Global Healthcare Market

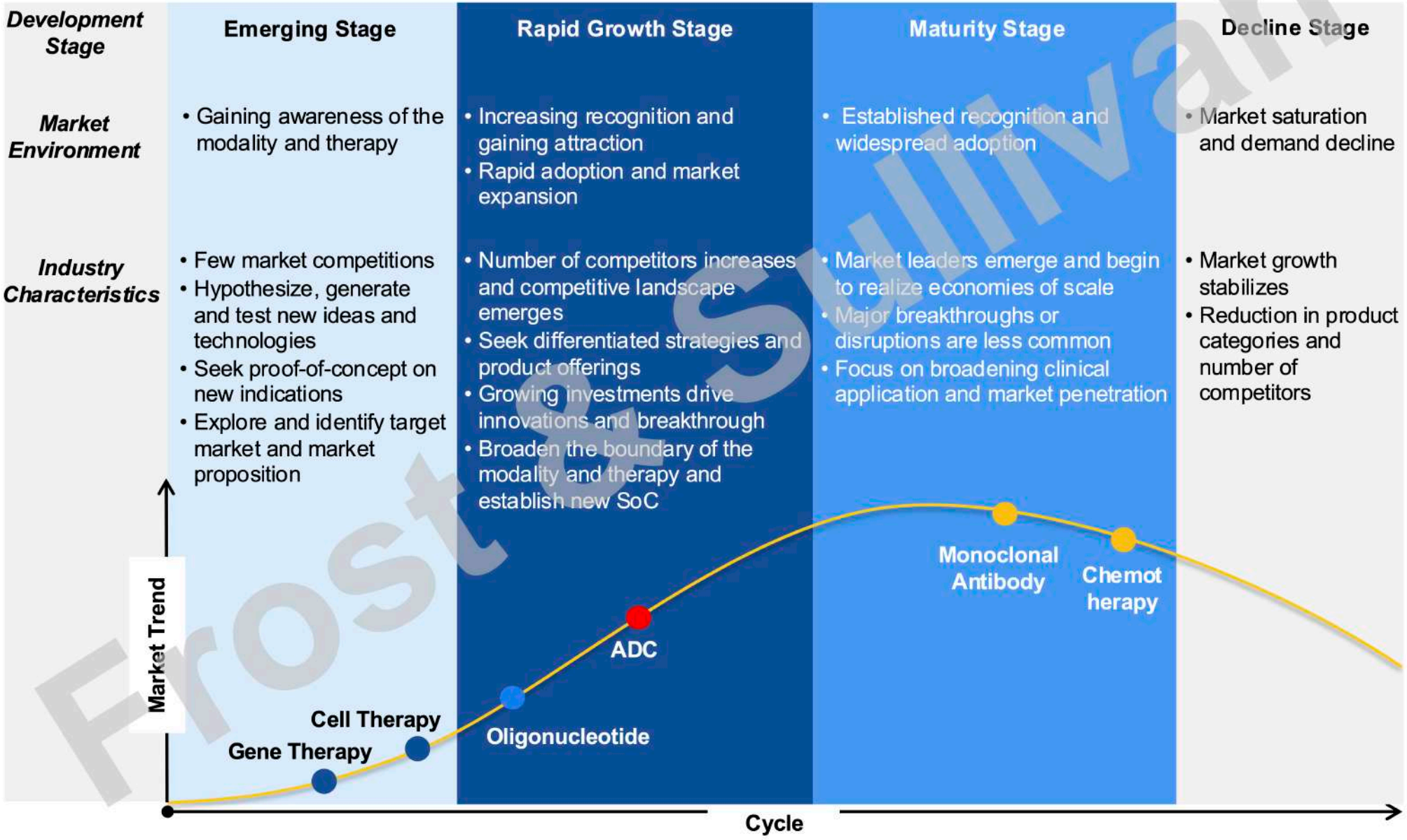
Independent Market Research Report

Confidential For

Mabwell
迈威生物

Frost & Sullivan
April 2026

Development Path of Cancer Treatment



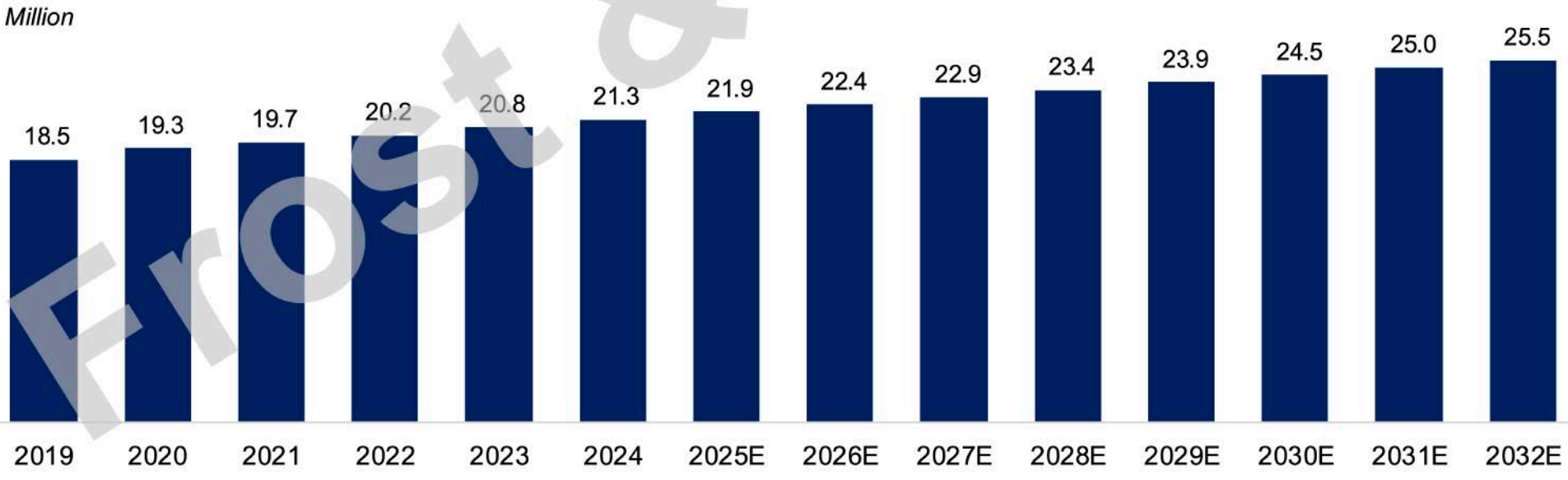
Source: Literature review, Frost & Sullivan Analysis

Incidence of Total Cancer in the Globe, 2019-2032E

- The new cases of total cancer globally is growing to 21.3 million in 2024 from 18.5 million