss from operations	(10,186,082)	(5,925,246)
Other expense, net		
Interest expense	(238,963)	(2,102,681)
Change in fair value of derivative liability on convertible notes	—	(271,000)
Change in fair value of derivative liability on bridge notes and bridge notes, related parties	—	1,582,700
Loss on extinguishment of bridge notes and bridge notes, related parties	—	(2,740,425)
Loss on extinguishment of convertible notes and convertible notes, related parties	—	(260,185)
Gain on extinguishment of note payable	—	788,156
Other income (expense), net	9,778	(44,531)
Interest income	169,345	11,397
Total other expense, net	(59,840)	(3,036,569)
Net loss	$ (10,245,922)	$ (8,961,815)
Net loss per share - basic and diluted	$ (1.16)	$ (2.09)
Weighted average shares of common stock outstanding - basic and diluted	8,844,307	4,287,424

See accompanying notes to the financial statements.

iSpecimen Inc.

Statements of Changes in Convertible Preferred Stock and Stockholders' Equity (Deficit)

	Series B Convertible Preferred Stock		Series A-1 Convertible Preferred Stock		Series A Convertible Preferred Stock		Common Stock		Treasury Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount			
Balance at December 31, 2020	572,465	$ 7,999,997	100,365	$ 561,041	618,182	$ 2,612,038	936,213	$ 94	31,000	$ (172)	$ 1,779,698	$ (29,057,587)	$ (27,277,967)
Share-based compensation expense	—	—	—	—	—	—	44,129	4	—	—	622,060	—	622,064
Conversion of redeemable convertible preferred stock into common stock upon initial public offering	(572,465)	(7,999,997)	(100,365)	(561,041)	(618,182)	(2,612,038)	1,291,012	129	—	—	11,172,947	—	11,173,076
Conversion of principal and accrued interest of convertible notes and bridge notes into common stock upon initial public offering	—	—	—	—	—	—	2,049,043	205	—	—	16,392,139	—	16,392,344
Issuance of common stock in connection with initial public offering	—	—	—	—	—	—	2,250,000	225	—	—	17,999,775	—	18,000,000
Offering costs in connection with initial public offering	—	—	—	—	—	—	—	—	—	—	(2,339,816)	—	(2,339,816)
Issuance of common stock in connection with public offering over-allotment option exercise	—	—	—	—	—	—	337,500	34	—	—	2,497,467	—	2,497,501
Issuance of common stock in connection with private placement	—	—	—	—	—	—	1,749,999	175	—	—	20,999,813	—	20,999,988
Transaction costs in connection with private placement	—	—	—	—	—	—	—	—	—	—	(1,434,999)	—	(1,434,999)
Issuance of common stock in exchange for services	—	—	—	—	—	—	2,000	—	—	—	12,500	—	12,500
Issuance of common stock through exercise of stock options	—	—	—	—	—	—	55,694	5	—	—	58,643	—	58,648
Issuance of common stock through exercise of warrants	—	—	—	—	—	—	17,889	2	—	—	990	—	992
Issuance of warrants in connection with debt	—	—	—	—	—	—	—	—	—	—	49,072	—	49,072
Net loss	—	—	—	—	—	—	—	—	—	—	—	(8,961,815)	(8,961,815)
Balance at December 31, 2021	—	$ —	—	$ —	—	$ —	8,733,479	$ 873	31,000	$ (172)	$ 67,810,289	$ (38,019,402)	$ 29,791,588
Share-based compensation expense	—	—	—	—	—	—	—	—	—	—	642,077	—	642,077
Vesting of restricted stock	—	—	—	—	—	—	110,286	11	—	—	36,525	—	36,536
Issuance of common stock through exercise of stock options	—	—	—	—	—	—	81,043	8	—	—	78,633	—	78,641
Issuance of common stock in exchange for services	—	—	—	—	—	—	1,000	—	—	—	6,250	—	6,250
Net loss	—	—	—	—	—	—	—	—	—	—	—	(10,245,922)	(10,245,922)
Balance at December 31, 2022	—	$ —	—	$ —	—	$ —	8,925,808	$ 892	31,000	$ (172)	$ 68,573,774	$ (48,265,324)	$ 20,309,170

See accompanying notes to the financial statements.

iSpecimen Inc.

Statements of Cash Flows

	Years Ended December 31,	
	2022	2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (10,245,922)	$ (8,961,815)
Adjustments to reconcile net loss to net cash used in operating activities:		
Share-based compensation	678,613	622,064
Proceeds from issuance of common stock in exchange for services	6,250	12,500
Amortization of internally developed software	1,182,766	958,639
Depreciation of property and equipment	22,433	45,358
Bad debt expense	106,581	161,074
Amortization of debt issuance costs on term loan	77,384	4,605
Amortization of discount and debt issuance costs on convertible notes	—	1,088
Amortization of discount on bridge notes	—	869,600
Change in fair value of derivative liabilities	—	(1,311,700)
Loss on extinguishment on bridge notes	—	2,740,425
Loss on extinguishment of convertible notes	—	260,185
Gain on extinguishment on note payable	—	(788,156)
Change in operating assets and liabilities:		
Accounts receivable – unbilled	(588,769)	(1,086,259)
Accounts receivable	1,297,946	(1,637,124)
Prepaid expenses and other current assets	26,601	90,894
Operating lease right-of-use asset	148,431	—
Tax credit receivable	—	38,503
Accounts payable	1,626,385	(959,754)
Accrued expenses	521,435	198,893
Accrued interest	(8,167)	(1,708,922)
Operating lease liability	(147,276)	—
Deferred revenue	(522,411)	(218,508)
Net cash used in operating activities	(5,817,720)	(10,668,410)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of property and equipment	(215,504)	(2,550)
Capitalization of internally developed software	(2,975,686)	(1,035,367)
Net cash used in investing activities	(3,191,190)	(1,037,917)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from issuance of bridge notes payable	—	500,000
Proceeds from issuance of term loan	—	3,500,000
Proceeds from exercise of stock options	78,641	58,648
Proceeds from issuance of common stock in connection with initial public offering	—	18,000,000
Payment of offering costs in connection with the issuance of common stock in connection with initial public offering	—	(2,339,816)
Proceeds from issuance of common stock in connection with private placement	—	20,999,988
Payment of transaction costs in connection with the issuance of common stock in connection with private placement	—	(1,434,999)
Proceeds from exercise of warrants	—	992
Proceeds from issuance of over-allotment shares of common stock, net of transaction costs of $202,499	—	2,497,501
Payment of principal to bridge note holders	—	(3,000,000)
Payment of debt issuance costs in connection with note payable	—	(32,917)
Payment of term loan	(3,500,000)	—
Net cash (used in) provided by financing activities	(3,421,359)	38,749,397
Net change in cash	(12,430,269)	27,043,070
Cash at beginning of period	27,738,979	695,909
Cash at end of period	$ 15,308,710	$ 27,738,979
Supplemental disclosure of cash flow information:		
Cash paid for interest	$ 161,579	$ 2,824,032
Cash paid for taxes	$ —	$ —
Supplemental disclosure of non-cash investing and financing activities:		
Conversion of redeemable convertible preferred stock into common stock	$ —	$ 11,173,076
Conversion of convertible notes and accrued interest into common stock	$ —	$ 6,748,729
Conversion of bridge notes and accrued interest into common stock	$ —	$ 4,717,646
Issuance of common stock warrants as offering costs in connection with public offering of common stock	$ —	$ 374,400
Issuance of common stock warrants in connection with term loan	$ —	$ 49,072
Issuance of common stock warrants in connection with private placement	$ —	$ 10,624,759
Non-cash amounts of lease liabilities arising from obtaining right-of use-assets	$ 333,123	$ —

See accompanying notes to the financial statements.

iSpecimen Inc.

Notes to Financial Statements

1. NATURE OF BUSINESS

iSpecimen Inc. ("iSpecimen" or the "Company") was incorporated in 2009 under the laws of the state of Delaware. The Company has developed and launched a proprietary online marketplace platform that connects medical researchers who need access to subjects, samples, and data, with hospitals, laboratories, and other organizations who have access to them. iSpecimen is a technology-driven company founded to address a critical challenge: how to connect life science researchers who need human biofluids, tissues, and living cells ("biospecimens") for their research, with biospecimens available (but not easily accessible) in healthcare provider organizations worldwide. The iSpecimen Marketplace platform was designed to solve this problem and transform the biospecimen procurement process to accelerate medical discovery. The Company is headquartered in Lexington, Massachusetts and its principal market is North America. The Company operates as one operating and reporting segment.

Basis of Presentation

The Company's financial statements have been prepared in conformity with generally accepted accounting principles in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification ("ASC") and Accounting Standards Updates ("ASU") of the Financial Accounting Standards Board ("FASB").

On March 30, 2021, the Company effected a 1-for-5.545 reverse stock split ("reverse stock split") of the Company's common stock. All fractional shares as a result of the reverse stock split were rounded down and no fractional shares were issued in connection with the reverse stock split. The par value, authorized share amount, and other terms of the common stock and preferred stock were not affected by the reverse stock split. All share and per share amounts, including stock options, warrants, and restricted stock awards have been retroactively adjusted in these financial statements for all periods presented to reflect the reverse stock split. Further, exercise prices of stock options and warrants have been retroactively adjusted in these financial statements for all periods presented to reflect the reverse stock split.

Initial Public Offering

On June 21, 2021, the Company consummated its initial public offering ("IPO") in which the Company issued and sold 2,250,000 shares of its common stock at a public offering price of $8.00 per share, for aggregate gross proceeds of $18 million. The net proceeds from the IPO were $15.7 million after deducting underwriting discounts of $1.7 million and other offering costs of $0.6 million. The shares of common stock commenced trading on the Nasdaq Stock Market LLC on June 17, 2021 under the ticker symbol "ISPC."

Upon closing of the IPO, all of the then-outstanding shares of redeemable convertible preferred stock automatically converted into common stock at a ratio of 1:1, resulting in the issuance of 1,291,012 shares of common stock. Subsequent to the closing of the IPO, there were no shares of convertible preferred stock outstanding.

Upon closing of the IPO, the Company converted all $5.5 million of its outstanding principal and all unpaid and accrued interest of approximately $1.3 million of the then outstanding Convertible Notes into 1,206,614 shares of common stock at a conversion price of $5.60 per share. The Company incurred an approximately $0.3 million loss on conversion of the Convertible Notes during the year ended December 31, 2021. As of December 31, 2021, there were no Convertible Notes or Bridge Notes outstanding.

Additionally, upon closing of the IPO, the Company converted $4 million of its outstanding principal and accrued and unpaid interest of approximately $0.7 million of the then outstanding Bridge Notes, as amended, into 842,429 shares of common stock at a conversion price of $5.60 per share. During the year ended December 31, 2021, the Company paid off the remaining principal balance of $3.0 million on the Bridge Notes and accrued interest of $64,110. As of December 31, 2021, there were no Bridge Notes outstanding.

On July 1, 2021, the Company sold an additional 337,500 shares of its common stock, pursuant to the underwriters' full exercise of the overallotment option, at a public offering price of $8.00 per share, for aggregate gross proceeds of $2.7 million. In aggregate, the

Company received approximately $18.2 million in net cash proceeds from the IPO after deducting for all underwriting discounts of $1.9 million and other offering costs of $0.6 million.

Private Placement

On December 1, 2021, the Company closed on a private placement ("PIPE") for the sale of 1,749,999 shares of common stock of iSpecimen together with warrants to purchase 1,312,500 shares of common stock ("Warrants"), which resulted in gross proceeds to iSpecimen of approximately $21 million, before deducting offering costs of approximately $1,435,000. Each share of common stock and accompanying three-quarters of one Warrant were sold at a combined offering price of $12.00. The detachable Warrants have a five and one-half year term and an exercise price of $13.00 per share.

Liquidity and Going Concern

The Company has recognized recurring losses. At December 31, 2022, the Company had a net working capital of $15,394,634, an accumulated deficit of $48,265,324, cash of $15,308,710 and accounts payable and accrued expenses of $3,990,301. Management believes that the Company's existing cash, which include the net proceeds from the IPO, the Term Loan, and the PIPE will allow the Company to continue its operations for at least the next 12 months from the date these financial statements are issued and therefore the conditions raising substantial doubt raised in prior periods has been alleviated. As a result of recurring losses, the continued viability of the Company beyond March 2024 may be dependent on its ability to continue to raise additional capital to finance its operations.

Impact of the COVID-19 Pandemic on the Company's Operations

In response to the COVID-19 pandemic the Company put in place additional health and safety protocols. We continue to monitor and revise these protocols as appropriate to address the evolving nature of the pandemic. While we have seen a return to business as usual in our industry, the Company continues to monitor the future impact of the COVID-19 pandemic on the Company, which includes factors such as length of time of the pandemic; the responses of federal, state and local government; the impact of future variants that may emerge; vaccination rates among the population; the efficacy of the COVID-19 vaccines; the longer-term impact of the pandemic on the economy and consumer behavior; and the effect on the Company's employees, vendors and suppliers. We will continue to monitor and evaluate the ongoing COVID-19 pandemic and will work to respond appropriately to the impact of COVID-19 on our business, as well as customers' and suppliers' businesses.

Impact of the Russian-Ukrainian War on the Company's Operations

The Company's business was negatively impacted during the first half of 2022 by the ongoing war between Russia and Ukraine. At the start of the war, the Company had approximately $1 million of purchase orders that were slated to be fulfilled by the Company's supply network in Ukraine and Russia. This supply network was shut down at the start of the war. Ukrainian suppliers were disabled due to war conditions and evacuations and some of the Company's Russian suppliers were disabled by sanctions. While the Company mobilized to shift these purchase orders to other suppliers in the network, the process of getting specimen collections from other supply sites took time, which caused a delay in the fulfillment of such purchase orders. Alternate suppliers do not have the same favorable unit economics or specimen collection rates and this impacted our margins. Additionally, key resources were diverted from operations to resolving the re-fulfillment issues caused by the conflict.

As of December 31, 2022, the Company's supply sites in Russia that had not been under sanctions are now accessible and the Company's supply sites in Ukraine are mostly reopened. However, due to the uncertainty caused by the ongoing war, Ukrainian and Russian suppliers may again become inaccessible to the Company. Therefore, as long as the uncertainty continues, the Company's policy is to ensure at a purchase order level, that an order is not solely sourced from the two countries. The short and long-term implications of the war are difficult to predict at this time. The imposition of more sanctions and counter sanctions may have an adverse effect on the economic markets generally and could impact the Company's business and the businesses of the Company's supply partners, especially those in Ukraine and Russia. Because of the highly uncertain and dynamic nature of these events, it is not currently possible to estimate the impact of the war on the Company's business and the companies from which the Company obtains supplies and distributes specimens.

Inflation and Recession

The Company's financial performance is subject to global economic conditions and their impact on levels of spending by its customer research organizations, particularly discretionary spending for procurement of specimens used for research. Economic recessions may have adverse consequences across industries, including the health and bio-specimen industries, which may adversely affect the Company's business and financial condition. As a result of the ongoing cost-of-living crisis, tightening financial conditions, Russia's invasion of Ukraine, and the lingering COVID-19 pandemic, there is substantial uncertainty about the strength of the global economy which have increased uncertainty about the pace of potential recovery. In addition, changes in general market, economic and political conditions in domestic and foreign economies or financial markets, including fluctuation in stock markets resulting from, among other things, trends in the economy, recession and inflation, as are being currently experienced, may result in a reduction of researchers' demand for specimens due to the research organization's inability to obtain funding through grants.

The Company believes that its business will continue to be resilient through a continued economic downturn or recession, or slowing or stalled recovery therefrom, and that the Company has the liquidity to address its financial obligations and alleviate possible adverse effects on its business, financial condition, results of operations or prospects.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Use of Estimates

The preparation of the Company's financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. The Company utilizes certain estimates in the determination of the fair value of its internally developed software, deferred tax valuation allowances, share-based compensation, and accrued expenses amongst others. The Company bases its estimates on historical experience and other market-specific or other relevant assumptions that it believes to be reasonable under the circumstances. Actual results could differ from such estimates.

Off-Balance Sheet Risk and Concentrations of Credit Risk

The Company has no significant off-balance sheet risks, such as foreign exchange contracts, option contracts, or other foreign hedging arrangements. Cash accounts are maintained at financial institutions that potentially subject the Company to concentrations of credit risk. At December 31, 2022 and 2021, substantially all of the Company's cash was deposited in accounts at one financial institution. The Company maintains its cash deposits, which at times may exceed the federally insured limits, with a reputable financial institution and, accordingly, the Company believes such funds are subject to minimal credit risk.

Concentration of credit risk with respect to accounts receivable is typically related to customers who account for a significant portion of revenue.

During 2022, two customers represented 14% and 12% of the Company's revenues. As of December 31, 2022, one customer represented approximately 15% of accounts receivable and two customers represented approximately 13% and 11% of accounts receivable-unbilled. During 2021, no customers represented greater than 10% of the Company's revenues. As of December 31, 2021, one customer represented approximately 11% of accounts receivable and two customers represented approximately 23% and 17% of accounts receivable-unbilled.

During the years ended December 31, 2022 and 2021, revenue attributable to customers located in foreign countries was approximately 11% and 7% of revenue, respectively. As of December 31, 2022 and 2021, accounts receivable attributable to customers located in foreign countries was approximately 10% and 6% of accounts receivable, respectively.

As of December 31, 2022 and 2021, accounts receivable-unbilled attributable to customers located in foreign countries was approximately 18% and 11% of accounts receivable-unbilled, respectively.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. To increase the comparability of fair value measures, the following hierarchy prioritizes the inputs to valuation methodologies used to measure fair value:

- Level 1 — Valuations based on quoted prices for identical assets and liabilities in active markets.
- Level 2 — Valuations based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.
- Level 3 — Valuations based on unobservable inputs reflecting our own assumptions, consistent with reasonably available assumptions made by other market participants. These valuations require significant judgment.

For certain financial instruments, including cash, accounts receivable, and accounts payable, the carrying amounts approximate their fair values as of December 31, 2022 and 2021 because of their short-term nature.

Recently Adopted Accounting Standards

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and are adopted by the Company as of the specified effective date. Unless otherwise discussed, the Company believes that the impact of recently issued standards that are not yet effective will not have a material impact on its financial position or results of operations upon adoption.

The Company qualifies as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended, or the JOBS Act. The JOBS Act permits an emerging growth company such as us to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies until those standards would otherwise apply to private companies. We have elected not to "opt out" of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard and will do so until such time that we either (i) irrevocably elect to "opt out" of such extended transition period or (ii) no longer qualify as an emerging growth company.

In December 2019, the FASB issued ASU 2019-12, Simplifying the Accounting for Income Taxes ("ASU 2019-12"), which modifies ASC 740 to reduce complexity while maintaining or improving the usefulness of the information provided to users of financial statements. ASU 2019-12 is effective for the Company for interim and annual reporting periods beginning after December 15, 2021. The Company adopted this new standard as of January 1, 2022. ASU 2019-12 did not have a material impact on the Company's financial statements.

In February 2016, the FASB established Topic 842, Leases, by issuing ASU No. 2016-02 ("ASU 2016-02"), which requires lessees to recognize leases on balance sheet and disclose key information about leasing arrangements. The new standard establishes a right-of-use model ("ROU") that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with a term longer than 12 months. Leases are classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement.

In June 2020, the FASB issued ASU No. 2020-05 ("ASU 2020-05") which pushed back the effective date of the adoption of ASC 842 one year for private and not-for-profit entities that did not issue or serve as conduit bond obligors and had not yet adopted the standard. The new effective date was for fiscal year periods beginning after December 15, 2021.