in 2019 with the CAGR of 2.9%. Due to the awareness and diagnosis for cancer, the number of new cases will increase to 23.4 million in 2028 and 25.5 million in 2032 with the CAGR of 2.3% from 2024 to 2028 and a CAGR of 2.2% from 2028 to 2032.

Incidence of Total Cancer in the Globe, 2019-2032E

Period	CAGR
2019-2024	2.9%
2024-2028E	2.3%
2028E-2030E	2.2%



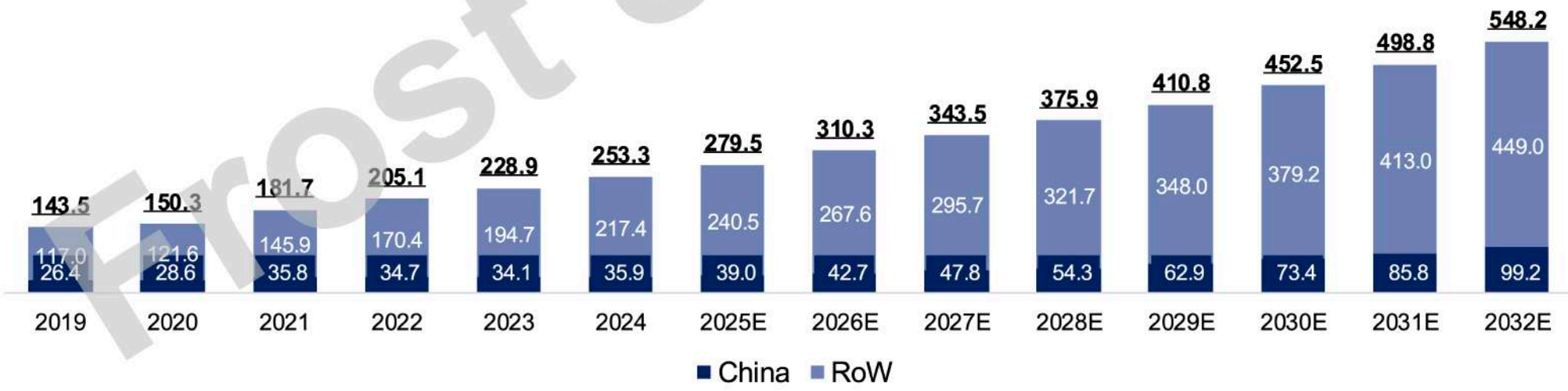
Source: NCC, IRAC, Frost & Sullivan Analysis

Global and China Oncology Drug Market, 2019-2032E

- In 2024, global oncology drug market reached USD 253.3 billion. It is expected to increase to USD 375.9 billion, and USD 548.2 billion in 2028, and 2032 respectively, with the CAGR of 10.4% from 2024 to 2028, and 9.9% from 2028 to 2032.
- In 2024, China oncology drug market reached USD 35.9 billion. It is expected to increase to USD 54.3 billion and USD 99.2 billion in 2028 and 2032 respectively, with the CAGR of 10.9% from 2024 to 2028, and 16.3% from 2028 to 2032.

Global and China Oncology Drug Market, 2019-2032E

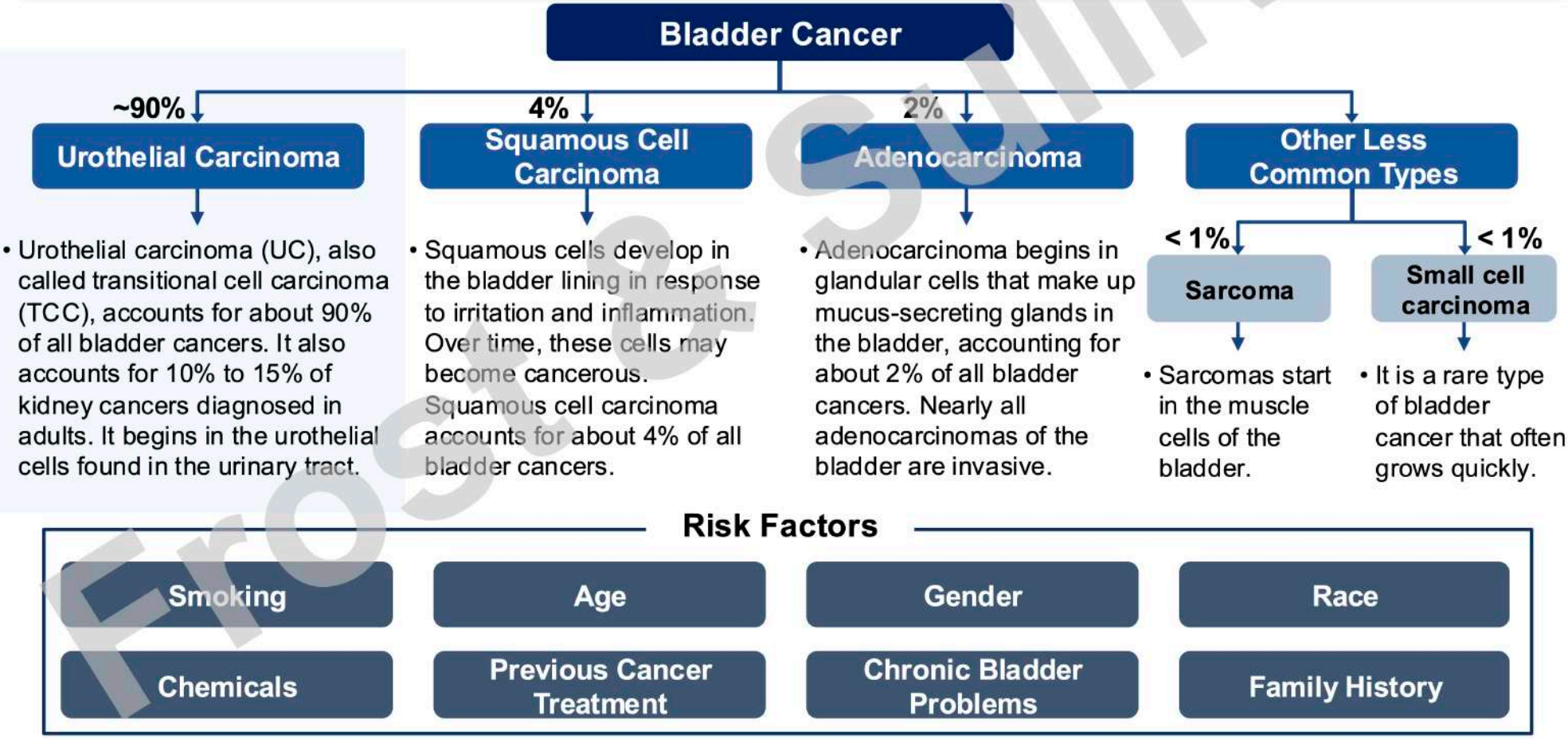
Period	CAGR		
	China	RoW	Global
2019-2024	6.3%	13.2%	12.0%
2024-2028E	10.9%	10.3%	10.4%
2028E-2032E	16.3%	8.7%	9.9%