The Company adopted ASU 2016-02 effective January 1, 2022 using the Comparatives Under 840 transition method whereby the Company will continue to present prior period financial statements and disclosures under ASC 840. In addition, the Company elected the transition package of three practical expedients permitted within the standard, among other practical expedients which allowed the Company to carry forward prior conclusions about lease identification and classification which allows not separating lease and non-

lease components and allows not recording leases with an initial term of twelve months or less on the balance sheet across all existing asset classes.

The adoption of the new standard resulted in the balance sheet recognition of additional assets of approximately $333,000 and lease liabilities of approximately $333,000. For additional information regarding the Company's lease arrangements, see Note 8 in the notes to financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments — Credit Losses* (Topic 326): *Measurement of Credit Losses on Financial Instruments*, which changes the impairment model for most financial assets and certain other instruments. For receivables, loans and other instruments, entities will be required to use a new forward-looking "expected loss" model that generally will result in the earlier recognition of allowance for losses. In addition, an entity will have to disclose significantly more information about allowances and credit quality indicators. The new standard is effective for the Company for fiscal years beginning after December 15, 2022. The Company adopted this new standard as of January 1, 2023. ASU 2016-13 did not have a material impact on the Company's financial statements.

Accounting Standards Issued, Not Yet Adopted

In August 2020, the FASB issued ASU No. 2020-06, *Accounting for Convertible Instruments and Contracts in an Entity's Own Equity* ("ASU 2020-06"), which simplifies an issuer's accounting for convertible instruments by reducing the number of accounting models that require separate accounting for embedded conversion features. ASU 2020-06 also simplifies the settlement assessment that entities are required to perform to determine whether a contract qualifies for equity classification and makes targeted improvements to the disclosures for convertible instruments and earnings-per-share (EPS) guidance. This update will be effective for the Company's fiscal years beginning after December 15, 2023, and interim periods within those fiscal years. Early adoption is permitted, but no earlier than fiscal years beginning after December 15, 2020, and interim periods within those fiscal years. Entities can elect to adopt the new guidance through either a modified retrospective method of transition or a fully retrospective method of transition. The Company is currently evaluating the impact of the pending adoption of the new standard on its financial statements and intends to adopt the standard as of January 1, 2024.

Revenue Recognition and Accounts Receivable

The Company recognizes revenue using the five-step approach as follows: (1) identify the contract with the customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the Company satisfies the performance obligations.

The Company generates revenue by procuring various specimens from hospitals, laboratories, and other supply sites, for the Company's medical research customers using the Company's proprietary software, the iSpecimen Marketplace, to identify, locate, and ultimately validate the required specimens to the Company's customers' requested specifications. The Company's performance obligation is to procure a specimen meeting the customer's specification(s) from a supplier, on a "best efforts" basis, for the Company's customer at the agreed price per specimen as indicated in the customer's contract with the Company. The Company does not currently charge suppliers or customers for the use of the Company's proprietary software. Each customer will execute a material and data use agreement with the Company or agrees to online purchase terms, each of which includes terms such as specimen and data use, shipment terms, payment and cancellation terms. These are then supplemented by purchase orders that specify specimen requirements including detailed inclusion/exclusion criteria, quantities to be collected, and pricing. Collectively, these customer agreements represent the Company's contracts with its customer. Generally, contracts have fixed unit pricing. For certain specimen orders, a refundable customer deposit may be required prior to order fulfillment depending on project set-up requirements which is presented as deferred revenue. The Company expects to recognize the deferred revenue within the next twelve months.

Specimen collections occur at supply sites within the Company's network. "Collection" is when the specimen has been removed, or "collected" from the patient or donor. A specimen is often collected specifically for a particular Company order. Once collected, the specimen is assigned by the supplier to the Company and control of the specimen passes to the Company. "Accession" is the process whereby a collected specimen and associated data are registered and assigned in the iSpecimen Marketplace to a particular customer order, which can occur while a specimen is at the supplier site or while at the Company site and it is when control of the specimen passes to the customer. Suppliers may ship specimens to the Company or directly to the customer if specimens must be delivered within a short time period (less than 24 hours after collection) or shipping to the Company is not practical.

The Company has evaluated principal versus agent considerations as part of the Company's revenue recognition policy. The Company has concluded that it acts as principal in the arrangement as it manages the procurement process from beginning to end and determines which suppliers will be used to fulfill an order, usually take physical possession of the specimens, set prices for the specimens, and bears the responsibility for customer credit risk.

The Company recognizes revenue over time, as the Company has created an asset with no alternative use to the Company which has an enforceable right to payment for performance completed to date. At contract inception, the Company reviews a contract, and related order upon receipt, to determine if the specimen ordered has an alternative use by the Company. Generally, specimens ordered do not have an alternative future use to the Company and the performance obligation is satisfied when the related specimens are accessioned. The Company uses an output method to recognize revenue for specimens with no alternative future use. The output is measured based on the number of specimens accessioned. In the rare circumstances where specimens do have an alternative future use, the Company's performance obligation is satisfied at the time of shipment.

Customers are typically invoiced upon shipment. Depending on the quantity of specimens ordered, it may take several accounting periods to completely fulfill a purchase order. In other words, there can be multiple invoices issued for a single purchase order, reflecting the specimens being accessioned over time. However, specimens are generally shipped as soon as possible after they have been accessioned.

Once a specimen that has no alternative future use, and for which the Company has an enforceable right to payment, has been accessioned, the Company records the offset to revenue in accounts receivable -- unbilled. Once the specimen has been shipped and invoiced, a reclassification is made from accounts receivable -- unbilled to accounts receivable.

Customers are generally given fourteen days from the receipt of specimens to inspect the specimens to ensure compliance with specifications set forth in the purchase order documentation. Customers are entitled to either receive replacement specimens or receive reimbursement of payments made for such specimens. The Company has a nominal history of returns for nonacceptance of specimens delivered. When this has occurred, the Company has given the customer a credit for the returns. The Company has not recorded a returns allowance.

The following table summarizes the Company's revenue for the years ended December 31:

	Year ended December 31,	
	2022	2021
Specimens – contracts with customers	$ 9,956,582	$ 10,944,255
Shipping and other	445,721	191,048
Revenue	$ 10,402,303	$ 11,135,303

The Company carries its accounts receivable at the invoiced amount less an allowance for doubtful accounts. On a periodic basis, the Company evaluates its accounts receivable to determine if an allowance for doubtful accounts is necessary, based on economic conditions and each customer's payment history. Receivables are written off when deemed uncollectible, with any future recoveries recorded as income when received. As of December 31, 2022, and 2021, the Company had an allowance for doubtful accounts of $230,999 and $269,170, respectively.

The Company applies the practical expedient to account for shipping and handling activities as fulfillment cost rather than as a separate performance obligation. Shipping and handling costs incurred are included in cost of revenue.

Property and Equipment, net

Property and equipment are stated at cost, net of accumulated depreciation and amortization. When an item is sold or retired, the costs and related accumulated depreciation or amortization are eliminated, and the resulting gain or loss, if any, is credited or charged to

income in the statement of operations. The Company provides for depreciation and amortization using the straight-line method over the estimated useful lives of the respective assets. A summary of estimated useful lives is as follows:

Asset category	Estimated Useful Life
Website	3 years
Computer equipment and purchased software	5 years
Equipment	5 years
Furniture and fixtures	5 years
Leasehold improvements	Shorter of useful life of asset or lease term

Major improvements are capitalized while replacement, maintenance and repairs which do not improve or extend the lives of the respective assets are expensed as incurred.

Internally Developed Software, net

The Company capitalizes certain internal and external costs incurred during the application development stage of internal-use software projects until the software is ready for its intended use. Amortization of the asset commences when the software is complete and placed into service and is recorded in operating expenses. The Company amortizes completed internal-use software over its estimated useful life of five years on a straight-line basis. Costs incurred during the planning, training and post-implementation stages of the software development life cycle are classified as technology and are expensed to operations as incurred.

Impairment of Long-Lived Assets

Management reviews long-lived assets for impairment when circumstances indicate the carrying amount of an asset may not be recoverable. An impairment loss is recognized when expected cash flows are less than the asset's carrying value. Long-lived assets consist of property and equipment and internal-use software. No impairment charges were recorded for the years ended December 31, 2022 and 2021.

Debt Issuance Costs

Debt issuance costs are recorded net against the related debt and amortized to interest expense over the life of the related debt. During the years ended December 31, 2022 and 2021, amortized debt issuance costs of $77,384 and $875,293 respectively, were recorded as a component of interest expense.

Cost of Revenue

Cost of revenue primarily consists of the purchase price to acquire specimens from hospitals and laboratories; inbound and outbound shipping costs; supply costs related to samples; payment processing and related transaction costs; and costs paid to the supply sites to support sample collections. Shipping costs upon receipt of products from suppliers are recognized in cost of revenue. For the year ended December 31, 2022, the Company acquired approximately 12% of specimens from one vendor. For the year ended December 31, 2021, the Company acquired approximately 11%, 11%, 10% and 10% of specimens from four vendors.

Technology

Technology costs include payroll and related expenses for employees involved in the development and implementation of iSpecimen's technology; software license and system maintenance fees; outsourced data center costs; data management costs; depreciation and amortization; and other expenses necessary to support technology initiatives. Collectively, these costs reflect the investments the Company makes in order to offer a wide variety of products and services to customers. Technology and data costs are generally expensed as incurred.

A portion of technology costs are related to research and development. Costs incurred for research and development are expensed as incurred, except for software development costs that are eligible for capitalization. Research and development costs primarily include salaries and related expenses, in addition to the cost of external service providers. For the years ended December 31, 2022, and 2021, research and development costs totaled $1,473,520 and $879,243, respectively.

Sales and Marketing

Sales and marketing costs primarily consist of payroll and related expenses for personnel engaged in marketing and selling activities, including salaries and sales commissions; travel expenses; public relations and social media costs; ispecimen.com website development and maintenance costs; search engine optimization fees; advertising costs; direct marketing costs; trade shows and events fees; marketing and customer relationship management software; and other marketing-related costs. Advertising expenses consist primarily of marketing, public relations, and promotional materials. Advertising costs are expensed as incurred and totaled $188,026 and $229,223 for the years ended December 31, 2022 and 2021, respectively.

Supply Development

The Company has agreements with supply partners that allow the Company to procure specimens from them and distribute these samples to customers. Supply development costs primarily include payroll and related expenses for personnel engaged in the development and management of this supply network; related travel expenses; regulatory compliance costs to support the network; and other supply development and management costs.

Fulfillment

Fulfillment costs primarily consist of those costs incurred in operating and staffing operations and customer service teams, including costs attributable to assess the feasibility of specimen requests; creating and managing orders; picking non-capitalizable, packaging, and preparing customer orders for shipment; responding to inquiries from customers; and laboratory equipment and supplies.

General and Administrative

General and administrative expenses primarily consist of costs for corporate functions, including payroll and related expenses for human resources, legal, finance, and executive teams; associated software licenses; facilities and equipment expenses, such as depreciation and amortization expense and rent, outside legal expenses, insurance costs, and other general and administrative costs.

Share-Based Compensation

The Company records share-based compensation for options granted to employees, non-employees, and to members of the board of directors for their services on the board of directors based on the grant date fair value of awards issued, and the expense is recorded on a straight-line basis over the requisite service period. Forfeitures are recognized when they occur.

The Company uses the Black-Scholes-Merton option pricing model to determine the fair value of stock options. The use of the Black-Scholes-Merton option-pricing model requires management to make assumptions with respect to the expected term of the option, the expected volatility of the common stock consistent with the expected life of the option, risk-free interest rates and expected dividend yields of the common stock. The Company has concluded that its historical share option exercise experience does not provide a reasonable basis upon which to estimate expected term. Therefore, the expected term was determined according to the simplified method, which is the average of the vesting tranche dates and the contractual term. Due to the lack of company specific historical and implied volatility data, the estimate of expected volatility is primarily based on the historical volatility of a group of similar companies that are publicly traded. For these analyses, companies with comparable characteristics are selected, including enterprise value and position within the industry, and with historical share price information sufficient to meet the expected life of the share-based awards. The Company computes the historical volatility data using the daily closing prices for the selected companies' shares during the equivalent period of the calculated expected term of its share-based awards. The risk-free interest rate is determined by reference to U.S. Treasury zero-coupon issues with remaining maturities similar to the expected term of the options. The Company has not paid, and does not anticipate paying, cash dividends on shares of its common stock.

Subsequent to the IPO, the fair value of the Company's common stock was equal to the closing price on the specified grant date.

Prior to the IPO, in order to determine the fair value of the Company's common stock, the Company considered, among other things, contemporaneous valuations of the Company's common stock, the Company's business, financial condition and results of operations, including related industry trends affecting its operations; the likelihood of achieving a liquidity event, such as an initial public offering,

or IPO, or sale, given prevailing market conditions; the lack of marketability of the Company's common stock; the market performance of comparable publicly traded companies; and U.S. and global economic and capital market conditions.

Restricted Stock Units (RSUs)

The Company recognizes share-based compensation expense from restricted stock units (RSUs) ratably over the specified vesting period. The fair value of RSUs is determined to be the closing share price of the Company's common stock on the grant date.

Income Taxes

The Company provides for income taxes using the asset and liability method. The Company provides deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the Company's financial statement carrying amounts and the tax bases of assets and liabilities using enacted tax rates expected to be in effect in the years in which the differences are expected to reverse. A valuation allowance is provided to reduce the deferred tax assets to the amount that will more likely than not be realized.

The Company does not have any material uncertain tax positions for which reserves would be required. The Company will recognize interest and penalties related to uncertain tax positions, if any, in income tax expense.

Common Stock Warrants

The Company accounts for common stock warrants as either equity instruments or liabilities, depending on the specific terms of the warrant agreement. The warrants shall be classified as a liability if 1) the underlying shares are classified as liabilities or 2) the entity can be required under any circumstances to settle the warrant by transferring cash or other assets. The measurement of equity-classified nonemployee share-based payments is generally fixed on the grant date and are considered compensatory. For additional discussion on warrants, see Note 9.

Net Loss Per Share

Basic net loss per share is calculated by dividing net loss applicable to common stockholders by the weighted-average number of shares outstanding during the period, without consideration for common stock equivalents. Diluted net loss per share is calculated by adjusting the weighted-average number of shares outstanding for the dilutive effect of common stock equivalents outstanding for the period, determined using the treasury-stock method. Therefore, basic and diluted net loss per share applicable to common stockholders were the same for all periods presented.

The table below provides total shares outstanding, as of December 31:

	2022	2021
Shares issuable upon vesting of RSUs	267,505	282,417
Shares issuable upon exercise of stock options	297,559	255,147
Shares issuable upon exercise of PIPE Warrant to purchase common stock	1,312,500	1,312,500
Shares issuable upon exercise of Lender Warrant to purchase common stock	12,500	12,500
Shares issuable upon exercise of Underwriter Warrants to purchase common stock	90,000	90,000

3. FACTORING OF ACCOUNTS RECEIVABLE

On January 1, 2021, the Company entered into a factoring agreement (the "Factoring Agreement") with Versant Funding LLC ("Versant"), in which the Company agreed to sell a minimum of $1.2 million of its accounts receivable without recourse, and which the Company granted Versant a security interest in substantially all of the Company's assets, in accordance with the terms of the Factoring Agreement. On June 30, 2021, the Company terminated the Factoring Agreement paying Versant $139,374 in settlement of its balance payable to Versant pursuant to the Factoring Agreement. Upon termination of the Factoring Agreement, all future payments of accounts receivable shall be made directly to the Company. In July 2021, the Company received notice from Versant regarding an additional amount owed in relation to past factored receivables, resulting in an additional $214,497 payment to Versant.

During the year ended December 31, 2021, net receivables sold under the Factoring Agreement was approximately $3.4 million. Without recourse indicates that the Company assigns and transfers its rights, title, and interest in and to the accounts receivable to Versant, meaning that the Company will not be liable to repay all or any portion of the advance amount if any portion of the accounts receivable is not paid by our customer(s). Information on accounts receivable identified for factoring are provided and verified by Versant prior to being accepted for factoring. Pursuant to the Factoring Agreement, the factoring fees range from 2.5% to 15% of the purchase price of the accounts receivable based on the age of the accounts receivable when collected. The Company is also charged for certain reimbursable administrative fees incurred on its behalf for the management of the program. The sales of accounts receivable in accordance with the factoring arrangements were recognized as a reduction of accounts receivable, net in the balance sheet as of December 31, 2021.

4. PROPERTY AND EQUIPMENT, NET

Property and equipment, net consisted of the following at December 31:

	2022	2021
Website	$ 285,377	$ 105,380
Computer equipment and purchased software	84,589	84,588
Equipment	35,449	35,449
Furniture and fixtures	87,184	87,184
Leasehold improvements	60,441	24,935
Total property and equipment	553,040	337,536
Accumulated depreciation	(327,188)	(304,755)
Total property and equipment, net	$ 225,852	$ 32,781

Depreciation expense for property and equipment was $22,433 and $45,358 for the years ended December 31, 2022 and 2021, respectively.

5. INTERNALLY DEVELOPED SOFTWARE, NET

During 2022 and 2021, the Company capitalized $2,975,686 and $1,035,367, respectively, of internally developed software costs in connection with the development and continued enhancement of the technology platform and web interfaces. Capitalized costs primarily consist of payroll and payroll-related costs for the Company's employees. The Company recognized $1,182,766 and $958,639 of amortization expense associated with capitalized internally developed software costs during the years ended December 31, 2022 and 2021, respectively. Accumulated amortization associated with capitalized internally developed software costs as of December 31, 2022 and 2021 was $5,016,670 and $3,833,904, respectively.

6. SEVERANCE

Dr. Christopher Ianelli

On September 19, 2022, the Company received a notice of departure from Dr. Christopher Ianelli to vacate his position of Chief Executive Officer and President of the Company, effective as of October 24, 2022, as a result of the non-renewal of his Executive Employment Agreement dated June 21, 2021. Dr. Ianelli continues to serve on the Company's board of directors until the 2024 Annual Meeting of Stockholders, or until the election and qualification of Dr. Ianelli's successor in office, subject to his earlier death, resignation, or removal.

The Company entered into a Separation Agreement with Dr. Ianelli, dated October 24, 2022 (the "Ianelli Separation Agreement"). Pursuant to the Ianelli Separation Agreement the Company shall pay severance equal to 12 months of base salary in effect as of the Separation Date in the amount of $350,000. The severance payments shall be paid in equal installments commencing on the Company's first regular payroll date after the Effective Date of the separation agreement and ending on the 12-month anniversary of the Effective Date. The Company recognized a severance expense and corresponding liability in the amount of $376,400 for Dr. Ianelli's severance payment plus applicable and COBRA benefits in the year ended December 31, 2022. The severance expense is recorded within general and administrative expense on the statement of operations and the corresponding liability is recorded in accrued liabilities on the balance sheet.

The Company considered the salary and benefits paid to Dr. Ianelli through his departure date of October 24, 2022 as normal payroll expenses incurred in that current period. The Company recorded a share-based compensation expense of approximately $40,000 on October 24, 2022 for the partial acceleration of RSUs that were vested on October 24, 2022, in accordance with the original terms of Dr. Ianelli's Restricted Stock Unit agreement.

Jill Mullan

On September 20, 2022, the Company received a notice of departure from Jill Mullan to vacate the position of Chief Operating Officer of the Company, effective as of October 24, 2022. At the time the notice of departure was received from Ms. Mullan, she had received an executive employment agreement for renewal of her employment with the Company. Ms. Mullan continues to serve on the Company's board of directors until the 2023 Annual Meeting of Stockholders, or until the election and qualification of Ms. Mullan's successor in office, subject to her earlier death, resignation, or removal.