Source: Annual report, Expert interview, Literature Review, Frost & Sullivan Analysis

Overview of Bladder Cancer

- The bladder is an expandable, hollow organ in the pelvis that stores urine before it leaves the body during urination. Bladder cancer is any of several types of cancer arising from the tissues of the urinary bladder, in which cells grow abnormally and have the potential to spread to other parts of the body.
- Urothelial carcinoma, also known as transitional cell carcinoma (TCC), is by far the most common type of bladder cancer. These cancers start in the urothelial cells that line the inside of the bladder.



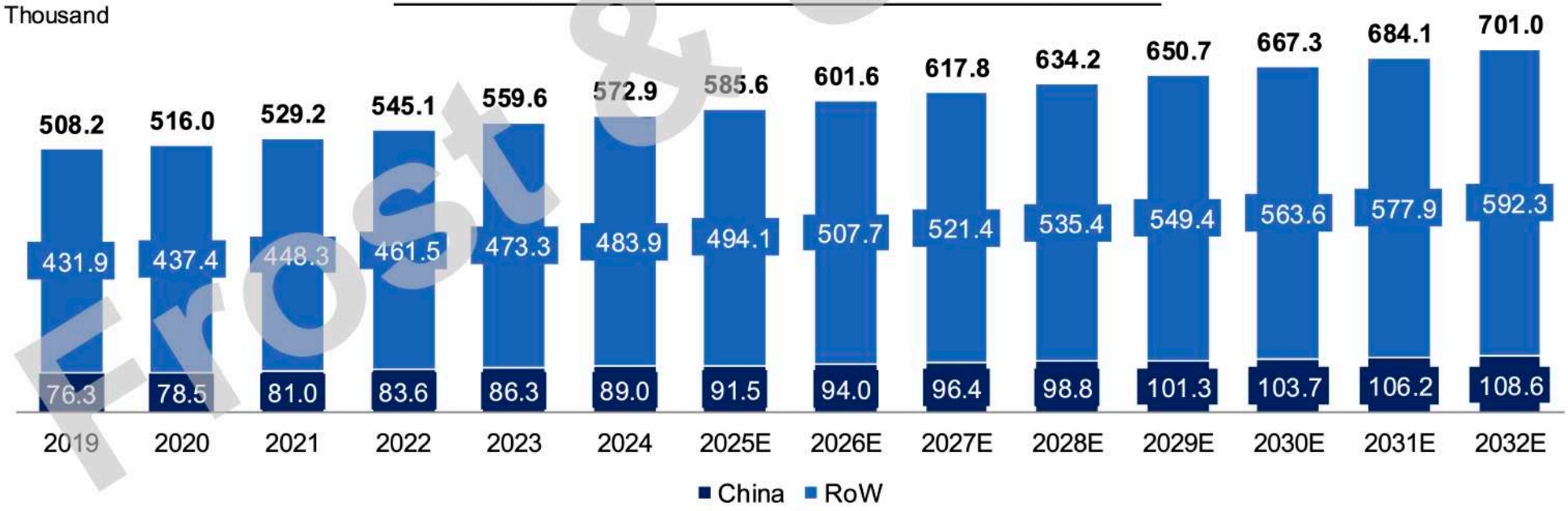
Source: Literature Review, Frost & Sullivan Analysis

Global Incidence of Urothelial Carcinoma, 2019-2032E

- The global incidence of urothelial carcinoma increased from 508.2 thousand in 2019 to 572.9 thousand in 2024, reflecting a CAGR of 2.4% over this period. It is expected to further rise to 634.2 thousand in 2028 and 701.0 by 2032 with a CAGR of 2.6% from 2024 to 2028 and 2.5% from 2028 to 2032.
- Urothelial Carcinoma is one of the most frequently occurring cancers in China. In 2024, the incidence of urothelial cancer in China is 89.0 thousand. It is expected to be 98.8 thousand in 2028 and reach 108.6 thousand in 2032, with a CAGR of 2.7% from 2024 to 2028 and 2.4% from 2028 to 2032 .

Global incidence of Urothelial Cancer, 2019-2032E

Period	CAGR		
	China	ROW	Global
2019-2024	3.1%	2.3%	2.4%
2024-2028E	2.7%	2.6%	2.6%
2028E-2032E	2.4%	2.6%	2.5%



Source: Frost & Sullivan Analysis

NMPA-Approved Biologics for the 2L Monotherapy of UC

- There are four NMPA-Approved Biologics for the 2L Monotherapy of UC.
- The number of eligible patients for 1L and 2L UC treatment in China was approximately 23.6 thousand and 18.3 thousand as of 2024, respectively.

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Toripalimab 拓益®	Junshi Biosciences	mAb	PD-1	Locally advanced or metastatic urothelial carcinoma, who have progressed during or after platinum-containing chemotherapy, including progression within 12 months of neoadjuvant or adjuvant chemotherapy	Monotherapy	2L	2018/12/17	B	~¥12,000
Tislelizumab 百泽安®	BeiGene	mAb	PD-1	Patients with locally advanced or metastatic urothelial carcinoma with high PD-L1 expression who have progressed during or after platinum-containing chemotherapy, including progression within 12 months of neoadjuvant or adjuvant chemotherapy	Monotherapy	2L	2019/12/26	B	~¥5,500
Disitamab vedotin 爱地希®	Remegen	ADC	HER2	Patients with HER2 positive locally advanced or metastatic urothelial carcinoma who have and have previously received systemic chemotherapy	Monotherapy	2L	2021/12/31	B	~¥160,000
Enfortumab vedotin 备思复®	Astellas	ADC	Nectin-4	Patients with locally advanced or metastatic urothelial carcinoma who have previously received platinum-containing chemotherapy and treatment with a programmed cell death receptor-1 (PD-1) or programmed cell death ligand-1 (PD-L1) inhibitor	Monotherapy	2L	2024/8/13	/	~¥430,000