The Company and Ms. Mullan executed a separation agreement on October 28, 2022 with an effective date of October 24, 2022 (the "Mullan Separation Agreement"). The Company recognized $325,000 in severance expense for Ms. Mullan on November 4, 2022, the date on which her separation agreement revocation period expired. The severance expense is recorded within general and administrative expense on the statement of operations and the corresponding liability is recorded in accrued liabilities on the balance sheet. The Company considered the salary and benefits paid to Ms. Mullan through her departure date of October 24, 2022 as normal payroll expenses incurred in that current period. The Company recorded an expense of approximately $40,000 on October 24, 2022 for the partial acceleration of RSUs that were vested on October 24, 2022.

7. DEBT

Note Payable

In May 2020, the Company applied for and received $783,008 in unsecured loan funding from the Paycheck Protection Program (the "PPP Loan"), established pursuant to the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and administered by the U.S. Small Business Administration ("SBA").

Under the terms of the promissory note (the "PPP Note") and the PPP Loan, interest accrues on the outstanding principal at the rate of 1% per annum. Interest expense under the PPP Loan amounted to $279 the years ended December 31, 2021.

The Company received full forgiveness of all outstanding principal of, and accrued and unpaid interest on the PPP Loan as of January 13, 2021. The forgiveness of the PPP Loan qualified for debt extinguishment and as a result, the outstanding principal and accrued and unpaid interest on the PPP Loan was recorded as a net gain on extinguishment of the PPP Loan totaling $788,156 for the year ended December 31, 2021 and the debt was eliminated from the Company's balance sheet.

Related Party Convertible Notes Payable

During 2017 and 2018, the Company issued Related Party Convertible Promissory Notes (the "Convertible Notes") to related parties totaling $5,500,000. The Convertible Notes bear interest at a rate of six percent (6%) per annum, without compounding. The Convertible Notes are convertible into shares of the Company's preferred stock, upon the following: (i) a new permanent equity financing yielding gross proceeds of in excess of $10,000,000, including conversion of the outstanding principal of the Convertible Notes (a "Qualified Equity Financing"), (ii) achievement of positive free flow from operations on a quarterly basis for the two consecutive quarters ending 90 days prior to the maturity date, (iii) an acquisition, or (iv) upon election of the holders of the majority of the aggregate principal outstanding (the "Majority Lenders"). Preferred stock issued on conversion shall be shares of the Company's stock that have substantially the same rights and preferences as the Company's Series B Preferred Stock or that which is issued in such Qualified Equity Financing, depending on the applicable conversion event. The conversion rate shall be equal to the issue price of the IPO Stock (as defined in Note 1) less a thirty percent (30%) discount.

The maturity date on the Convertible Notes is the earliest occurrence of (i) the closing of a Qualified Equity Financing, (ii) the date upon which prepayment by the Company occurs with the consent of the Majority Lenders, (iii) the date upon which the Convertible Notes are otherwise converted into equity securities, or (iv) March 31, 2020. In March 2020, the Majority Lenders elected to extend the

maturity date through September 30, 2020. On October 1, 2020, the maturity date was further extended to March 31, 2021. On March 8, 2021, the maturity date was further extended to June 30, 2021.

The terms related to the Qualified Equity Financing conversion and acquisition conversion features (collectively, the "Embedded Conversion Features") were determined by the Company not to have been clearly and closely related to the Convertible Note host instrument and meet the definition of a derivative. Therefore, the Embedded Conversion Features were bifurcated from the Convertible Notes and separately measured at fair value. The derivative liability was subsequently marked-to-market each reporting period with changes in fair value recognized in the statement of operations.

Interest expense on the Convertible Notes totaled $156,411 for the year ended December 31, 2021 and debt issuance costs on the Convertible Notes was fully amortized as of December 31, 2021.

During the year ended December 31, 2021, amortization of debt discounts amounted to $1,088 and as of December 31, 2021, the debt discount was fully amortized.

Conversion of Convertible Notes Payable

In connection with the consummation of the IPO, the Company converted all $5,491,663 of its outstanding principal and all unpaid and accrued interest of $1,257,066 of the Convertible Notes into 1,206,614 shares of common stock on June 21, 2021 at a conversion price of $5.60 per share. As of December 31, 2021, there were no Convertible Notes outstanding. The Company incurred an approximate $260,000 loss on conversion of the Convertible Notes during the year ended December 31, 2021.

Bridge Financing

From 2018 through 2021, the Company issued Secured Promissory Notes (the "Bridge Notes") to new investors and existing stockholders in an amount of $7,000,000 to finance the Company's interim working capital needs. Of this amount, $1,905,000 was issued to related parties ("Related Party Bridge Notes"). The Bridge Notes, including the Related Party Bridge Notes, had identical terms.

The Bridge Notes beared interest at a rate of twenty-four percent (24%) per annum, without compounding. The Bridge Notes and all accrued interest were due and payable on the earliest occurrence of (i) a Qualified Equity Financing, (ii) the sale of the Company, (iii) prepayment by the Company, or (iv) December 31, 2019, which was subsequently extended to June 30, 2020. In June 2020, the Bridge Notes were amended to further extend the maturity date through September 30, 2020. On October 1, 2020, the Company amended the Bridge Notes to extend the maturity date to March 31, 2021 and to increase the interest rate from 24% to 30% after October 1, 2020. On March 15, 2021, the Company entered into an Amendment to the Bridge Notes and the maturity date was further extended to April 30, 2021. The Bridge Notes were repayable upon demand of the Majority Lenders of the Bridge Notes at any time on or after the maturity date. The Bridge Notes were senior in right of payment and priority to any Convertible Debt and subordinated to any Senior Debt. The investors that held the Bridge Notes were granted a security interest in substantially all assets of the Company ("Collateral").

On March 15, 2021, the Company entered into a Fifth Amendment (the "Amendment") to the Note Subscription Agreements and Secured Promissory Notes. The Bridge Notes are hereafter referred to as the "Amended Bridge Notes".

The terms of the Amendment were as follows:

Maturity Date

The Amended Bridge Notes shall beared interest, on a non-compounding basis, at a rate of thirty percent (30%) per annum from and after October 1, 2020, due on maturity on the earlier of (i) the closing of an initial public offering yielding gross proceeds in excess of $18,000,000, exclusive of any existing Convertible Notes (a "Qualified IPO"), (ii) the sale of the Company, (iii) prepayment by the Company, or (iv) April 30, 2021. The Majority Lenders may, with the approval of the Company, elect to extend the maturity date one or more times, at their discretion. On April 28, 2021, the maturity date was further extended to May 31, 2021. On May 12, 2021, the maturity date was further extended to June 30, 2021.

Elective Conversion Upon a Qualified IPO

The holders of the Amended Bridge Notes may voluntarily elect, at any time prior the maturity date and up to March 19, 2021, to convert 50% or more of the outstanding unpaid principal plus any amount of outstanding unpaid interest at the time of the Qualified IPO, into the same class or series of securities of the Company to be offered and issued in the Qualified IPO (the "IPO Stock"). The conversion rate shall be equal to the issue price of the IPO Stock less a thirty percent (30%) discount ("the Elective Conversion Stock"). The elective conversion amount shall be deducted from the amount of principal and interest outstanding in order to arrive at an adjusted principal and interest repayment amount. The sum of the amounts being converted on the Amended Bridge Notes shall first convert the outstanding principal and then the outstanding interest second.

Repayment of Adjusted Outstanding Interest and Principal Upon a Qualified IPO

If a Qualified IPO is consummated prior to the maturity date, and the holders have not voluntarily converted, the Company shall make a cash payment to the holders of the Amended Bridge Notes equal to the greater of either the total adjusted outstanding interest or one and one-half times (1.50X) the Third-Party Loan Proceeds ("Note Repayment Proceeds"). Third-Party Loan Proceeds were defined as the net cash proceeds received by the Company from an institutional lender, commercial bank, or other similar lender consummated on or about the time of the Qualified IPO (or contingent upon the closing of the Qualified IPO).

Repayments shall first be applied to the adjusted outstanding interest due in cash to the holders of the Amended Bridge Notes. The residual value shall be next applied to the adjusted outstanding principal (the "Principal Repayment Proceeds"). The remaining cash repayment shall be calculated by multiplying the Principal Repayment Proceeds by a fraction, the numerator of which is equal to the adjusted principal repayment amount of such note holder, and the denominator of which is equal to the total adjusted outstanding principal to all note holders. In no event shall any cash payment be made to any note holder exceed the sum of the adjusted interest repayment amount plus the adjusted principal repayment amount for such note holder.

Automatic Conversion or Debt Extension

Any remaining unpaid principal, calculated by subtracting the Principal Repayment Proceeds from the total adjusted outstanding principal (the "Automatic Principal Conversion Amount"), shall then automatically convert into IPO Stock at a rate equal to the issue price of the IPO Stock less a ten percent (10%) discount (that is, at a rate of ninety percent (90%) of the issue price of the IPO Stock; such discounted IPO Stock; the "Automatic Conversion Stock"). If the Company is unable to repay at least twenty-five percent (25%) of the total adjusted outstanding principal of the Amended Bridge Notes ("the "Principal Repayment Floor"), then no Automatic Conversion Stock shall be issued and the total adjusted outstanding principal on the Amended Bridge Notes shall remain on the books of the Company under their existing Bridge Notes which shall automatically be amended to (i) have their interest rates adjusted to a rate of fifteen percent (15%) per annum and (ii) have their maturity date set to a date that is eighteen (18) months from the date of the Qualified IPO.

Amended Bridge Notes Embedded Conversion Features

The Company has determined that the terms related to the elective and automatic conversion features (collectively, the "Amended Bridge Notes Embedded Conversion Features") were determined to not be clearly and closely related to the Amended Bridge Notes host instrument and meet the definition of a derivative. Therefore, the Amended Bridge Notes Embedded Conversion Features were bifurcated from the Amended Bridge Notes and separately measured at fair value. The derivative liability was subsequently marked-to-market each reporting period with changes in fair value recognized in the statement of operations.

The Amended Bridge Notes Embedded Conversion Features were initially recorded as a component of the loss on debt extinguishment with an offset to the derivative liability at fair value. No related discount was recorded on the Amended Bridge Notes, and the derivative liability was not amortized using the effective interest rate over the term of the Amended Bridge Notes.

Debt Extinguishment

The Company evaluated the terms of the March 15, 2021 Amendment. This evaluation included analyzing whether there were significant and consequential changes to the economic substance of the Bridge Notes. If the change is deemed insignificant then the change is considered a debt modification, whereas if the change is substantial the change is reflected as a debt extinguishment. A modification or

an exchange that adds or eliminates a substantive conversion option as of the conversion date would always be considered substantial and require extinguishment accounting. The addition of the elective and mandatory conversion options, as described above, would be considered substantive based on the likelihood of the option being exercised in the near future in connection with a Qualified IPO event. Accordingly, the Company accounted for the amendment of the Notes as an extinguishment of the original Bridge Notes.

As a result, the Company recorded a loss on extinguishment of $2,740,425 in the year ended December 31, 2021. The extinguishment loss also included a write-off of unamortized debt issuance costs of approximately $5,700. Additionally, the Company recorded a discount on the Amended Bridge Notes of approximately $869,600 in the year ended December 31, 2021 , which was amortized through interest expense over the life of the Amended Bridge Notes (i.e., March 15, 2021 through April 30, 2021).

Interest expense on the Bridge Notes, including $320,469 of related party interest expense, totaled $1,014,657 in the year ended December 31, 2021.

The debt issuance costs on the Amended Bridge Notes was fully amortized as of December 31, 2021.

Amortization of the debt discount on the Amended Bridge Notes totaled approximately $869,600 for the year ended December 31, 2021.

Conversion of Bridge Notes

Upon the completion of the IPO, the Company converted $4,000,000 of its outstanding principal and accrued interest of $717,646 of the Bridge Notes, as amended, into 842,429 shares of common stock at a conversion price of $5.60 per share. The Company recognized a gain on the conversion of $9,746.

The conversion of the Amended Bridge Notes and Convertible Notes upon the consummation of the IPO resulted in an increase in total stockholder's equity of $16,392,344 in the year ended December 31, 2021. The components of this non-cash transaction are as follows for the year ended December 31, 2021:

Write off of derivative liability relating to the Convertible Notes	$	2,644,000
Extinguishment of Convertible Notes principal		5,486,199
Accrued and unpaid interest on the Convertible Notes		1,257,066
Accumulated amortization on debt issuance costs		33,035
Loss on extinguishment of Convertible Notes		260,185
Write off of debt issuance costs		(27,573)
Write off of derivative liability relating to the Bridge Notes		2,031,300
Extinguishment of Bridge Notes principal		4,000,000
Accrued and unpaid interest on the Bridge Notes		717,646
Gain on extinguishment of Bridge Notes		(9,514)
Total conversion of Convertible Notes and Bridge Notes into common stock	$	16,392,344

During the third quarter of 2021, the Company paid off remaining principal of $3,000,000 and accrued interest of $64,110. As of December 31, 2021, there were no Bridge Notes outstanding.

Term Loan

On August 13, 2021 (the "Closing Date"), the Company entered into a Term Loan with Western Alliance Bank (the "Lender") in the amount of $3,500,000 for working capital needs. The Company has the option to request an additional advance in the amount of $1,500,000, which the Company has not yet borrowed as of December 31, 2022. The additional advance of $1,500,000 is available to the Company during the "Draw Period," which is defined in the Term Loan as the "period commencing on the Closing Date and ending the earlier to occur of (a) February 13, 2023, and (b) an Event of Default." The Term Loan bears interest at a rate equal to three-quarters of one percent (0.75%) above the Prime Rate. Interest is due and payable on the tenth (10th) calendar day of each month during the term of the Term Loan. The Term Loan principal is payable in thirty (30) equal monthly installments, plus accrued interest, beginning on March 10, 2023, and continuing on the same day of each month through August 10, 2025 (the "Term Loan Maturity Date"), at which time all amounts shall be immediately due and payable.

The Company shall have the option to prepay all, but not less than all, of the outstanding loan balance, provided the Company a) delivers written notice to the financial institution of their election to prepay such Term Loan at least ten (10) days prior to such prepayment and b) pay, on the date of such prepayment, (1) all outstanding principal with respect to the Term Loan, plus accrued but unpaid interest, plus (2) all fees (including any late fee), and other sums, including bank expenses, if any, that shall have become due and payable. The Lender which holds the Term Loan is granted a security interest in substantially all assets of the Company ("Collateral").

On November 3, 2022, the Company paid off the outstanding principal balance of $3,500,000 and accrued interest of approximately $16,000 on the Term Loan.

As of the pay-off date, the interest rate on the Term Loan is 7.00% which is equal to 0.75% above the Prime Rate of 6.25%. Interest expense on the Term Loan totaled $154,509 and $47,444 for the years ended December 31, 2022 and 2021, respectively.

Debt issuance costs totaled $81,989, comprised of a warrant to purchase 12,500 shares of common stock issued to the Lender with a fair value of $49,072 (the "Lender Warrant"), fees paid of $23,066 to the Lender and legal costs of $9,851. Amortization of the debt issuance costs related to the Term Loan, included in interest expense on the statement of operations, totaled $77,384 and $5,175 for the years ended December 31, 2022 and 2021, respectively.

Unamortized debt issuance costs on the Term Loan totaled $0 and $77,384 at December 31, 2022 and 2021, respectively.

8. COMMITMENTS AND CONTINGENCIES

Leases

The Company has one operating lease of office space in Lexington, Massachusetts that will expire on February 28, 2024. Leases with an initial term of twelve months or less are not recorded on the balance sheet date, and the Company does not separate lease and non-lease components of contracts. There are no material residual guarantees associated with any of the Company's leases, and there are no significant restrictions or covenants included in the Company's lease agreements.

The Company's lease agreement does not provide an implicit borrowing rate. Therefore, the Company used a benchmark approach to derive an appropriate imputed discount rate. The Company benchmarked itself against other companies of similar credit ratings and comparable quality and derived an imputed rate, which was used to discount its real estate lease liabilities. The Company used estimated incremental borrowing rates for its active real estate lease. The calculated incremental borrowing rate was 5.96%, which was calculated based on remaining lease term of 1.92 years as of January 1, 2022.

There was no sublease rental income for the year ended December 31, 2022, and the Company is not the lessor in any lease arrangement, and there were no related-party lease agreements.

Lease Costs

The table below presents certain information related to the lease costs for the Company's operating lease for year ended December 31, 2022:

Operating lease expense	$	164,314
Short-term lease expense		12,022
Total lease cost	$	176,336

Lease Position as of December 31, 2022

Right of use lease assets and lease liabilities for our operating lease were recorded in the balance sheet as follows:

Assets		
Operating lease right-of-use assets	$	184,692
Total lease assets	$	184,692
Liabilities		
Current liabilities:		
Operating lease liability – current portion	$	158,451
Noncurrent liabilities:		
Operating lease liability – net of current portion		27,396
Total lease liability	$	185,847

Lease Terms and Discount Rate

The table below presents certain information related to the weighted average remaining lease term and the weighted average discount rate for the Company's operating leases as of December 31, 2022:

Weighted average remaining lease term (in years) – operating leases	1.17
Weighted average discount rate – operating leases	5.96%

Undiscounted Cash Flows

Future lease payments included in the measurement of lease liabilities on the balance sheet are as follows:

2023	$	165,254
2024		27,601
Total future minimum lease payments		192,855
Less effect of discounting		(7,008)
Present value of future minimum lease payments	$	185,847

Rent expense for the years ended December 31, 2022 and 2021 amounted to $176,336 and $167,167, respectively.

Cash Flows

Supplemental cash flow information related to operating lease for the year ended December 31, 2022 was as follows:

Non-cash operating lease expense (operating cash flow)	$	148,431
Change in operating lease liabilities (operating cash flow)	$	(147,276)
Supplemental non-cash amounts of operating lease liabilities arising from obtaining right-of-use assets	$	333,123

Legal Proceedings

From time to time the Company is involved in litigation, claims, and other proceedings arising in the ordinary course of business. Such litigation and other proceedings may include, but are not limited to, actions relating to employment law and misclassification, intellectual property, commercial or contractual claims, or other consumer protection statutes. Litigation and other disputes are inherently unpredictable and subject to substantial uncertainties and unfavorable resolutions could occur. As of December 31, 2022, there was no material litigation against the Company.

9. STOCKHOLDERS' EQUITY (DEFICIT)

Pursuant to the Company's fourth amended and restated certificate of incorporation dated June 17, 2021, the Company's authorized capital is 250,000,000 shares, of which (1) 200,000,000 shares are common stock, par value $0.0001 per share and (2) 50,000,000 are preferred stock, par value $0.0001 per share, which may, at the sole discretion of the Company's board of directors be issued in one or more series.

Redeemable Convertible Preferred Stock

Upon the consummation of the IPO, 1,291,012 shares of outstanding preferred stock automatically converted into 1,291,012 shares of common stock. As of December 31, 2021, there were no shares of preferred stock outstanding.

Common Stock

During the year ended December 31, 2021, the Company issued 2,250,000 shares of common stock in connection with the IPO. Additionally, during the year ended December 31, 2021, the Company issued 1,206,614 shares of common stock in connection with the conversion of all the Convertible Notes and accrued interest and 842,429 shares of common stock in connection with the conversion of $4.7 million of the outstanding principal and accrued interest on the Bridge Notes.

On July 1, 2021, the Company issued and sold 337,500 additional shares of common stock, pursuant to the underwriters' exercise of its overallotment option, at a public offering price of $8.00 per share, for aggregate gross proceeds of $2.7 million. The net proceeds from the overallotment were $2.5 million after deducting underwriting discounts of $0.2 million. Inclusive of the underwriters' option to purchase additional shares, the Company received approximately $18.2 million in net proceeds from the IPO, after deducting underwriting discounts of $1.9 million and other offering costs of $0.6 million.