Note: As of April 12, 2026

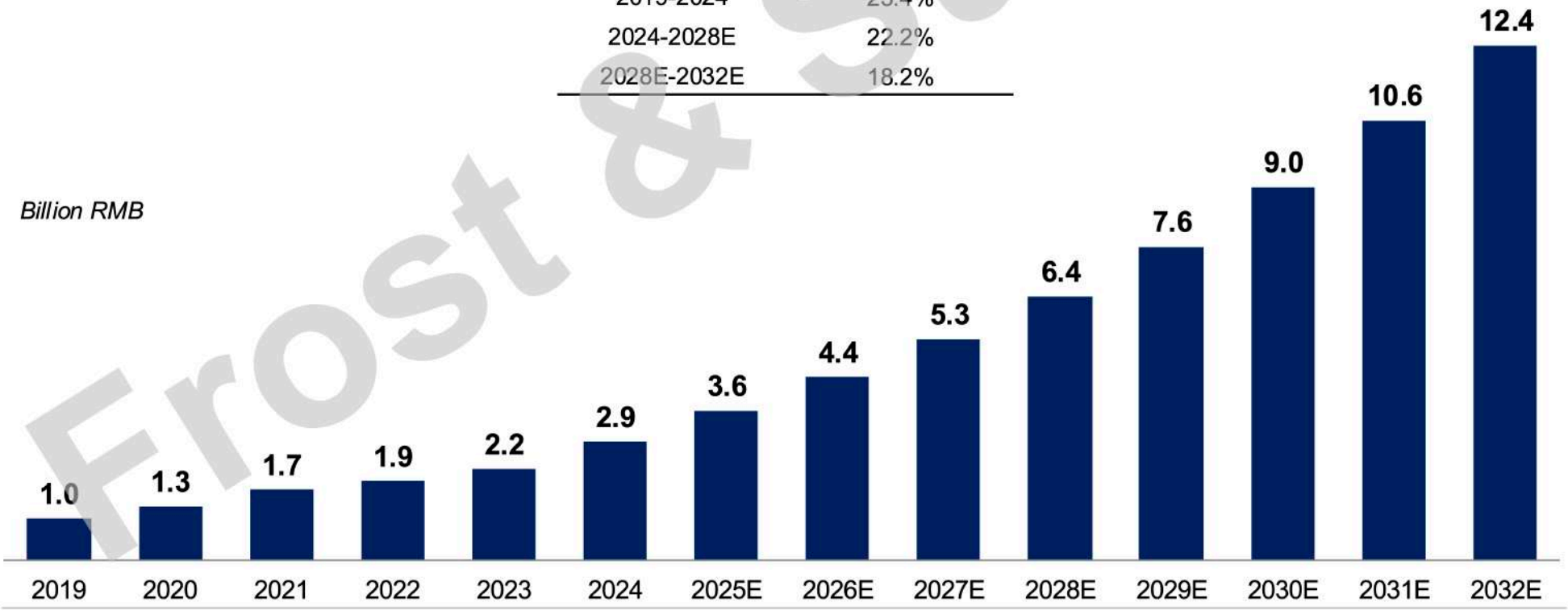
Source: Frost & Sullivan Analysis

China Urothelial Cancer Drug Market, 2019-2032E

- The market of urothelial cancer drugs in China increased to RMB 2.9 billion in 2024, with the CAGR of 23.4% from 2019 to 2024. It is estimated to grow to RMB 6.4 billion in 2028 and rise to RMB 12.4 billion by 2032, with the CAGR of 22.2% from 2024 to 2028 and a CAGR of 18.2% from 2028 to 2032.

China Urothelial Cancer Drug Market, 2019-2032E

Period	CAGR
2019-2024	23.4%
2024-2028E	22.2%
2028E-2032E	18.2%



Source: Frost & Sullivan Analysis

Overview of Triple-negative Breast Cancer

- Triple-negative breast cancer (TNBC) is a type of breast cancer defined by immunohistochemistry (IHC) as being negative for estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2). It accounts for approximately 15% of all breast cancer cases globally. TNBC is typically diagnosed more frequently in younger and premenopausal women.

Triple-Negative Breast Cancer

ER negative	PR negative	HER2 negative

Hormone therapy is ineffective (such as tamoxifen or aromatase inhibitors).

No response to targeted HER2 receptor therapy (such as Herceptin).

- TNBC is an aggressive and difficult-to-treat cancer.
- Approximately 15 to 20 percent of breast cancers are TNBC.

Risk Factors

1. Demographic characteristics
   - Age: 50 years and younger
   - Ethnicity: African and Hispanic
2. Breast cancer susceptibility genes
   - Including two genes: BRCA1 and BRCA2
3. Physiological factors
   - Early menarche, higher parity, younger age at full-term pregnancy, shorter duration of breastfeeding, higher body mass index (BMI), and higher waist-to-hip ratio.

Clinical Characteristics of TNBC

- TNBC is highly aggressive, characterized by a younger age at diagnosis, larger average tumor size, higher tumor grade, and a higher rate of lymph node positivity.
- TNBC exhibits an early peak in recurrence between the first and third years after diagnosis and is known for having more aggressive metastases, which are more likely to occur in visceral sites, particularly in the lungs and brain.
- The PI3K-AKT-mTOR pathway, prevalent in cells, regulates cellular senescence, angiogenesis, energy and glucose metabolism, and interacts with many other signaling pathways. Its overactivation can drive excessive cell growth, inhibit cell death, and cause abnormal cell differentiation, promoting tumor formation and metastasis. This pathway is critical for cancer development and prognosis.

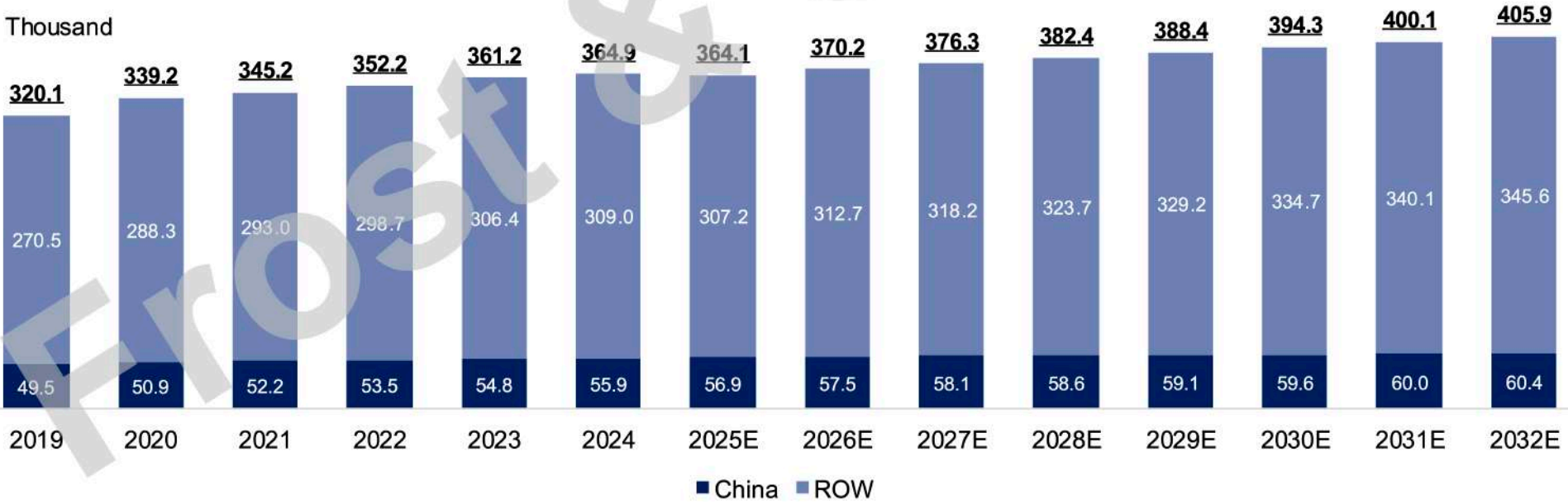
Source: Frost & Sullivan Analysis

Global Incidence of TNBC, 2019-2032E

- The incidence of TNBC in China reached 55.9 thousand in 2024. This number is expected to increase to 58.6 thousand in 2028 and 60.4 thousand in 2032, representing a CAGR of 1.2% between 2024 and 2028 and 0.7% between 2028 and 2032.
- Global incidence of TNBC in 2024 reached 364.9 thousand. It is estimated to rise to 382.4 thousand in 2028 and 405.9 thousand in 2032, representing a CAGR of 1.2% and 1.5% respectively.

Global Incidence of TNBC, 2019-2032E

Period	CAGR		
	China	RoW	Global
2019-2024	2.4%	2.7%	2.7%
2024-2028E	1.2%	1.2%	1.2%
2028E-2032E	0.7%	1.6%	1.5%



Source: Frost & Sullivan analysis

NMPA-Approved Biologics for the Treatment of TNBC

- There are four NMPA-approved biologics for the treatment of TNBC. Among these, 2 drugs are ADC drugs: Sacitumab tirumotecan and Sacitumab govitecan.
- The number of eligible patients for 1L TNBC treatment in China in 2024 was approximately 39.1 thousand and the number of eligible patient for 2L TNBC treatment in China in 2024 was approximately 33.5 thousand.
- The number of TOPi ADC treated TNBC patients in 2024 is approximately 17.8 thousand.