On December 1, 2021, the Company completed a PIPE in which the Company issued and sold 1,749,999 shares of common stock and the warrants to purchase up to an aggregate of 1,312,500 shares of common stock, at a combined purchase price of $12.00 per share for aggregate gross proceeds of approximately $21 million. The net proceeds from the PIPE were $19.6 million after deducting placement agent commissions of $1.26 million and other offering costs.

During the year ended December 31, 2021, the Company issued 2,000 shares of common stock in exchange for investor relations services. The shares of common stock had a fair value of $6.25 per share for a total aggregate value of $12,500.

During the year ended December 31, 2022, the Company issued 81,043 shares of common stock for cash exercises of options totaling $78,641.

During the year ended December 31, 2022, the Company issued 1,000 shares of common stock in exchange for investor relations services. The shares of common stock had a fair value of $6.25 per share for a total aggregate value of $6,250.

Warrants

During the year ended December 31, 2021, warrant holders exercised 17,889 warrants to purchase common stock, resulting in the issuance of 17,889 shares of common stock for total proceeds of $992. As of December 31, 2021, 5,420 warrants expired, and were not exercised.

Underwriter Warrants

In connection with the Company's underwriting agreement with ThinkEquity, a division of Fordham Financial Management, Inc. and the representative of the Company's IPO underwriters, the Company entered into a warrant agreement to purchase up to 90,000 shares of common stock, par value $0.0001 (the "Underwriter Warrant"). The Underwriter Warrant is exercisable at a per share exercise price of $10.00 and is exercisable at any time and from time to time, in whole or in part, during the four and one-half year period commencing 180 days from the effective date of the registration statement. The Warrant became exercisable on or after December 16, 2021 (six months from the effective date of the offering) and expires on June 15, 2026. Upon issuance of these warrants, as partial compensation for its services as an underwriter, the fair value of approximately $0.4 million was recorded as equity issuance costs in period ended

December 31, 2021. As of December 31, 2022, the Underwriter Warrant had not been exercised, and had a weighted average exercise price of $10 per share and a remaining weighted average time to expiration of 3.46 years.

Lender Warrant

In connection with the Term Loan entered into on August 13, 2021, the Company issued a Lender Warrant to Lender to purchase 12,500 shares of common stock of the Company. The Lender Warrant is exercisable at a per share exercise price of $8.00 and is exercisable at any time on or after August 13, 2021 through August 12, 2031. The Company determined that the Lender Warrant was equity-classified. As of December 31, 2022, the Lender Warrant had not been exercised, and had a weighted average exercise price of $8 per share and a remaining weighted average time to expiration of 8.62 years.

PIPE Warrants

On December 1, 2021, the Company completed a private placement (the "PIPE") in which the Company issued warrants (the "PIPE Warrants") to purchase up to an aggregate of 1,312,500 shares of common stock. These PIPE Warrants have an exercise price of $13.00 per share and are immediately exercisable upon issuance and will expire on the five and one-half-year anniversary of the issuance date. As of December 31, 2022, the PIPE Warrants had not been exercised, and had a weighted average exercise price of $13 per share and a remaining weighted average time to expiration of 4.50 years.

The following assumptions were used to estimate the fair value of warrants granted using the Black-Scholes-Merton option pricing model during the years ended December 31:

	2022	2021
Assumptions:		
Risk-free interest rate	—	0.90% - 1.30%
Expected term (in years)	—	5.00 - 10.00
Expected volatility	—	59% - 69%
Expected dividend yield	—	—

A summary of total warrant activity during the years ended December 31, 2022 and 2021 is as follows:

	Warrants Outstanding	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term in Years
Balance at December 31, 2020	23,309	$ 0.06	0.75
Granted	1,415,000	12.77	5.34
Exercised	(17,889)	0.06	—
Cancelled/forfeited	(5,420)	0.06	—
Balance at December 31, 2021	1,415,000	$ 9.76	5.34
Granted	—	—	—
Exercised	—	—	—
Cancelled/forfeited	—	—	—
Balance at December 31, 2022	1,415,000	$ 12.77	4.47

10. SHARE-BASED COMPENSATION

2021 Stock Incentive Plan

On June 16, 2021, the Company adopted the iSpecimen Inc. 2021 Stock Incentive Plan ("the 2021 Plan"). The 2021 Plan was adopted to enhance our ability to attract, retain and motivate employees, officers, directors, consultants and advisors by providing such persons with equity ownership opportunities and performance-based incentives. The 2021 Plan authorizes options, restricted stock, restricted stock units and other stock-based awards. The Company's Board of Directors, or any committee to which the Board of Directors

delegates such authority, has the sole discretion in administering, interpreting, amending or accelerating the 2021 Plan. Awards may be made under the 2021 Plan for up to 608,000 shares of the Company's common stock, and the 2021 Plan was made effective with the completion of the IPO.

During the year ended December 31, 2022, 187,569 and 122,485 equity awards were issued from the Company's 2013 Stock Incentive Plan and 2021 Stock Incentive Plan, respectively.

As of December 31, 2022, there were 87 and 122,015 shares of common stock available for future grants under the Company's 2013 Stock Incentive Plan and 2021 Stock Incentive Plan, respectively.

Stock Options

The following assumptions were used to estimate the fair value of stock options granted using the Black-Scholes-Merton option pricing model during the years ended December 31:

	2022	2021
Assumptions:		
Risk-free interest rate	0.43% – 0.48%	0.47% – 0.66
Expected term (in years)	1.09 – 3.64	5.81 – 5.89
Expected volatility	59.97%	49.83% –49.98
Expected dividend yield	—	—

A summary of stock option activity under the 2013 Stock Incentive Plan and 2021 Stock Incentive Plans is as follows:

	Options Outstanding	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term in Years	Aggregate Intrinsic Value
Balance at December 31, 2020	251,847	$ 1.00	8.06	$ 89,100
Granted	70,164	5.74		432,520
Exercised	(55,694)	1.00		379,276
Cancelled/forfeited	(11,170)	1.00		
Balance at December 31, 2021	255,147	$ 2.32	7.75	$ 1,550,409
Granted	131,668	1.60		35,725
Exercised	(81,043)	1.00		216,626
Cancelled/forfeited	(8,213)	1.18		
Balance at December 31, 2022	297,559	$ 2.69	6.96	$ 63,237
Options exercisable at December 31, 2022	124,817	$ 2.73	3.50	$ 33,090

The aggregate intrinsic value in the table above represents the difference between the Company's stock price as of the balance sheet date and the exercise price of each in-the-money option on the last day of the period. The total intrinsic value of stock options exercised was approximately $216,626 and $379,276 during the year ended December 31, 2022 and 2021, respectively.

The weighted-average grant date fair value of stock options issued in the years ended December 31, 2022 and 2021 was $0.76 and $3.94, respectively. The Company recorded stock compensation expense as follows for years ended December 31, 2022 and 2021:

Operating expenses:	2022	2021
Technology	$ 8,900	$ 4,101
Sales and marketing	3,915	6,562
Supply development	982	1,289
Fulfillment	2,442	3,868
General and administrative	63,265	93,012
Total stock options expense	$ 79,504	$ 108,832

As of December 31, 2022 and 2021, a total of $233,004 and $432,520 of unamortized compensation expense is being recognized over the remaining requisite service period of 2.3 years and 2.4 years, respectively.

During 2022 and 2021, the Company received proceeds of $78,641 and $58,648 from the exercise of stock options, respectively.

Restricted Stock Units

A summary of RSUs activity under the 2013 Stock Incentive Plan and 2021 Stock Incentive Plans is as follows:

	RSUs Outstanding	Weighted Average Grant Date Fair Value
Unvested Balance at December 31, 2020	—	$ —
Granted	329,246	6.71
Vested	(44,126)	6.33
Forfeited	(5,400)	6.34
Unvested Balance at December 31, 2021	279,720	$ 6.78
Granted	178,386	4.15
Vested	(110,286)	6.41
Forfeited	(80,315)	5.90
Unvested Balance at December 31, 2022	267,505	$ 5.43

Total RSUs expense recognized in 2022 was as follows:

	2022	2021
Operating expenses:		
Technology	$ 122,863	$ 18,290
Sales and marketing	89,765	25,686
Supply development	33,677	13,304
Fulfillment	81,508	21,824
General and administrative	271,296	434,128
Total RSU expense	$ 599,109	$ 513,232

Employees

The Company granted 175,261 and 127,350 RSUs to employees during the years ended December 31, 2022 and 2021, respectively. During the years ended December 31, 2022 and 2021, stock compensation expense was $306,775 and $85,557, respectively. These RSUs are subject to a one-year cliff vesting, with 25% of the RSUs vesting on the first anniversary of issuance. For the remaining vesting period, RSUs vest quarterly over a three-year period. As of December 31, 2022 and 2021, unrecognized stock-based compensation expense related to the unvested employee RSUs was $992,437 and $845,933, respectively.

Executives

The Company granted 0 and 189,396 RSUs to members of the executive team during the years ended December 31, 2022 and 2021, respectively. During the years ended December 31, 2022 and 2021, stock compensation expense was $249,186 and $394,555, respectively. These RSUs are subject to a four-year vesting period, with 20% of the units vesting immediately upon issuance. For the remaining vesting period, RSUs vest annually over a four-year period. As of December 31, 2022 and 2021, unrecognized stock-based compensation expense related to the unvested RSUs was $27,070 and $806,216, respectively.

Directors

The Company granted 3,125 and 12,500 restricted stock units to board directors during the years ended December 31, 2022 and 2021, respectively. During the years ended December 31, 2022 and 2021, stock compensation expense was $43,147 and $33,120, respectively. These restricted stock units vest quarterly over a one-year period. As of December 31, 2022, the stock-based compensation expense related to these unvested restricted stock units has been fully recognized.

As of December 31, 2022 and 2021, the total unrecognized stock-based compensation expense related to unvested RSUs is expected to be recognized on a straight-line basis over a weighted average period of approximately 2.87 years and 2.6 years, respectively.

Performance Stock Units

During July 2021, the Company issued 47,349 performance stock units to four members of the executive team pursuant to each executive's employment agreement executed in connection with the IPO. The performance stock units are subject to certain performance conditions relating to certain revenue and cost of revenue metrics to be determined at the beginning of each fiscal year within the four year vesting period. In year one of the four-year vesting period, the Company was not able to predict the likelihood of achieving the targets pursuant to the metrics in each of the executives' employment agreements, and therefore no stock compensation expense was recognized for the year ended December 31, 2022.

11. INCOME TAXES

There was no provision for income taxes for the years ended December 31, 2022 and 2021 due to the Company's operating losses and a full valuation allowance on deferred tax assets.

The Company completed research and development studies covering all tax years currently under the applicable statute of limitations. The benefits of the study are reflected in the 2022 and 2021 financial statements as a tax credit receivable in the amount of approximately $141,000. A tax method change was adopted for the year ended December 31, 2022, requiring amortization of research and experimentation expenses under Section 174. Management has reviewed its impact and has determined that any effect of the Company's financials would be immaterial.

Significant components of the Company's deferred tax assets and liabilities as of December 31 are as follows:

	2022	2021
Deferred tax assets:		
Operating loss carryforwards	$ 10,164,000	$ 7,775,000
Research and development tax credit	1,095,000	850,000
Other	542,000	325,000
Total deferred tax assets	11,801,000	8,950,000
Deferred tax liability:		
Other	(50,400)	—
Intangibles	(357,600)	(300,000)
Total deferred tax liabilities	(408,000)	(300,000)
Net deferred tax assets before valuation allowance	11,393,000	8,650,000
Valuation allowance	(11,393,000)	(8,650,000)
Net deferred tax asset	$ —	$ —

The Company has provided a valuation allowance against the deferred tax assets as it has incurred significant losses since its inception. Management currently believes that it is more likely than not that the deferred tax assets will not be realized in the future. The change in the valuation allowance during 2022 was an increase of $2,743,000.

At December 31, 2022, the Company had federal net operating loss ("NOL") carryforwards of approximately $40,800,000 of which approximately $13,000,000 expire at various periods through 2037 and approximately $27,800,000 can be carried forward indefinitely. The Company also had state NOL carryforwards of approximately $25,000,000 that expire at various periods through 2042. At December 31, 2022, the Company had federal and state tax credits of approximately $1,094,000 available for future periods that expire at various periods through 2042. Due to changes in ownership provisions of the Internal Revenue Code, the availability of the Company's NOL carryforwards may be subject to annual limitations under Section 382 of the Internal Revenue Code against taxable income in the future period, which could substantially limit the eventual utilization of such carryforwards.

The Company applies the standards on uncertainty in income taxes. The Company did not have any significant unrecognized tax benefits during the year ended December 31, 2022. The Company's U.S. federal operating losses have occurred since its inception and as such, tax years subject to potential tax examination could apply from that date because the utilization of net operating losses from prior years opens the relevant year to audit by the IRS and/or state taxing authorities.

The Company's income tax provision was computed using the federal statutory rate and average state statutory rates, net of related federal benefit. The following represents a reconciliation of the statutory income tax rates to the effective rates at December 31:

	2022	2021
Reconciliation to statutory rates		
Expected federal income taxes benefit at statutory rates	(21.0)%	(21.0)%
Expected state tax benefit at statutory rates, net of federal benefit	(6.3)	(8.0)
Change in valuation allowance	27.3	25.7
Forgiveness of PPP Loan	—	3.3
Income tax expense (benefit)	— %	— %

12. EMPLOYEE BENEFITS PLAN

The Company has established a defined contribution savings plan under Section 401(k) of the Internal Revenue Code (the "401(k) Plan"). The 401(k) Plan is available to all eligible employees. The 401(k) Plan allows participants to defer a portion of their annual compensation subject to certain Internal Revenue Service limitations. The Company may make matching contributions and additional profit-sharing contributions at its discretion. The Company has not made any matching contributions to the 401(k) Plan during the years ended December 31, 2022 and 2021.

13. SUBSEQUENT EVENTS

On January 9, 2023, the Board appointed Ms. Curley as Chief Executive Officer of the Company.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure controls and procedures. The Company, under the supervision and with the participation of its management, including the Company's principal executive officer and principal financial and accounting officer, evaluated the effectiveness of the Company's "disclosure controls and procedures," as such term is defined in Rule 13a-15(e) and 15d-15(e) under the Exchange Act, as of the end of the period covered by this Annual Report. Based on that evaluation, the Company's principal executive officer and principal financial and accounting officer have concluded that the Company's disclosure controls and procedures were effective as of December 31, 2022 to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and includes controls and procedures

designed to ensure that information required to be disclosed by the Company in such reports is accumulated and communicated to the Company's management, including the Company's principal executive officer and principal financial and accounting officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's report on internal controls over financial reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Our management, including the principal executive officer and principal financial officer, does not expect that our internal controls over financial reporting will prevent all errors and all fraud. A control system, no matter how well designed and operated, cannot provide full assurance that the objectives of the control system are met, and no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with generally accepted accounting principles.

Under the supervision and with the participation of our management, including the principal executive officer and principal financial officer, we conducted an evaluation as to the effectiveness of our internal control over financial reporting as of December 31, 2022. In making this assessment, our management used the criteria for effective internal control set forth by the Committee of Sponsoring Organizations of the Treadway Commission in the *2013 Internal Control Integrated Framework*. Based on this assessment, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

This Annual Report on Form 10-K does not include an attestation report of our independent registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the Company's independent registered public accounting firm pursuant to a permanent exemption of the Commission that permits the Company to provide only management's report in this Annual Report on Form 10-K. Accordingly, our management's assessment of the effectiveness of our internal control over financial reporting as of December 31, 2022 has not been audited by our auditors, Wolf & Company, P.C.

***Changes in internal controls over financial reporting*.** There were no changes in the Company's internal controls over financial reporting that occurred during the fourth quarter of the fiscal year covered by this Annual Report that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not Applicable.

PART III

Item 10. Directors, Executive Officers, and Corporate Governance

The following is a list of our directors and executive officers as of March 16, 2023, along with the specific information required by Rule 14a-3 of the Securities Exchange Act of 1934:

Name	Age	Position
Tracy Curley	61	Chief Executive Officer, Chief Financial Officer and Treasurer
Benjamin Bielak	54	Chief Information Officer
Andrew L. Ross	74	Chairman of the Board
George "Bud" Scholl	63	Director
Steven Gullans	70	Director
John L. Brooks III	72	Director
Christopher Ianelli	56	Director
Jill Mullan	58	Director
Joseph J. Basile	70	Director

Tracy Curley has been serving as our Chief Executive Officer, since January 2023, our Chief Financial Officer since August 2020 and as Treasurer since July 2021. Ms. Curley also served as our Interim Chief Executive Officer from September 2022 to January 2023. She was a partner at CohnReznick LLP, a national accounting firm, from September 2017 to June 2020. During her time at CohnReznick, LLP, Ms. Curley led the creation and development of an emerging markets commercial audit practice for the firm in their Boston, MA office. Her practice focused on recruiting and providing audit services to private and public emerging growth companies in the technology and life sciences industries. From November 2014 to August 2017, she also served as a partner at Marcum LLP, a national accounting firm. Ms. Curley led the northeast regional high-tech practice for the firm. She focused on expanding the client base to provide a full range of accounting, tax and advisory services for private and public emerging growth companies in high tech industries such as technology, life sciences and advanced manufacturing. From March 2010 to October 2014, Ms. Curley served as a partner at Moody, Famiglietti & Andronico, LLP ("MFA"), a proactive consulting firm in the greater Boston, MA area with national and global reach. During her time at MFA, Ms. Curley led the creation and development of a public company audit practice focused on recruiting and providing audit services to public emerging growth companies. Ms. Curley serves as President and a board member of the North Shore Technology Council and as a board member of Project Green Schools. Ms. Curley received her Master of Accountancy and Bachelor of Science in Business Administration with a concentration in accounting from Kansas State University. She also attended the United States Military Academy. She is a certified public accountant licensed in the Commonwealth of Massachusetts.

Benjamin Bielak has been serving as our Chief Information Officer since June 2018. He served as the Chief Information Officer at GNS Healthcare, a leading casual machine learning product and services company, from January 2017 to May 2018 and as Director of Academic Technology at Harvard University, from February 2015 to January 2017. Prior to his work at GNS and Harvard, Mr. Bielak was the Chief Information Officer at Dovetail Health, a high-growth product and services company focused on reducing costs through pharmacy-focused interventions, from November 2006 to April 2014. He previously held roles as Manager of Development and Integration at Boston Medical Center and Senior Manager of Technology at Sapient, a global services company, from December 1997 to July 2005. Mr. Bielak holds a Master of Business Administration degree from Bentley University, where his studies focused on change management, and a master's degree from Boston University in computer science. He maintains two certifications, the College of Healthcare Information Management Executives (CHIME) Certified Healthcare Chief Information Officer (CHCIO) and the Health Information Management System Society (HIMSS) Certified Professional in Healthcare Information and Management Systems (CPHIMS).

Andrew L. Ross has been serving as our director since 2012. Mr. Ross serves as a Class I Director and his current term will expire at our 2025 annual meeting of stockholders. He has been an entrepreneur and investor for almost 50 years. He developed, financed, owned and managed through controlled entities over two dozen start-ups and diverse commercial real estate assets. Since 2010, Mr. Ross has focused on angel and early-stage investments primarily in biotech and collaborative consumption businesses. He has invested in and advised multiple early-stage enterprises as a seed, angel or A-round investor. Mr. Ross served as a director on the board of Q-State Holdings, Inc., from 2013 to February 2020. He currently serves as a director of RallyPoint Networks, Inc.

George "Bud" Scholl has been serving as our director since 2014. Mr. Scholl serves as a Class II Director and his current term will expire at our 2023 annual meeting of stockholders. He has been an entrepreneur for most of his professional life, primarily focused on purchasing and working out distressed assets across a variety of industries and asset types. He has developed and invested in financial, real estate, service and technology companies. Mr. Scholl currently serves as the President and Chief Executive Officer of OneBlood, which was formed in 2012 as a result of a merger he organized when he was Chairman and Chief Executive Officer of the Community Blood Centers of Florida, one of the three largest blood centers in the southeastern United States. Mr. Scholl currently serves on the board of Prothya Biosolutions Belgium B.V. (formally Sanquin Plasma Products B.V.), headquartered in Brussels, Belgium, where he chairs the regulatory committee and OrSense Ltd. headquartered in Tel Aviv, Israel. He also served for four years on the board of HemaCare Corporation until it was acquired by Charles River Laboratories in January 2020. Until September 2021, Mr. Scholl served as the Mayor of the City of Sunny Isles Beach, Florida, where he was elected in 2014 after serving as City Commissioner for 7 years. Mr. Scholl is a graduate of the University of Florida and holds an engineering degree in computer science.

Steven Gullans has been serving as our director since October 2020. Dr. Gullans serves as a Class I Director and his current term will expire at our 2025 annual meeting of stockholders. Dr. Gullans is CEO of Metis Minds, a digital health company, which he

recently cofounded. From May 2018 to December 2019, he served as President and Chief Executive Officer and Director of Gemphire Therapeutics, until it was acquired by NeuroBo Pharmaceuticals. While at Gemphire, he oversaw activities related to clinical trials, manufacturing, finances, business development, R&D and intellectual property. Prior to Gemphire, he was Managing Director at Excel Venture Management, LLC ("Excel"), a Boston-based venture capital firm which he co-founded, from March 2008 to May 2018. At Excel, he focused on investing in life science technology companies with a particular interest in disruptive platforms that can impact multiple industries. Prior to Excel, Dr. Gullans co-founded RxGen, Inc., a pharmaceutical services company, where he also served as Chief Executive Officer and a director from February 2004 to February 2008. Prior to that, he was the Chief Scientific Officer of US Genomics, Inc., a company that developed technology to analyze DNA for pathogen detection, from November 2002 to January 2004. Dr. Gullans currently serves as a director at Orionis Biosciences, Navigation Sciences, Alexis Bio and Metis Minds. He was previously a board member of Activate Networks, Inc. which was acquired by Decision Resource Group, nanoMR Inc., which was acquired by DNA Electronics Ltd, Tetraphase Pharmaceuticals, Inc. which went public in 2013, and Molecular Templates, Inc. which was merged into a public entity in 2017, BioTrove which was acquired by Agilent, and NeuroBo Pharmaceuticals. Dr. Gullans was a faculty member at Harvard Medical School and Brigham and Women's Hospital for almost 20 years. Dr. Gullans holds a B.S. from Union College and a Ph.D. from Duke University.

John L. Brooks III has been serving as our director since June 2021. Mr. Brooks serves as a Class II Director and his current term will expire at our 2023 annual meeting of stockholders. He currently serves as a director of Hemoshear Therapeutics since November 2008, Noxilizer since March 2009, Hygieia since June 2016, Theromics since February 2021 and AltrixBio since December 2021. He served as the chairman of Thermalin, Inc. from January 2009 to December 2021. Mr. Brooks was the President of the NTT division of L-Nutra Inc., a company focused on nutrition and fasting mimicking technologies from March 2021 to May 2022. In January 2012, Mr. Brooks founded Ammonett Pharma and continues to serve on its board of directors since then. He is also a co-founder of Rocky Mountain Biphasic and serves as a director since April 2022. He has also served as the managing director of Healthcare Capital LLC since February 2007. Previously, Mr. Brooks served as the Chief Executive Officer, President and a director of NeuroBo Pharmaceuticals, Inc. from March 2018 to December 2019 and as the chairman of Cellnovo, Ltd. from 2012 to December 2019. Mr. Brooks is also involved with several non-profit organizations. He currently serves as the Chief Executive Officer and President of Worldwide Network for Innovation in Clinical Education and Research (WNICER) since January 2019 and serves as a director of T1D Exchange since March 2020, the ADA New England Chapter since January 2015, The Diabetes Link since January 2010, and the University of Massachusetts Amherst Foundation since January 2012. Mr. Brooks received his BBA and MSBA in Accounting from the University of Massachusetts Amherst.

Christopher Ianelli served as Chief Executive Officer and President of iSpecimen from July 2009 until September 2022, and has served as a director since July 2009. Dr. Ianelli serves as a Class III Director and his current term will expire at our 2024 annual meeting of stockholders. Dr. Ianelli was a co-founder of and served as Chief Executive Officer of Abkine Pharmaceuticals, Inc., a development stage biopharmaceutical company pioneering innovative approaches to treatment of inflammatory and autoimmune diseases based on disruption of interleukin-16 signaling and chemoattraction from November 2009 to December 2011. Prior to that, Dr. Ianelli served as a Managing Director at Leerink Swann (presently SVB Leerink), a leading healthcare and life science investment bank, where he managed the expansion and delivery of specialized research services and directed strategy to develop new healthcare data and information assets for the firm from August 2003 to March 2008. From 2000 to 2003, Dr. Ianelli was a co-founder and Managing Director of Boston Medical & Scientific Advisors LLC, a specialty healthcare investment research firm ultimately acquired by Leerink. Dr. Ianelli received his Bachelor of Science degree in Biological Sciences from University of Lowell and both his Ph.D. in Immunology and his M.D. from Tufts University. He completed his residency training, including a year as Chief Resident, in Pathology at Brigham & Women's Hospital and Harvard Medical School. He is well-qualified to serve on our Board due to his extensive experience in operations of biopharmaceutical and technology companies and his expertise in medicine, healthcare and life sciences.

Jill Mullan has been serving as a director since October 2014, and previously served as our Chief Operating Officer from August 2013 to October 2022, and Secretary from November 2012 to October 2022. Ms. Mullan serves as a Class II Director and her current term will expire at our 2023 annual meeting of stockholders. She joined the Company in 2010 as the Vice President of Marketing. She was a marketing/strategy consultant at AppNeta, a computer software company, from 2008 to 2010. From 2003 to 2008, she was a marketing and business strategy consultant to various technology-based companies including EMC and Planon Software. From 2000 to 2003, Ms. Mullan was on the founding team and Director of Marketing at Storigen Systems, a provider of distributed storage networks, where she built and ran the company's product marketing, communications, and public relations organization; developed the company's brand identity and launched several successful products. She was also employed at Avid Technology from 1996 to 2000, most recently as a Director of Product Marketing and Management with product responsibility for Avid's editing product line. Prior to that, Ms. Mullan worked in product management and engineering roles at IBM, MIPS Computer Systems, and Hewlett Packard. Ms. Mullan formerly

served as treasurer and board member of the Westford Education Foundation. She graduated with distinction from Cornell University with a Bachelor of Science in electrical engineering and received a Master of Business Administration from Stanford University with a focus on entrepreneurship and marketing. She is well-qualified to serve on our Board due to her extensive experience in operations, strategy, marketing, product, and business development in technology-based companies.

Joseph J. Basile has been serving as our director since November 2022. Mr. Basile serves as a Class III Director and his current term will expire at our 2024 annual meeting of stockholders. Mr. Basile has an extensive body of work with companies and investors in cross-border and domestic mergers, acquisitions, divestitures, financial restructurings, control and minority investments, joint ventures and strategic alliances in North America, Europe, Asia and Latin America. He has been serving as founder and managing director of Pari Passu M&A Mediation, LLC, an alternative dispute resolution firm, since July 2022, and as a Senior Advisor of Hogan Lovells US LLP, a global law firm, since July 2022. He is also a member of each of the Board of Directors, Executive Committee, and Health Care Task Force of Massachusetts Business Roundtable. Previously, Mr. Basile was a Partner and Co-chair of the Mergers & Acquisitions practice group at Foley Hoag LLP from March 2014 to June 2022. Prior to that, he worked at Weil, Gotshal & Manges LLP as a Partner and from May 2008 to February 2014 and as Managing Partner of Weil's Boston office from September 2011 to February 2014. From 2000 to 2008, he was a Partner of mergers & acquisitions and financial restructuring practice groups at Bingham McCutchen LLP. Mr. Basile has held several board or committee positions, including as a member of the Board of Trustees (including the Audit Committee and Finance Committee of the Board) of Stonehill College, as a member of Board of Trustees of Saint Columbkille Partnership School, and as a member of Massachusetts State Ethics Commission. He received his A.B. from Stonehill College and J.D. from Harvard Law School. He is well-qualified to serve on the Board due to his extensive experience in mergers & acquisitions and corporate governance.

Family Relationships

There are no family relationships among any of our executive officers or directors.

Composition of our Board of Directors

Our board of directors currently consists of seven directors. Our certificate of incorporation, as amended, and bylaws, as amended, provide that our board of directors can consist of any number of directors as voted on and approved by the board of directors. Our board of directors is divided into three classes, designated as Class I, Class II and Class III directors, with only one class of directors being elected in each year and each class serving a three-year term. The term of office of the Class I directors, consisting of Messrs. Ross and Gullans, will expire at our 2025 annual meeting of stockholders. The term of office of the Class II directors, consisting of Messrs. Brooks and Scholl and Ms. Mullan, will expire at our 2023 annual meeting of stockholders. The term of office of the Class III directors, consisting of Dr. Ianelli and Mr. Basile, will expire at our 2024 annual meeting of stockholders. When considering whether directors have the experience, qualifications, attributes or skills, taken as a whole, to enable our board of directors to satisfy its oversight responsibilities effectively in light of our business and structure, the board of directors focuses primarily on each person's background and experience as reflected in the information discussed in each of the directors' individual biographies set forth above. We believe that our directors provide an appropriate mix of experience and skills relevant to the size and nature of our business.

Director Independence

As our common stock is listed on the Nasdaq Capital Market, our determination of the independence of directors is made using the definition of "independent director" contained in Nasdaq Listing Rule 5605(a)(2). Our board of directors has affirmatively determined that each of Mr. Ross, Dr. Gullans, Mr. Brooks, Mr. Scholl and Mr. Basile are "independent directors," as that term is defined in the Nasdaq rules. Under the Nasdaq rules, our Board must be composed of a majority of "independent directors." Additionally, subject to certain limited exceptions, our Board's audit, compensation, and nominating and corporate governance committees also must be composed of all independent directors.

Audit committee members must also satisfy the independence criteria set forth in Rule 10A-3 under the Exchange Act. Under the rules of Nasdaq, a director will only qualify as an "independent director" if, in the opinion of that company's board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director.

To be considered to be independent for purposes of Rule 10A-3 of the Exchange Act, a member of an audit committee of a listed company may not, other than in his capacity as a member of our audit committee, our board of directors, or any other committee of our board of directors: (1) accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the listed company or any of its subsidiaries; or (2) be an affiliated person of the listed company or any of its subsidiaries.

Committees of Our Board of Directors

Our board of directors directs the management of our business and affairs, as provided by Delaware law, and conducts its business through meetings of the board of directors and standing committees. We have a standing audit committee, compensation committee, and nominating and corporate governance committee. In addition, from time to time, special committees may be established under the direction of the board of directors when necessary to address specific issues.

Audit Committee

We have established an audit committee of the board of directors. Dr. Gullans, Mr. Brooks and Mr. Basile serve as members of our audit committee, and Mr. Brooks chairs the audit committee. Each member of the audit committee is financially literate, and our board of directors has determined that Mr. Brooks qualifies as an "audit committee financial expert" as defined in applicable SEC rules and has accounting or related financial management expertise.

We have adopted an audit committee charter that is available to stockholders on the Corporation's website at https://investors.ispecimen.com/governance-documents, which details the principal functions of the audit committee, including:

- reviewing and discussing with management and the independent auditor the annual audited financial statements, and recommending to the board whether the audited financial statements should be included in our Form 10-K;
- discussing with management and the independent auditor significant financial reporting issues and judgments made in connection with the preparation of our financial statements;
- discussing with management major risk assessment and risk management policies;
- monitoring the independence of the independent auditor;
- verifying the rotation of the lead (or coordinating) audit partner having primary responsibility for the audit and the audit partner responsible for reviewing the audit as required by law;
- reviewing and approving all related-party transactions;
- inquiring and discussing with management our compliance with applicable laws and regulations;
- pre-approving all audit services and permitted non-audit services to be performed by our independent auditor, including the fees and terms of the services to be performed;
- appointing or replacing the independent auditor;
- determining the compensation and oversight of the work of the independent auditor (including resolution of disagreements between management and the independent auditor regarding financial reporting) for the purpose of preparing or issuing an audit report or related work;

- establishing procedures for the receipt, retention and treatment of complaints received by us regarding accounting, internal accounting controls or reports which raise material issues regarding our financial statements or accounting policies; and

- approving reimbursement of expenses incurred by our management team in identifying potential target businesses.

The Board of Directors reviews the Nasdaq listing standards definition of independence for audit committee members on an annual basis and has determined that all current members of our audit committee are independent (as independence is currently defined in Rule 5605(c)(2)(A)(i) and (ii) of the Nasdaq listing standards).

The Board of Directors has also determined that Mr. Brooks qualifies as an "audit committee financial expert," as defined in applicable SEC rules. The Board made a qualitative assessment of Mr. Brooks' level of knowledge and experience based on a number of factors, including his formal education and experience.

Compensation Committee

We have established a compensation committee of the Board of Directors. Messrs. Brooks and Scholl and Dr. Gullans serve as members of our compensation committee. Dr. Gullans chairs the compensation committee.

We have adopted a compensation committee charter that is available to stockholders on the Company's website at *https://investors.ispecimen.com/governance-documents*, which details the principal functions of the compensation committee, including:

- reviewing and approving on an annual basis the corporate goals and objectives relevant to our Chief Executive Officer's compensation, evaluating our Chief Executive Officer's performance in light of such goals and objectives and determining and approving the remuneration (if any) of our Chief Executive Officer based on such evaluation;

- reviewing and approving the compensation of all our other executive officers;

- reviewing our executive compensation policies and plans;

- implementing and administering our incentive compensation equity-based remuneration plans;

- assisting management in complying with our proxy statement and annual report disclosure requirements;

- approving all special perquisites, special cash payments and other special compensation and benefit arrangements for our executive officers and employees;

- if required, producing a report on executive compensation to be included in our annual proxy statement; and

- reviewing, evaluating and recommending changes, if appropriate, to the remuneration for directors.

Notwithstanding the foregoing, no compensation of any kind, including finders, consulting or other similar fees, will be paid to any of our existing stockholders, officers, directors or any of their respective affiliates, prior to, or for any services they render in order to effectuate the consummation of an initial business combination. Accordingly, it is likely that prior to the consummation of an initial business combination, the compensation committee will only be responsible for the review and recommendation of any compensation arrangements to be entered into in connection with such initial business combination.

The charter also provides that the compensation committee may, in its sole discretion, retain or obtain the advice of a compensation consultant, independent legal counsel or other adviser and will be directly responsible for the appointment, compensation and

oversight of the work of any such adviser. However, before engaging or receiving advice from a compensation consultant, external legal counsel or any other adviser, the compensation committee will consider the independence of each such adviser, including the factors required by Nasdaq and the SEC.

Nominating and Corporate Governance Committee

We have established a nominating and corporate governance committee of the board of directors. Mr. Scholl and Mr. Basile serve as members of our nominating and corporate governance committee. Mr. Scholl chairs the nominating and corporate governance committee.

We have adopted a nominating and corporate governance committee charter that is available to stockholders on the Company's website at https://investors.ispecimen.com/governance-documents, which details the principal functions of the nominating and corporate governance committee, and which provides that persons to be nominated to serve as directors:

- should have demonstrated notable or significant achievements in business, education or public service;
- should possess the requisite intelligence, education and experience to make a significant contribution to the board of directors and bring a range of skills, diverse perspectives and backgrounds to its deliberations; and
- should have the highest ethical standards, a strong sense of professionalism and intense dedication to serving the interests of the stockholders.

The nominating and corporate governance committee will consider several qualifications relating to management and leadership experience, background and integrity and professionalism in evaluating a person's candidacy for membership on the board of directors. The nominating committee may require certain skills or attributes, such as financial or accounting experience, to meet specific board needs that arise from time to time and will also consider the overall experience and makeup of its members to obtain a broad and diverse mix of board members. The nominating committee does not distinguish among nominees recommended by stockholders and other persons.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee is or has been an officer or employee of our company. None of our executive officers currently serves, or in the past year has served, as a member of the board of directors' compensation committee (or other board committee performing equivalent functions) of any entity that has one or more of its executive officers serving on our board of directors or compensation committee. See the section titled "Certain Relationships and Related Party Transactions" for information about related party transactions involving members of our compensation committee or their affiliates.

Code of Ethics and Code of Conduct

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A copy of the code will be posted on our website, www.ispecimen.com. In addition, we post on our website all disclosures that are required by law or the Nasdaq listing standards concerning any amendments to, or waivers from, any provision of the code. The information on or accessed through our website is deemed not to be incorporated in this Annual Report or to be part of this Annual Report.

Compensation Recovery

Under the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act"), in the event of material noncompliance with the financial reporting requirements that results in a financial restatement that would have reduced a previously paid incentive amount, we can recoup those improper payments from our current and former executive officers. We plan to implement a clawback policy to address this, although we have not yet implemented such policy.

Item 11. Executive Compensation

The following discussion of compensation arrangements should be read with the compensation tables and related disclosures set forth below. This discussion contains forward-looking statements that are based on our current plans and expectations regarding future compensation programs, see "Special Note Regarding Forward-Looking Statements." Actual compensation programs that we adopt may differ materially from the programs summarized in this discussion.

The discussion below includes a review of our compensation decisions with respect to fiscal years 2022 and 2021 for our "named executive officers," or NEOs, namely our principal executive officer, our two other most highly compensated executive officers and two additional persons for whom disclosure would have been provided but for the fact that they were not serving as our executive officers as of December 31, 2022.

In 2022 and 2021, we compensated our NEOs through base salary, as described below. Our officers are also eligible for the standard benefits programs we offer all employees.

Summary Compensation Table

The following table sets forth information regarding compensation awarded to, earned by or paid to each of our named executive officers for fiscal years 2022 and 2021.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock awards ($)	Option awards ($)(1)	All other compensation ($)	Total ($)
Tracy Curley[2]	2022	$ 313,385	$ —	$ —	$ 77,000 (6)	$ —	$ 390,385
Chief Executive Officer	2021	$ 282,999	$ 84,000	$ 240,153	$ —	$ —	$ 607,152
Benjamin Bielak	2022	$ 301,938	$ 6,000 (5)	$ —	$ 23,100 (7)	$ —	$ 331,038
Chief Information Officer	2021	$ 250,000	$ 84,000	$ 300,193	$ —	$ —	$ 634,193
Christopher Ianelli[3]	2022	$ 351,346	$ 12,000 (5)	$ —	$ —	$ 2,956	$ 366,302
Former Chief Executive Officer, President and Director	2021	$ 300,000	$ 140,000	$ 330,213	$ —	$ —	$ 770,213
Jill Mullan[4]	2022	$ 328,750	$ 20,000 (5)	$ —	$ —	$ —	$ 348,750
Former Chief Operating Officer, Secretary and Director	2021	$ 277,500	$ 113,750	$ 330,213	$ —	$ —	$ 721,463

1. The amounts reported in the "Option awards" column reflect the aggregate fair value of stock-based compensation awarded during the year computed in accordance with the provisions of FASB ASC Topic 718. See Note 10 to our financial statements appearing at the end of this prospectus regarding assumptions underlying the valuation of equity awards.
2. Tracy Curley has been serving as our Chief Financial Officer since August 2020 and Treasurer since July 2021. She became the Interim Chief Executive Officer on September 21, 2022 and was appointed as the Company's full-time Chief Executive Officer on January 9, 2023.
3. Dr. Ianelli's positions as Chief Executive Officer and President of the Company were terminated, by the mutual agreement of the Company and Dr. Ianelli, on September 21, 2022. He still serves on the board as a director.
4. Ms. Mullan vacated her positions as Chief Operating Officer and Secretary of the Company on October 24, 2022. She still serves on the board as a director.
5. Bonus paid in 2022 was paid as compensation for the executive officer's satisfaction of certain performance objectives in 2021.
6. Represents the fair value of 100,000 options granted to Tracy Curley on November 1, 2023.
7. Represents the fair value of 30,000 options granted to Benjamin Bielak on November 1, 2023.

Employment Agreements

We have entered into one-year employment agreements with each of our Chief Executive Officer/Chief Financial Officer, and Chief Information Officer.

Tracy Curley

We entered into an employment agreement with Ms. Curley, effective as of June 21, 2021, which, by its terms, was to expire on June 21, 2022, but was extended until July 29, 2022. We subsequently entered into a First Amended and Restated Executive Employment Agreement on October 24, 2022 (the "Curley Amended Employment Agreement"), continuing her employment as our Chief Financial Officer and appointing her as Interim Chief Executive Officer until such date as her employment is either terminated by the Company or Ms. Curley, as provided under the terms of the Curley Amended Employment Agreement, and described in further detail below, or earlier terminated upon her death or disability. On January 9, 2023, the Board appointed Ms. Curley as our full-time Chief Executive Officer.

Under the terms of the Curley Amended Employment Agreement, Ms. Curley is paid an annual base salary ("Base Salary") of $350,000, which was applied retroactively from June 21, 2022. Additionally, Ms. Curley is eligible for an annual discretionary bonus, solely within the determination of the Board, with a target of 50% of her then current Base Salary, based on the Company's overall performance and her achieving certain measures described in the Curley Amended Employment Agreement (the "Curley Target Bonus"). The Curley Target Bonus for fiscal year 2022 was $87,500, based on a pro-rated target of 25% of her Base Salary.

In addition to the Base Salary and Curley Target Bonus described above, Ms. Curley was awarded stock options ("Options") for a term of 10 years and exercisable for up to 100,000 shares of common stock, under our Amended and Restated 2021 Equity Incentive Plan (the "2021 Plan"), at an exercise price equal to $1.61 per share. These Options vest over four years, vesting with respect to 25,000 shares of common stock on June 21, 2023 and for 2,083 shares of common stock monthly thereafter, until fully vested, subject to Ms. Curley continuing to be employed by the Company on each applicable vesting date. The Options also fully vest upon a Change of Control (as such term is defined in the Plan), as more fully described in the Curley Amended Employment Agreement. Furthermore, if Ms. Curley retires from the Company at or after the age of 66, all unvested equity awards she possesses, upon such retirement, will automatically vest.

The Curley Amended Employment Agreement may be terminated either by the Company or Ms. Curley, with the following termination provisions. If the Company terminates the Curley Amended Employment Agreement for just cause (as such term is defined in the Curley Amended Employment Agreement) or if Ms. Curley terminates the Curley Amended Employment Agreement by giving 30 days' advance notice (other than for Good Reason (as such term is defined in the Curley Amended Employment Agreement)), Ms. Curley will be entitled to (i) earned but unpaid salary and earned but unpaid bonus through the termination date, (ii) COBRA benefits for up to the applicable statutory period with premium payments made by Ms. Curley, and (iii) other payments which may be required by law (the "Standard Termination Benefits"). If Ms. Curley terminates the Curley Amended Employment Agreement for Good Reason or the Company terminates the Curley Amended Employment Agreement without just cause, Ms. Curley is entitled to, in addition to the Standard Termination Benefits, (x) severance equal to 18 months of her then Base Salary (which will be reduced to 12 months of her then Base Salary, if such termination occurs more than one year after the Company appoints a new Chief Executive Officer and Ms. Curley no longer serves as Interim Chief Executive Officer) and (y) COBRA benefits for the period during which she receives severance payments, with the Company providing Ms. Curley with continuation coverage upon the same terms and conditions as if she were still an active employee of the Company. Such severance payments will be made in bi-weekly installments and Ms. Curley's right to receive such payments is conditioned upon her executing and delivering to the Company a customary general release. In the event of a Change of Control (as such term is defined in the Curley Amended Employment Agreement), and a termination of Ms. Curley's employment without just cause or her resignation for Good Reason, in either case, within 12 months after such Change of Control, Ms. Curley will be entitled to the Standard Benefits and 18 months of severance payments. Ms. Curley's right to receive such payments is conditioned upon her executing and delivering to the Company a customary general release. In the event of the termination of the Curley Amended Employment Agreement, as a result of her death or disability, she will be entitled to the Standard Termination Benefits.

The Curley Amended Employment Agreement also contains customary noncompetition and non-solicitation covenants, provisions regarding the protection of confidential information and commitments to assign to use any inventions developed during Ms. Curley's employment, which are contained in a separate First Restated Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement between Ms. Curley and the Company, also dated October 24, 2022.

Benjamin Bielak

We entered into an employment agreement with Mr. Bielak, effective as of June 21, 2021, which, by its terms, was to expire on June 21, 2022, but was extended until July 29, 2022. We subsequently entered into a First Amended and Restated Executive Employment Agreement with Mr. Bielak on October 24, 2022, continuing his employment as our Chief Information Officer until such date as his employment is either terminated by the Company or Mr. Bielak, as provided under the terms of the Bielak Amended Employment Agreement, and described in further detail below, or earlier terminated upon his death or disability.

Under the terms of the Bielak Amended Employment Agreement, Mr. Bielak is paid an annual Base Salary of $326,000, which was applied retroactively from June 21, 2022. Additionally, Mr. Bielak is eligible for an annual discretionary bonus, solely within the determination of the Board, with a target of 40% of his then current Base Salary, based on the Company's overall performance and his achieving certain measures described in the Bielak Amended Employment Agreement (the "Bielak Target Bonus"). The Bielak Target Bonus for fiscal year 2022 was $65,200 based on a pro-rated target of 20% of his Base Salary.

In addition to the Base Salary and Bielak Target Bonus described above, Mr. Bielak was awarded Options for a term of 10 years and exercisable for up to 30,000 shares of common stock, under the 2021 Plan, at an exercise price of $1.61 per share. These Options vest over four years, vesting with respect to 7,500 shares on June 21, 2023 and for 625 shares of common stock monthly thereafter, until fully vested, subject to Mr. Bielak continuing to be employed by the Company on each applicable vesting date.

The Bielak Amended Employment Agreement may be terminated either by the Company or Mr. Bielak, with the following termination provisions. If the Company terminates the Bielak Amended Employment Agreement for just cause (as such term is defined in the Bielak Amended Employment Agreement") or if Mr. Bielak terminates the Bielak Amended Employment Agreement by giving 30 days' advance notice (other than for Good Reason (as such term is defined in the Bielak Amended Employment Agreement)), Mr. Bielak will be entitled to the Standard Termination Benefits. If Mr. Bielak terminates the Bielak Amended Employment Agreement for Good Reason or the Company terminates the Bielak Amended Employment Agreement without just cause, Mr. Bielak is entitled to, in addition to the Standard Termination Benefits, (x) severance equal to 12 months of his then Base Salary, (y) a bonus payment equal to 40% of his then Base Salary, pro-rated based on the number of days Mr. Bielak was employed during the year of termination of his employment and (z) COBRA benefits for the period during which he receives severance payments, with the Company providing Mr. Bielak with continuation coverage upon the same terms and conditions as if he were still an active employee of the Company. Such severance payments will be made in bi-weekly installments and Mr. Bielak's right to receive such payments is conditioned upon his executing and delivering to the Company a customary general release.

The Bielak Amended Employment Agreement also contains customary noncompetition and non-solicitation covenants, provisions regarding the protection of confidential information and commitments to assign to use any inventions developed during Mr. Bielak's employment, which are contained in a separate First Restated Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement between Mr. Bielak and the Company, also dated October 24, 2022.

Separation Agreements

Christopher Ianelli

On October 24, 2022, we entered into Separation Agreement with Dr. Ianelli (the "Ianelli Separation Agreement"), in connection with his termination as our Chief Executive Officer and President. Under the terms of the Ianelli Separation Agreement, Dr. Ianelli was paid all accrued salary earned through October 24, 2022 (the "Ianelli Separation Date"). Dr. Ianelli is also receiving the following additional benefits under the terms of the Ianelli Separation Agreement:

(i) Severance equal to 12 months of his base salary for a total of $350,000, which is payable in 12 equal monthly payments after the Ianelli Separation Date through October 2024.

(ii) Payment by the Company for all COBRA health and dental insurance premiums for the entire period for which Dr. Ianelli is eligible for COBRA benefits; provided, however, that he is required to notify the Company if he becomes covered under another employer's group health plan or otherwise ceases to be eligible for COBRA benefits, upon which the Company shall no longer be required to pay for such COBRA benefits.

(iii) Vesting of Restricted Stock Units ("RSU's), for 13,021 shares of the 31,250 shares of common stock which were unvested as of the Ianelli Separation Date, was accelerated with Dr. Ianelli being issued 13,021 shares of common stock, for which he was required to pay all applicable taxes in connection with the vesting of those RSUs.

Dr. Ianelli will continue to serve on the Board for as long as he continues to be elected to the Board, unless he resigns or is removed sooner.

The Ianelli Separation Agreement also requires Dr. Ianelli to comply with his continuing obligations under the Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement executed by Dr. Ianelli on June 21, 2021, the form of which was filed as an exhibit to the form of Dr. Ianelli's Executive Employment Agreement filed as Exhibit 10.25 to the Company's Registration Statement on Form S-1 (Reg. No. 333-250198), which was declared effective by the Commission on June 16, 2021. The Ianelli Separation Agreement also contains customary mutual releases by Dr. Ianelli and the Company.

Jill Mullan

On October 24, 2022, we entered into a Separation Agreement with Ms. Mullan (the "Mullan Separation Agreement"), in connection with her termination as our Chief Operating Officer. Under the terms of the Mullan Separation Agreement, Ms. Mullan was paid all accrued salary earned through October 24, 2022 (the "Mullan Separation Date"). Ms. Mullan is also receiving the following additional benefits under the terms of the Mullan Separation Agreement:

(i) Severance equal to 12 months of her base salary for a total of $325,000, which is payable in 12 equal monthly payments after the Separation Date through October 2024.

(ii) Payment by the Company for all COBRA health and dental insurance premiums for the entire period for which Ms. Mullan is eligible for COBRA benefits; provided, however, that she is required to notify the Company if she becomes covered under another employer's group health plan or otherwise ceases to be eligible for COBRA benefits, upon which the Company shall no longer be required to pay for such COBRA benefits.

(iii) Vesting of Restricted Stock Units ("RSU's), for 13,021 shares of the 31,250 shares of common stock which were unvested as of the Mullan Separation Date, was accelerated with Ms. Mullan being issued 13,021 shares of common stock, for which she was required to pay all applicable taxes in connection with the vesting of those RSUs.

Ms. Mullan will continue to serve on the Board for as long as she continues to be elected to the Board, unless she resigns or is removed sooner.

The Mullan Separation Agreement also requires Ms. Mullan to comply with her continuing obligations under the Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement executed by Ms. Mullan on June 21, 2021, the form of which was filed as an exhibit to the form of Ms. Mullan's Executive Employment Agreement filed as Exhibit 10.26 to the Company's Registration Statement on Form S-1 (Reg. No. 333-250198), which was declared effective by the Commission on June 16, 2021. The Mullan Separation Agreement also contains customary mutual releases by Ms. Mullan and the Company, which will not become effective in the event that Ms. Mullan revokes her execution of the Mullan Separation Agreement, during the Mullan Revocation Period.

Non-Employee Director Compensation

The following table sets forth information regarding the total compensation paid to our current non-employee directors during 2022 for their service on our Board. Our directors who are employed by us do not receive any additional compensation for serving on our Board.

Name and Principal Position	Fees earned or paid in cash($)	Stock awards($)	Option awards ($)(9)	Non-equity incentive plan compensation ($)	Non qualified deferred compensation earnings ($)	All other compensation ($)	Total($)
Andrew Ross,							
Chairman of the Board(1)	$ 20,000	$ 1,088 (10)	$ —	—	—	—	$ 21,088
Bud Scholl(2)							
Director	$ 20,000	$ 1,088 (11)	$ —	—	—	—	$ 21,088
Steven Gullans(3)							
Director	$ 20,000	$ 1,088 (12)	$ —	—	—	—	$ 21,088
John Brooks(4)							
Director	$ 20,000	$ 1,088 (13)	$ —	—	—	—	$ 21,088
Christopher Ianelli(5)							
Director	$ 3,641	$ —	$ —	—	—	—	$ 3,641
Jill Mullan(6)							
Director	$ 3,641	$ —	$ —	—	—	—	$ 3,641
Joseph J Basile(7)							
Director	$ 1,793	$ —	$ 663 (14)	—	—	—	$ 2,456
Margaret Lawrence(8)							
Director	$ 17,500	$ —	$ —	—	—	—	$ 17,500

1) Andrew L. Ross has been serving as our director since January 2012.
2) George "Bud" Scholl has been serving as our director since February 2014.
3) Steven Gullans has been serving as our director since October 2020.
4) John L. Brooks III has been serving as our director since June 2021.
5) Dr. Ianelli's positions as Chief Executive Officer and President of the Company were terminated, by the mutual agreement of the Company and Dr. Ianelli on September 21, 2022. He became a non-employee director on October 24, 2022.
6) Ms. Mullan vacated her positions as Chief Operating Officer and Secretary of the Company on October 24, 2022. She became a non-employee director on October 24, 2022.
7) Joseph J. Basile was appointed a director on November 28, 2022.
8) Margaret H. Lawrence had been serving as our director since June 2021. She resigned from the board on November 15, 2022.
9) The amounts reported in the "Option awards" column reflect the aggregate fair value of stock-based compensation awarded during the year computed in accordance with the provisions of FASB ASC Topic 718.
10) The aggregate number of Restricted Stock Units (RSUs) awarded in 2022 was 625. None was outstanding as of December 31, 2022.
11) The aggregate number of Restricted Stock Units (RSUs) awarded in 2022 was 625. None was outstanding as of December 31, 2022.
12) The aggregate number of Restricted Stock Units (RSUs) awarded in 2022 was 625. None was outstanding as of December 31, 2022.
13) The aggregate number of Restricted Stock Units (RSUs) awarded in 2022 was 625. None was outstanding as of December 31, 2022.
14) The aggregate number of stock options outstanding as of December 31, 2022 was 1,668.

On July 30, 2021, our Board of Directors adopted and approved a director compensation policy (the "Initial Non-Employee Director Compensation Policy"), which provided for each of the non-employee directors (i) an annual retainer of $20,000, payable quarterly, (ii) equity compensations (including NSOs with a vesting schedule of three years to purchase 13,525 shares of common stock at the fair market value and annual restricted stock units ("RSUs") which vested in four equal quarterly tranches) under the 2021 Plan, and (iii) travel expense reimbursement. The Initial Non-Employee Director Compensation Policy was amended, as of November 30, 2022, in an Amended and Restated Non-Employee Director Compensation Policy. The Amended and Restated Non-Employee Director Compensation Policy provides for each of the non-employee directors:

(i) an initial non-qualified ten-year stock option grant upon commencement of service on the Board equal to (x) 834 shares multiplied by (y) the number of months (including the month of commencement of service on the Board) that such director will serve during his or her first calendar year at an exercise price equal to 100% of the fair market value of our common stock vesting in four equal quarterly installments and subject to certain adjustments;

(ii) an annual non-qualified ten-year stock option grant on each January 2nd equal to 10,000 shares of our common stock at an exercise price equal to 100% of the fair market value of our common stock vesting in four equal quarterly installments and subject to certain adjustments;

(iii) an annual cash retainer of $20,000 plus an additional (x) $7,500 for each Board committee on which a director serves as chair and (y) $3,500 for each Board committee on which a director serves, but is not chair, which cash retainer is payable in for equal quarterly payments; and

(iv) travel expense reimbursement.

Indemnification Agreements

We have entered into indemnification agreements with our directors and executive officers that require us to indemnify them against expenses, judgments, fines, settlements and other amounts that any such person becomes legally obligated to pay (including with respect to a derivative action) in connection with any proceeding, whether actual or threatened, to which such person may be made a party by reason of the fact that such person is or was a director or officer of us or any of our affiliates, provided such person acted in good faith and in a manner such person reasonably believed to be in, or not opposed to, our best interests. We maintain a directors' and officers' liability insurance policy. The policy insures directors and officers against unindemnified losses arising from certain wrongful acts in their capacities as directors and officers and reimburses us for those losses for which we have lawfully indemnified the directors and officers. The policy contains various exclusions.

Outstanding Equity Awards at Fiscal Year End

The following table sets forth information regarding all outstanding stock options and restricted stock held by each of our named executive officers as of December 31, 2022:

	Option Awards				Stock awards		
Name	Number of securities underlying unexercised options (#) exercisable	Number of securities underlying unexercised options (#) unexercisable	Option exercise price ($)	Option expiration date	Number of shares of units of stock that have not vested (#)		Market value of shares of units of stock that have not vested ($) (3)
Tracy Curley	—	100,000	$ 1.61	October 31, 2032	22,728	(1)	31,137
Benjamin Bielak	—	30,000	$ 1.61	October 31, 2032	28,410	(2)	38,922
Benjamin Bielak	4,396	—	$ 1.00	July 27, 2028	—		—
Benjamin Bielak	1,127	282	$ 1.00	April 26, 2029	—		—

1) Represents the unvested portion of the 37,879 RSUs granted on June 21, 2021, which is to vest in equal installments on the first five anniversaries of the grant date, subject to the executive's continued service through each applicable vesting date.
2) Represents the unvested portion of the 47,341 RSUs granted on June 21, 2021, which is to vest in equal installments on the first five anniversaries of the grant date, subject to the executive's continued service through each applicable vesting date.
3) Valuations are based on $1.37 per share, which was the last trading price for a share of the Company's Common Stock on the NASDAQ on December 30, 2022.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Equity Incentive Plans

Our Board has adopted, and our stockholders have approved, the 2013 Plan and 2021 Plan. The number of shares issued, number of shares reserved for issuance, number of shares underlying outstanding stock options and number of shares remaining available for future issuance under each plan, as of December 31, 2022, are as follows:

Plan	Number of Shares Reserved for Issuance	Number of Shares Issued	Number of Shares underlying Outstanding Options	Number of Shares Remaining Available for Future Issuance
2013 Stock Incentive Plan	309,029	308,942	134,661	87
2021 Stock Incentive Plan	608,000	485,985	95,243	122,015

2013 Stock Incentive Plan

The 2013 Stock Incentive Plan was adopted by our Board of Directors and approved by our stockholders on April 12, 2013 to enhance our ability to attract, retain and motivate employees, officers, directors, consultants and advisors by providing such persons with equity ownership opportunities and performance-based incentives. The 2013 Stock Incentive Plan similarly authorizes options, restricted stock, restricted stock units and other stock-based awards and grants our Board of Directors, or any committee to which the Board of Directors delegates such authority, the sole discretion in administering, interpreting, amending or accelerating the 2013 Stock Incentive Plan. Further, our Board of Directors may delegate to one or more officers of the Company the power to grant awards and exercise such other powers under the 2013 Stock Incentive Plan as the Board of Directors may determine, provided, that the maximum number of awards to be granted and the maximum number of shares issuable to any one participant by such officer or officers are fixed by the Board of Directors. No officer may designate himself or herself as a recipient of any such awards.

Awards may be made under the 2013 Stock Incentive Plan for up to 309,029 shares of our common stock. The shares of common stock underlying any unexercised award shall again be available for the grant of awards under the 2013 Stock Incentive Plan, subject to any limitations under the Code. No participant may be granted awards, over the ten-year term of the 2013 Stock Incentive Plan, equating to more than an aggregate of 50% of the shares of common stock available under the 2013 Stock Incentive Plan.

Our Board of Directors may grant participants of the 2013 Stock Incentive Plan options to purchase our common stock and determine the terms of such options (including the number of shares of common stock to be covered by each option, the exercise price of each option and the conditions and limitations applicable to the exercise of each option). Incentive stock options and nonqualified stock options to purchase common stock may also be awarded under the 2013 Stock Incentive Plan. Any incentive stock options that, in the aggregate, become exercisable for the first time in any one calendar year for shares of common stock with an aggregate fair market value of more than $100,000 are deemed to be nonstatutory or nonqualified stock options. These options may not be granted at less than the fair market value of our common stock (or 110% of the fair market value if an incentive stock option is granted to any stockholder who owns beneficially more than 10% of the voting power of all classes of the issued and outstanding stock).

Our Board of Directors may also grant shares of restricted stock or restricted stock units. Participants holding shares of restricted stock are entitled to all ordinary cash dividends paid with respect to such shares unless otherwise provided by our Board of Directors. Further, within 120 days of the termination of a participant's employment, for any reason, the Company may purchase any shares of unvested restricted stock awards at the lower of the original purchase or issue price to the participant, or the fair market value.

In addition, other stock-based awards including stock appreciation rights, bonus stock, phantom stock awards and stock units may be issued, entitling recipients to receive shares of common stock to be delivered in the future. Such other stock-based awards may be available as a form of payment in the settlement of other awards granted under the 2013 Stock Incentive Plan or as payment in lieu of compensation to which a participant is otherwise entitled. The 2013 Stock Incentive Plan also provides for substitute awards (the "2013 Substitute Awards"), which may be issued in connection with a merger or acquisition. The 2013 Substitution Awards may substitute any options or other stock or stock-based awards granted by any merged or acquired entity or its affiliate on such terms as our Board of Directors deems appropriate.

In the event of any stock split, reverse stock split, reclassification of shares, spin-off or similar change in capitalization or any dividend or distribution other than an ordinary cash dividend, the number and class of securities, exercise price per share and the terms of each outstanding award are to be adjusted equitably by the Company as determined by our Board of Directors. In the event of a reorganization, merger liquidation or similar transaction, the Board of Directors as the discretion to provide that awards are assumed, substituted, terminated immediately prior to the consummation of such event, declare them exercisable or provide cash consideration for such award.

We have the right to repurchase awards in the event a participant is terminated or leaves the Company regardless of the reason or cause.

Repricing of Stock Options

In September 2020, our Board of Directors approved the repricing of all outstanding stock options to purchase an aggregate of 253,349 shares of common stock at an exercise price of $1.00 per share.

Amended and Restated 2021 Stock Incentive Plan

On June 16, 2021, our Board of Directors and stockholders approved the 2021 Plan. Our Board of Directors approved certain amendments to the 2021 Plan, which were approved by the stockholders on May 25, 2022. The following is summary of the principal features of the 2021 Plan.

The purpose of the 2021 Plan is to enable us to offer our employees, officers, directors and consultants whose past, present and/or potential future contributions to us have been, are, or will be important to its success, an opportunity to acquire a proprietary interest in our Company. The various types of incentive awards that may be provided under the plan are intended to enable our Company to respond to changes in compensation practices, tax laws, accounting regulations and the size and diversity of its business.

The 2021 Plan grants our Board of Directors, or any committee to which the Board of Directors delegates such authority the sole discretion in administering, interpreting, amending or accelerating the 2021 Plan. The committee is comprised solely of "non-employee" directors, as defined in Rule 16b-3 under the Exchange Act. Subject to the provisions of the 2021 Plan, the committee will determine, among other things, the persons to whom from time to time awards may be granted, the specific type of awards to be granted, the number of shares subject to each award, share prices, any restrictions or limitations on the awards, and any vesting, exchange, surrender, cancellation, acceleration, termination, exercise or forfeiture provisions related to the awards.

There are 608,000 shares of common stock available for issuance under the 2021 Plan. The number of shares of common stock is subject to an annual increase on each anniversary of the 2021 Plan so that the aggregate amount of shares of common stock reserved under the 2021 Plan is equal to the greater of (i) the number of shares of common stock then reserved under the 2021 Plan or (ii) 5% of the total issued and outstanding number of our shares of common stock as of such anniversary. The maximum number of shares of common stock that may be awarded under the 2021 Plan as incentive stock options is 608,000 shares. Shares

of common stock subject to other awards that are forfeited or terminated will be available for future award grants under the 2021 Plan. If a holder pays the exercise price of a stock option by surrendering any previously owned shares of common stock or arranges to have the appropriate number of shares otherwise issuable upon exercise withheld to cover the withholding tax liability associated with the stock option exercise, the number of shares available under the plan may be increased by the lesser of (i) the number of such surrendered shares and shares used to pay taxes; and (ii) the number of shares purchased under such stock option.

We may grant awards under the 2021 Plan to employees, officers, directors, and consultants who are deemed to have rendered, or to be able to render, significant services to us and who are deemed to have contributed, or to have the potential to contribute, to its success. An incentive stock option may be granted under the plan only to a person who, at the time of the grant, is an employee of our Company or our subsidiaries.

Options. The 2021 Plan provides both for "incentive" stock options as defined in Section 422 of the Code, and for options not qualifying as incentive options, both of which may be granted with any other stock-based award under the plan. The committee determines the exercise price per share of common stock purchasable under an incentive or non-qualified stock option, which may not be less than 100% of the fair market value on the day of the grant or, if greater, the par value of a share of common stock. However, the exercise price of an incentive stock option granted to a person possessing more than 10% of the total combined voting power of all classes of our stock may not be less than 110% of the fair market value on the date of grant. The aggregate fair market value of all shares of common stock with respect to which incentive stock options are exercisable by a participant for the first time during any calendar year (under all of the plans), measured at the date of the grant, may not exceed $100,000.

An incentive stock option may only be granted within 10 years from the effective date of the 2021 Plan. An incentive stock option may only be exercised within ten years from the date of the grant, or within five years in the case of an incentive stock option granted to a person who, at the time of the grant, owns common stock possessing more than 10% of the total combined voting power of all classes of our stock.

Stock Appreciation Rights. Under the 2021 Plan, we may grant stock appreciation rights to participants who have been, or are being, granted stock options under the plan as a means of allowing the participants to exercise their stock options without the need to pay the exercise price in cash, or we may grant them alone and unrelated to an option. In conjunction with non-qualified stock options, stock appreciation rights may be granted either at or after the time of the grant of the non-qualified stock options. In conjunction with incentive stock options, stock appreciation rights may be granted only at the time of the grant of the incentive stock options. A stock appreciation right entitles the holder to receive a number of shares of common stock having a fair market value equal to the excess fair market value of one share of common stock over the exercise price of the related stock option, multiplied by the number of shares subject to the stock appreciation rights. The granting of a stock appreciation right in tandem with a stock option will not affect the number of shares of common stock available for awards under the plan. In such event, the number of shares available for awards under the plan will, however, be reduced by the number of shares of common stock acquirable upon exercise of the stock option to which the stock appreciation right relates.

Restricted Stock. Under the 2021 Plan, we may award shares of restricted stock either alone or in addition to other awards granted under the plan. The committee determines the persons to whom grants of restricted stock are made, the number of shares to be awarded, the price (if any) to be paid for the restricted stock by the person receiving the stock from us, the time or times within which awards of restricted stock may be subject to forfeiture, the vesting schedule and rights to acceleration thereof, and all other terms and conditions of the restricted stock awards.

The 2021 Plan will require that all shares of restricted stock awarded to the holder remain in our physical custody until the restrictions have terminated and all vesting requirements with respect to the restricted stock have been fulfilled. We will retain custody of all dividends and distributions made or declared with respect to the restricted stock during the restriction period. A breach of any restriction regarding the restricted stock will cause a forfeiture of the restricted stock and any retained dividends and distributions. Except for the foregoing restrictions, the holder will, even during the restriction period, have all of the rights of a stockholder, including the right to vote the shares.

Restricted Stock Units. Under the 2021 Plan, we may also award restricted stock units. Restricted stock units are the right to receive shares of common stock at a future date in accordance with the terms of such grant upon the attainment of certain

conditions specified by the committee, which include substantial risk of forfeiture and restrictions on their sale or other transfer by the participant. Restrictions or conditions could also include, but are not limited to, the attainment of performance goals, continuous service with our Company, the passage of time or other restrictions or conditions. The committee determines the persons to whom grants of restricted stock units are made, the number of restricted stock units to be awarded, the time or times within which awards of restricted stock units may be subject to forfeiture, the vesting schedule and rights to acceleration thereof, and all other terms and conditions of the restricted stock units awards. The value of the restricted stock units may be paid in shares, cash, or a combination of both, as determined by the committee.

Other Stock-Based Awards. Under the 2021 Plan, we may grant other stock-based awards, subject to limitations under applicable law that are denominated or payable in, valued in whole or in part by reference to, or otherwise based on, or related to, shares of common stock, as deemed consistent with the purposes of the plan. These other stock-based awards may be in the form of purchase rights, shares of common stock awarded that are not subject to any restrictions or conditions, convertible or exchangeable debentures or other rights convertible into shares of common stock and awards valued by reference to the value of securities of, or the performance of, one of our subsidiaries. These other stock-based awards may include performance shares or options, whose award is tied to specific performance criteria. These other stock-based awards may be awarded either alone, in addition to, or in tandem with any other awards under the 2021 Plan or any of our other plans.

Beneficial Ownership of Our Common Stock

The following table sets forth certain information regarding the beneficial ownership of our outstanding shares of common stock, as of March 16, 2023 by: (i) each of our directors, (ii) each of our named executive officers (as defined by Item 402(a)(3) of Regulation S-K promulgated under the Exchange Act), (iii) all of our directors and named executive officers as a group, and (iv) each person known to us to beneficially own more than 5% of our outstanding shares of common stock.

Beneficial ownership has been determined in accordance with Rule 13d-3 under the Exchange Act. The percentages in the table have been calculated on the basis of treating as outstanding for a particular person, all shares of our common stock outstanding on that date and all shares of our common stock issuable to that holder in the event of exercise of outstanding options, warrants, rights or conversion privileges owned by that person at that date which are exercisable within sixty (60) days of that date. Except as otherwise indicated, the persons listed below have sole voting and investment power with respect to all shares of our common stock owned by them, except to the extent that power may be shared with a spouse.

Title of Class	Name and Address of Beneficial Owner	Amount and Nature of Beneficial Ownership	Percentage of Class(3)
Director and Executive Officers			
Common Stock	Andrew L. Ross(1)	1,336,730 (4)	14.8%
Common Stock	Christopher Ianelli(1)	427,950 (5)	4.7%
Common Stock	Jill Mullan(1)	248,817 (6)	2.8%
Common Stock	Benjamin Bielak(1)	44,025 (7)	**
Common Stock	Tracy Curley(1)	22,412 (8)	**
Common Stock	George "Bud" Scholl(1)	855,621 (9)	9.5%
Common Stock	Steven Gullans(1)	15,894 (10)	**
Common Stock	John L. Brooks III(1)	13,640 (11)	**
Common Stock	Joseph J. Basile(1)	2,980 (12)	**
All Directors and Officers as a Group (9 persons)	All Directors and Officers as a Group (9 persons)	2,968,069	32.7%
5% or Greater Stockholders			
Common Stock	OBF Investments(1)	841,981	9.3%
Common Stock	James G. Wolf(2)	790,730 (13)	8.8%

** Less than 1%

(1) The address is: 450 Bedford St. Suite 1010, Lexington, MA 02420.

(2) The address is: 105 Flyway Drive, Kiawah Island, SC 29455.

(3) The calculation of the percentage of beneficial ownership is based on 9,016,558 shares of common stock outstanding as of March 16, 2023.

(4) Includes 125 shares of Common Stock issuable upon vesting of restricted stock units ("RSUs"), which vest within 60 days of March 16, 2023. Additionally, includes 7,890 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, which are exercisable within 60 days of March 16, 2023. Does not include 6,672 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, none of which are exercisable within 60 days of March 16, 2023.

(5) Includes 92 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.00 per share, which are exercisable within 60 days of March 16, 2023 and does not include 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.00 per share, none of which are exercisable within 60 days of March 16, 2023.

(6) Includes 92 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.00 per share, which are exercisable within 60 days of March 16, 2023 and does not include 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.00 per share, none of which are exercisable within 60 days of March 16, 2023.

(7) Includes 6,087 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.00 per share, all of which are exercisable within 60 days of March 16, 2023. Does not include 28,409 shares of Common Stock issuable upon vesting of RSUs, which do not vest within 60 days of March 16, 2023. Additionally, does not include 30,000 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.61 per share, none of which are exercisable within 60 days of March 16, 2023.

(8) Does not include 22,729 shares of Common Stock issuable upon vesting of RSUs, which do not vest within 60 days of March 16, 2023. Additionally, does not include 100,000 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.61 per share, none of which are exercisable within 60 days of March 16, 2023.

(9) Consists of 841,981 shares of Common Stock owned by OBF Investments, LLC. Mr. Scholl is the President and Chief Executive Officer of OBF Investments, LLC. Includes 125 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 7,890 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, which are exercisable within 60 days of March 16, 2023. Does not include 6,672 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, none of which are exercisable within 60 days of March 16, 2023.

(10) Includes 125 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 10,144 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $3.83 per share and 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, which are exercisable within 60 days of March 16, 2023. Does not include 3,381 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, none of which are exercisable within 60 days of March 16, 2023.

(11) Includes 125 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 7,890 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, which are exercisable within 60 days of March 16, 2023. Does not include 6,672 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $8.00 per share and 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, none of which are exercisable within 60 days of March 16, 2023.

(12) Includes 63 shares of Common Stock issuable upon vesting of RSUs, which vest within 60 days of March 16, 2023. Additionally, includes 2,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share and 417 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.50 per share, which are exercisable within 60 days of March 16, 2023. Does not include 7,500 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.41 per share, and 1,251 shares of Common Stock issuable upon exercise of vested stock options at an exercise price of $1.50 per share, none of which are exercisable within 60 days of March 16, 2023.

(13) Information based solely on the information provided by Mr. Wolf in Amendment No. 1 to Schedule 13G filed with the SEC on December 27, 2022.

Changes in Control

There are no arrangements, known to the Company, including any pledge by any person of securities of the Company, the operation of which may at a subsequent date result in a change in control of the Company.

13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The following are summaries of certain provisions of transactions within the past three years to which we have been a party, in which the amount involved exceeds or will exceed $120,000 and in which any of our directors, executive officers, holders of more than 5% of our capital stock, or immediate family member thereof, had or will have a direct or indirect material interest, and are qualified in their entirety by reference to all of the provisions of such agreements. We believe the terms obtained or consideration that we paid or received, as applicable, in connection with the transactions described below were comparable to terms available or the amounts that we would pay or receive, as applicable, in arm's-length transactions.

Issuance of Convertible Promissory Notes

From March 2017 through July 2018, we issued and sold an aggregate of $5.5 million principal amount in unsecured related party convertible promissory notes ("Convertible Notes") to related parties , with an annual non-compounding interest rate of 6%, all of which converted, along with approximately $1.3 million of unpaid and accrued interest, upon the closing of our IPO into an aggregate of 1,206,614 shares of our common stock, which was at 30% discount to the $8.00 offering price of our common stock in our IPO on June 21, 2021.

The following persons who are directors, executive officers, holders of more than 5% of our capital stock, or an immediate family member thereof currently owned Convertible Notes with a combined principal plus interest value that exceeded $120,000, prior to conversion.

- Andrew Ross, Chairman of our Board of Directors and a principal stockholder, purchased Convertible Notes in the aggregate principal amount of $1,650,000.
- OBF Investments, LLC, a principal stockholder, purchased Convertible Notes in the aggregate principal amount of $2,150,000.
- Anna-Maria and Stephen Kellen Foundation, a principal stockholder, purchased Convertible Notes in the aggregate principal amount of $1,700,000.

In connection with the consummation of the IPO, the Company converted all $5,491,663 of its outstanding principal and all unpaid and accrued interest of $1,257,066 of the Convertible Notes into 1,206,614 shares of common stock on June 21, 2021, at a conversion price of $5.60 per share. As of December 31, 2021, there were no Convertible Notes outstanding. The Company incurred an approximate $260,000 loss on conversion of the Convertible Notes during the year ended December 31, 2021.

Issuance of Secured Promissory Notes

From 2018 through 2020, we issued and sold an aggregate of $6.5 million in certain secured promissory notes ("Bridge Notes"), with an annual non-compounding interest rate of 24%, and a current maturity date of the earlier of September 30, 2020, the closing of a new permanent equity financing in excess of $10,000,000, the sale of our Company or the pre-payment by our Company.

On October 1, 2020, we amended the Bridge Notes to extend the maturity date to March 31, 2021 and to increase the interest rate from 24% to 30% after October 1, 2020. On March 15, 2021, the maturity date was further extended to April 30, 2021, and the Company entered into a Fifth Amendment to the Bridge Notes. On April 16, 2021 and May 20, 2021, the Company issued additional Related Party Bridge Notes to related parties in the aggregate amount of $500,000 in order to finance the Company's working capital needs. The note holders agreed to convert the outstanding principal and accrued and unpaid interest of the notes into shares of common stock upon the consummation of June 2021 offering. On April 28, 2021, the maturity date of the Bridge Notes and Related Party Bridge Notes was further extended to May 31, 2021. On May 12, 2021, the maturity date was further extended to June 30, 2021. See notes to our financial statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021.

The following persons who are directors, executive officers, holders of more than 5% of our capital stock, or immediate family member thereof owned Bridge Notes with a combined principal plus interest value that exceeded $120,000 as of the date of the conversion on June 21, 2021.

- Andrew Ross, a principal stockholder and Chairman of our Board of Directors, and the Andrew L. Ross 2013 Irrevocable Trust, purchased Bridge Notes in the aggregate principal amount of $250,000.

- Callen Ross, son of Andrew Ross, purchased Bridge Notes in the aggregate principal amount of $100,000.

- Barri Mullan-Goodman, sister of Jill Mullan, our former Chief Operating Officer, purchased Bridge Notes in the aggregate principal amount of $150,000.

- Jill Mullan, our former Chief Operating Officer, purchased Bridge Notes in the aggregate principal amount of $350,000.

- David Ianelli, brother of Christopher Ianelli, our former Chief Executive Officer, purchased Bridge Notes in the aggregate principal amount of $100,000.

- Joseph Ianelli, father of Christopher Ianelli, our former Chief Executive Officer, purchased Bridge Notes in the aggregate principal amount of $300,000.

- OBF Investments, LLC, a principal stockholder, purchased Bridge Notes in the aggregate principal amount of $500,000.

Pursuant to the Fifth Amendment to the Bridge Notes, the note holders listed above converted an estimated aggregate amount of $1.8 million of the outstanding principal and accrued interest on the Bridge Notes into 357,420 shares of common stock.

Policies and Procedures for Related Transactions

We have not yet adopted a formal policy for the review, approval or ratification of related party transactions. Accordingly, the transactions discussed above were not reviewed, approved or ratified in accordance with any such policy.

We have adopted a code of business conduct and ethics requiring us to avoid, wherever possible, all conflicts of interests, except under guidelines or resolutions approved by our Board of Directors (or the appropriate committee of our Board) or as disclosed in our public filings with the SEC. Under our code of ethics, conflict of interest situations includes any financial transaction, arrangement or relationship (including any indebtedness or guarantee of indebtedness) involving the Corporation.

In addition, our audit committee, pursuant to a written charter, is responsible for reviewing and approving related party transactions to the extent that we enter into such transactions. An affirmative vote of a majority of the members of the audit committee present at a meeting at which a quorum is present is required in order to approve a related party transaction. A majority of the members of the entire audit committee will constitute a quorum. Without a meeting, the unanimous written consent of all of the members of the audit committee is required to approve a related party transaction. We also require each of our directors and executive officers to complete a directors' and officers' questionnaire that elicits information about related party transactions.
These procedures are intended to determine whether any such related party transaction impairs the independence of a director or presents a conflict of interest on the part of a director, employee or officer.

Employee, Officer and Director Hedging

We maintain a policy on insider trading that applies to all shares of our capital stock held by any director, officer or employee. The policy requires that all directors, officers and employees receive our pre-clearance before engaging in any transactions involving our shares of capital stock and prohibits all directors, officers or employees from taking part in any hedging transactions.

Piggyback Registration Rights

We have granted certain parties piggyback registration rights under a certain investors' rights agreement, dated as of August 22, 2014, by and among us and certain investors, a certain Series A preferred stock subscription agreement, a certain registration rights agreement, dated as of November 28, 2021, by and among us and the selling stockholders in connection with our private placement offering in December 2021, and a certain underwriting agreement, dated June 16, 2021, by and between us and ThinkEquity, a division of Fordham Financial Management, Inc., subject to certain requirements and customary conditions.

Anti-Takeover Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws

Provisions of our Bylaws could make it more difficult to acquire us by means of a merger, tender offer, proxy contest, open market purchases, removal of incumbent directors and otherwise. These provisions, which are summarized below, are expected to discourage types of coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of us to first negotiate with us. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging takeover or acquisition proposals because negotiation of these proposals could result in an improvement of their terms.

Vacancies. Newly created directorships resulting from any increase in the number of directors and any vacancies on the Board of Directors resulting from death, resignation, disqualification, removal or other cause shall be filled by a majority of the remaining directors on the board.

Bylaws. Our Certificate of Incorporation and Bylaws authorizes the Board of Directors to adopt, repeal, rescind, alter or amend our bylaws without stockholder approval.

Removal. Except as otherwise provided, a director may be removed from office only by the affirmative vote of the holders of not less than a majority of the voting power of the issued and outstanding stock entitled to vote.

Calling of Special Meetings of Stockholders. Our Bylaws provide that special meetings of stockholders for any purpose or purposes may be called at any time only by the Board of Directors or by our Secretary following receipt of one or more written demands from stockholders of record who own, in the aggregate, at least 15% the voting power of our outstanding stock then entitled to vote on the matter or matters to be brought before the proposed special meeting.

Cumulative Voting. Our Certificate of Incorporation does not provide for cumulative voting in the election of directors, which would allow holders of less than a majority of the stock to elect some directors.

Staggered Board. Our Bylaws provided that our Board of Directors is divided into three classes with only one class of directors being elected in each year and each class (except for those directors appointed prior to the Annual Meeting) serving a three-year term. As a result, only a minority of the Board of Directors will be considered for election at every annual meeting of stockholders, which may make the removal of management more difficult and may discourage transactions that otherwise could involve payment of a premium over prevailing market prices for our securities.

Choice of Forum

Our Bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) will be the exclusive forum for: (i) any derivative action or proceeding brought on behalf of the Company; (ii) any action asserting a claim for breach of a fiduciary duty owed by any director, officer, employee, or agent of ours to us or our stockholders; (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, the Certificate of Incorporation, or the Bylaws; and (iv) any action asserting a claim governed by the internal affairs doctrine (the "Delaware Forum Provision"). The Bylaws further provide that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America shall be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act (the "Federal Forum Provision"). In addition, the Bylaws provide that any person or

entity purchasing or otherwise acquiring any interest in shares of our common stock is deemed to have notice of and consented to the Delaware Forum Provision and the Federal Forum Provision.

Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the Delaware Forum Provision will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. We note, however, that there is uncertainty as to whether a court would enforce this provision and that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder.

We recognize that the Delaware Forum Provision and the Federal Forum Provision in the Bylaws may impose additional litigation costs on stockholders in pursuing any such claims, particularly if the stockholders do not reside in or near the State of Delaware. Additionally, the Delaware Forum Provision and the Federal Forum Provision may limit our stockholders' ability to bring a claim in a forum that they find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees even though an action, if successful, might benefit our stockholders. In addition, while the Delaware Supreme Court ruled in March 2020 that federal forum selection provisions purporting to require claims under the Securities Act be brought in federal court were "facially valid" under Delaware law, there is uncertainty as to whether other courts will enforce the Federal Forum Provision. If the Federal Forum Provision is found to be unenforceable, we may incur additional costs associated with resolving such matters. The Federal Forum Provision may also impose additional litigation costs on stockholders who assert that the provision is not enforceable or invalid. The Court of Chancery of the State of Delaware and the United States District Court may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments may be more or less favorable to us than our stockholders.

Indemnification of Directors and Officers

We are incorporated in the State of Delaware. The Certificate of Incorporation and Bylaws provide that, to the fullest extent permitted by Delaware law, as it presently exists or may be amended from time to time, a director shall not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director. And under Delaware law, this limitation of liability does not extend to, among other things, acts or omissions which involve intentional misconduct, fraud or knowing violation of law, or unlawful payments of dividends. So these provisions may discourage stockholders from bringing suit against a director or officer for breach of fiduciary duty and may reduce the likelihood of derivative litigation brought by stockholders on our behalf against a director or officer.

The Certificate of Incorporation and Bylaws also provide for the indemnification of our directors, officers, employees, and agents, under certain circumstances, against attorney's fees and other expenses incurred by them in any litigation to which they become a party arising from their association with or activities on behalf of the Company. As such, should our officers and/or directors require us to contribute to their defense, we may be required to spend significant amounts of our capital. This indemnification policy could therefore result in substantial expenditures, which we may be unable to recoup. If these expenditures are significant or involve issues which result in significant liability for our key personnel, we may be unable to continue operating as a going concern.

Furthermore, we intend to enter into indemnification agreements with our directors and executive officers that require us to indemnify them against expenses, judgments, fines, settlements and other amounts that any such person becomes legally obligated to pay (including with respect to a derivative action) in connection with any proceeding, whether actual or threatened, to which such person may be made a party by reason of the fact that such person is or was a director or officer of us or any of our affiliates, provided such person acted in good faith and in a manner such person reasonably believed to be in, or not opposed to, our best interests. We maintain a directors' and officers' liability insurance policy. The policy insures directors and officers against unindemnified losses arising from certain wrongful acts in their capacities as directors and officers and reimburses us for those losses for which we have lawfully indemnified the directors and officers. The policy contains various exclusions.

Transfer Agent

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust. The transfer agent and registrar's address is 1 State Street, 30th Floor, New York, NY 10004 and its telephone number is 1-212-509-4000.

Item 14. Principal Accounting Fees and Services

Audit, Audit-Related and All Other Fees

The table below shows the aggregate fees billed for professional services for the audits and audit-related fees of the Company's annual financial statements included in the Annual Report on Form 10-K for the years ended December 31, 2022 and 2021, respectively, by Wolf & Company, P.C.

	2022	2021
Audit fees(1)	$ 173,000	$ 175,500
Audit-Related fees(2)	16,500	127,500
All Other Fees	—	—
Total	$ 189,500	$ 303,000

(1) This category includes the audit of our annual financial statements, reviews of our financial statements included in our Form 10-Qs and services that are normally provided by our independent registered public accounting firm in connection with its engagements for those fiscal periods.

(2) This category consists of assurance and related services by our independent registered public accounting firm that are reasonably related to the performance of the audit or review of our financial statements and are not reported above under "Audit Fees." The services for the fees disclosed under this category include consents regarding equity issuance.

Part IV

Item 15. Exhibits and Financial Statement Schedules

1. ***Financial Statements -*** We have filed the following documents in Item 8 of this Annual Report:

2. ***Financial Statement Schedules -*** All other schedules are omitted because they are not required, or the required information is included in the financial statements or notes thereto.

3. ***Exhibits -*** For a list of exhibits filed with this Annual Report, refer to the exhibit index below. The exhibits listed in the Exhibit Index are filed or incorporated by reference as part of this Annual Report.

No.	Description of Exhibit
3.1	Fourth Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Company's Form 8-K filed with the SEC on June 22, 2021).
3.2	Second Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 of the Company's Form 8-K filed with the SEC on June 22, 2021).
4.1	Form of Common Stock Purchase Warrant (incorporated by reference to Exhibit 4.1 of the Company's Form 8-K filed with the SEC on November 29, 2021).
4.2	Warrant to Purchase Stock – Western Alliance Bank (incorporated by reference as Exhibit 10.2 to the Company's Form 8-K filed with the SEC on August 16, 2021).
4.3	Description of Securities (incorporated by reference to Exhibit 4.3 of the Company's Form 10-K filed with the SEC on March 22, 2022).
10.1	Loan and Security Agreement (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on August 16, 2021).
10.2	Warrant to Purchase Common Stock issued to Western Alliance Bank on August 13, 2021 (incorporated by reference to Exhibit 10.2 of the Company's Form 8-K filed with the SEC on August 16, 2021).
10.3	Securities Purchase Agreement, dated November 28, 2021, by and between the Company and the purchasers named therein (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on November 29, 2021).
10.4	Registration Rights Agreement, dated November 28, 2021, by and between the Company and the investors named therein (incorporated by reference to Exhibit 10.2 of the Company's Form 8-K filed with the SEC on November 29, 2021).
10.5	Placement Agency Agreement, dated November 28, 2021, by and between the Company and ThinkEquity LLC (incorporated by reference to Exhibit 10.3 of the Company's Form 8-K filed with the SEC on November 29, 2021).
10.6	iSpecimen Inc. 2010 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.7	iSpecimen Inc. 2013 Stock Incentive Plan (incorporated by reference to Exhibit 10.2 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.8	Form of Indemnification Agreement, by and between the Company and certain directors and executive officers (incorporated by reference to Exhibit 10.3 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).

10.9	Form of Confidentiality, Non-Competition And Assignment Agreement, by and between iSpecimen Inc. and each of its employees (incorporated by reference to Exhibit 10.4 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.10	Lease between the Company and Bedford Street LLC (incorporated by reference to Exhibit 10.5 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.11	Form of Series A Preferred Stock Subscription Agreement (incorporated by reference to Exhibit 10.6 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.12	Capital Commitment Agreement, dated September 1, 2012 (incorporated by reference to Exhibit 10.7 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.13	Form of Series B Preferred Stock Purchase Agreement, dated August 22, 2014 (incorporated by reference to Exhibit 10.8 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.14	Form of Investors' Rights Agreement for Series A-1 Preferred Stock and Series B Preferred Stock Investors (incorporated by reference to Exhibit 10.9 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.15	Form of Convertible Note Subscription Agreement (incorporated by reference to Exhibit 10.10 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.16	Form of Unsecured Convertible Promissory Note (incorporated by reference to Exhibit 10.11 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.17	Unsecured Convertible Promissory Note, dated December 29, 2017, issued by the Company to Anna-Maria and Stephen Kellen Foundation, Inc. (incorporated by reference to Exhibit 10.12 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.18	Omnibus Amendment to Unsecured Convertible Notes and Subscription Agreement, dated August 3, 2018, by and among the Company, Andrew L. Ross, Anna-Maria and Stephen Kellen Foundation, Inc., and OBF Investments, LLC (incorporated by reference to Exhibit 10.13 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.19	Second Omnibus Amendment to Unsecured Convertible Notes and Subscription Agreement, dated May 1, 2019, by and among iSpecimen Inc., Andrew L. Ross, Anna-Maria and Stephen Kellen Foundation, Inc., and OBF Investments, LLC (incorporated by reference to Exhibit 10.14 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.20	Third Omnibus Amendment to Unsecured Convertible Notes and Subscription Agreement, dated November 15, 2019, by and among iSpecimen Inc., Andrew L. Ross, Anna-Maria and Stephen Kellen Foundation, Inc., and OBF Investments, LLC (incorporated by reference to Exhibit 10.15 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.21	Fourth Omnibus Amendment to Unsecured Convertible Notes and Subscription Agreement, dated September 19, 2020, by and among iSpecimen Inc., Andrew L. Ross, Anna-Maria and Stephen Kellen Foundation, Inc., and OBF Investments, LLC (incorporated by reference to Exhibit 10.16 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.22	Form of Note Subscription Agreement for Secured Bridge Debt (incorporated by reference to Exhibit 10.17 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.23	Form of Secured Promissory Note for Secured Bridge Debt (incorporated by reference to Exhibit 10.18 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.24	First Amendment to Note Subscription Agreements and Secured Promissory Notes, dated May 1, 2019, by and among the Company and Note Investors (incorporated by reference to Exhibit 10.19 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.25	Second Amendment to Note Subscription Agreements and Secured Promissory Notes, dated November 15, 2019, by and among the Company and Note Investors (incorporated by reference to Exhibit 10.20 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.26	Third Amendment to Note Subscription Agreements and Secured Promissory Notes, dated June 15, 2020, by and among the Company and Note Investors (incorporated by reference to Exhibit 10.21 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).
10.27	Fourth Amendment to Note Subscription Agreements and Secured Promissory Notes, dated October 1, 2020, by and among the Company and Note Investors (incorporated by reference to Exhibit 10.22 of the Company's Form S-1/A (File No. 333-250198) with the SEC on December 31, 2020).

10.28	Fifth Amendment to Note Subscription Agreements and Secured Promissory Notes, dated March 15, 2021, by and among the Company and Note Investors (incorporated by reference to Exhibit 10.23 of the Company's Form S-1/A3 (File No. 333-250198) with the SEC on April 2, 2021).
10.29	iSpecimen Inc. Second Amended and Restated 2021 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on May 26, 2022).
10.30#	Executive Employment Agreement by and between the Company and Christopher lanelli (incorporated by reference to Exhibit 10.25 of the Company's Form S-1/A3 (File No. 333-250198) with the SEC on April 2, 2021).
10.31#	Executive Employment Agreement by and between the Company and Jill Mullan (incorporated by reference to Exhibit 10.26 of the Company's Form S-1/A3 (File No. 333-250198) with the SEC on April 2, 2021).
10.32#	Executive Employment Agreement by and between the Company and Tracy Curley (incorporated by reference to Exhibit 10.27 of the Company's Form S-1/A3 (File No. 333-250198) with the SEC on April 2, 2021).
10.33#	Employment Agreement by and between the Company and Benjamin Bielak (incorporated by reference to Exhibit 10.28 of the Company's Form S-1/A3 (File No. 333-250198) with the SEC on April 2, 2021).
10.34	Factoring Agreement, dated January 1, 2021, by and between iSpecimen Inc. and Versant Funding, LLC (incorporated by reference to Exhibit 10.29 of the Company's Form S-1/A4 (File No. 333-250198) filed with the SEC on April 27, 2021).
10.35	Waiver Agreement, dated April 29, 2022, by and between the Company and Western Alliance Bank (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on April 29, 2022).
10.36#	First Amendment to Executive Employment Agreement, dated as of June 20, 2022, between the Company and Christopher Ianelli (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on June 21, 2022).
10.37#	First Amendment to Executive Employment Agreement, dated as of June 20, 2022, between the Company and Jill Mullan (incorporated by reference to Exhibit 10.2 of the Company's Form 8-K filed with the SEC on June 21, 2022).
10.38#	First Amendment to Executive Employment Agreement, dated as of June 20, 2022, between the Company and Tracy Curley (incorporated by reference to Exhibit 10.3 of the Company's Form 8-K filed with the SEC on June 21, 2022).
10.39#	First Amendment to Executive Employment Agreement, dated as of June 20, 2022, between the Company and Benjamin Bielak (incorporated by reference to Exhibit 10.4 of the Company's Form 8-K filed with the SEC on June 21, 2022).
10.40+#	First Amended and Restated Executive Employment Agreement, dated October 24, 2022, by and between Tracy Wilson Curley and iSpecimen Inc. (incorporated by reference to Exhibit 10.1 of the Company's Form 8-K filed with the SEC on October 28, 2022).
10.41	First Restated Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement, dated October 24, 2022, by and between Tracy Wilson Curley and iSpecimen Inc. (incorporated by reference to Exhibit 10.2 of the Company's Form 8-K filed with the SEC on October 28, 2022).
10.42+#	First Amended and Restated Executive Employment Agreement, dated October 24, 2022, by and between Benjamin Bielak and iSpecimen Inc. (incorporated by reference to Exhibit 10.3 of the Company's Form 8-K filed with the SEC on October 28, 2022).
10.43	First Restated Noncompetition, Nonsolicitation, Nondisclosure and Inventions Agreement, dated October 24, 2022, by and between Benjamin Bielak and iSpecimen Inc. (incorporated by reference to Exhibit 10.4 of the Company's Form 8-K filed with the SEC on October 28, 2022).
10.44+	Separation Agreement, dated October 24, 2022, by and between Christopher Ianelli and iSpecimen Inc. (incorporated by reference to Exhibit 10.5 of the Company's Form 8-K filed with the SEC on October 28, 2022).
10.45+	Separation Agreement effective October 24, 2022, by and between Jill Mullan and iSpecimen Inc. (incorporated by reference to Exhibit 10.6 of the Company's Form 8-K filed with the SEC on October 28, 2022).
14	Form of Code of Business Conduct and Ethics (incorporated by reference to Exhibit 14 of the Company's Form S-1/A4 (File No. 333-250198) filed with the SEC on April 27, 2021).
23.1*	Consent of Wolf & Company, P.C.
31.1*	Certification of Principal Executive Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15(d)-14(a), as adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer Pursuant to Securities Exchange Act Rules 13a-14(a) and 15(d)-14(a), as adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

101.INS*	Inline XBRL Instance Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104*	Cover Page Interactive Data File—the cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.

* Filed herewith.
** Furnished herewith.
+ Schedules and exhibits have been omitted pursuant to Items 601(a)(5) and 601(b)(2) of Regulation S-K. The Company agrees to furnish supplementally a copy of any omitted schedule or exhibit to the SEC upon request.
# Indicates management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on March 30, 2023.

iSPECIMEN, INC.

By: /s/ Tracy Curley
Tracy Curley
Chief Executive Officer, Chief Financial Officer and Treasurer
(Principal Executive Officer and Principal Financial and Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on March 30, 2023, by the following persons on behalf of the registrant and in the capacities indicated:

Signature	
/s/ Tracy Curley Tracy Curley	Chief Executive Officer, Chief Financial Officer and Treasurer (Principal Executive Officer and Principal Financial and Accounting Officer)
/s/ Andrew Ross Andrew Ross	Chairman of the Board
/s/ George "Bud" Scholl George "Bud" Scholl	Director
/s/ Steven Gullans Steven Gullans	Director
/s/ John Brooks II John Brooks II	Director
/s/ Christopher Ianelli Christopher Ianelli	Director
/s/ Jill Mullan Jill Mullan	Director
/s/ Joseph Basile Joseph Basile	Director

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