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance
Toripalimab 拓益®	Junshi Biosciences	mAb	PD-1	Recurrent or metastatic triple-negative breast cancer (TNBC) that is PD-L1 positive (CPS ≥1)	Combination with albumin-bound paclitaxel for injection.	1L	2024/6/18	B
Sacituzumab tirumotecan 佳泰莱®	Kelun-Biotech	ADC	TROP2	Adult patients with unresectable locally advanced or metastatic triple-negative breast cancer (TNBC) who have received at least two prior systemic therapies, including at least one for the treatment of advanced or metastatic disease.	Monotherapy	3L	2024/11/22	/
Pembrolizumab 可瑞达®	MSD	mAb	PD-1	Early high-risk triple-negative breast cancer (TNBC) whose tumors express PD-L1 (Combined Positive Score [CPS] ≥20)	Combination with chemotherapy	Neoadjuvant treatment	2022/12/1	/
Sacituzumab govitecan 拓达维®	Gilead	ADC	TROP2	Patients with unresectable locally advanced or metastatic triple-negative breast cancer who have received at least two prior systemic therapies, including at least one for metastatic disease	Monotherapy	3L	2022/6/7	/

Note: As of April 12, 2026

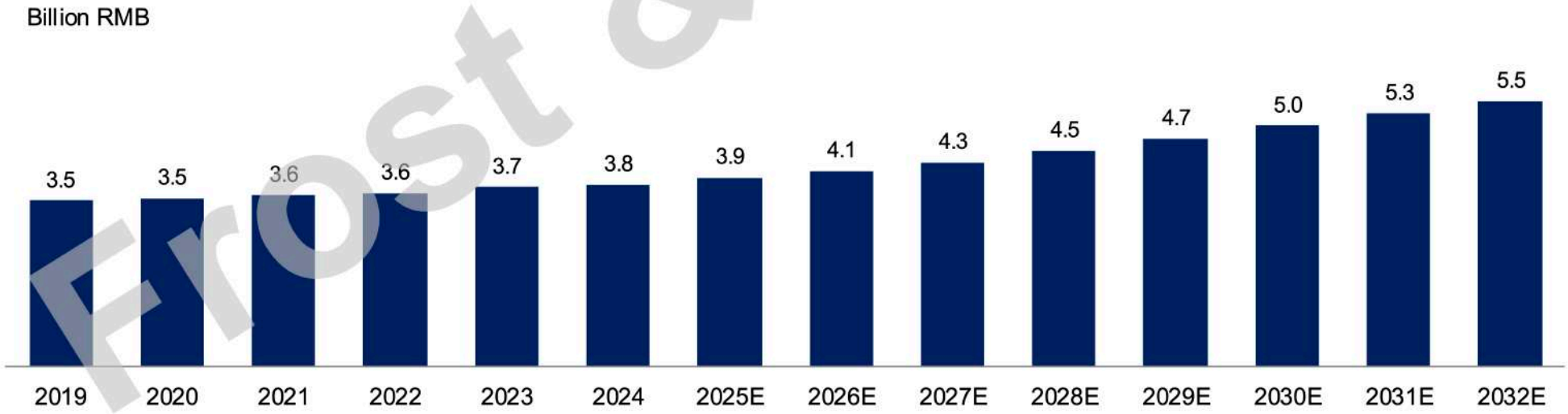
Source: Frost & Sullivan Analysis

Historical and Forecasted TNBC Market in China, 2019-2032E

- China's TNBC drug market size reached RMB 3.8 billion in 2024, with a CAGR of 1.9% from 2019 to 2024. The market size will climb to RMB 4.5 billion and RMB 5.5 billion in 2028 and 2032 respectively.

Historical and Forecasted TNBC Market in China, 2019-2032E

Period	CAGR
2019-2024	1.9%
2024-2028E	4.4%
2028E-2032E	5.3%

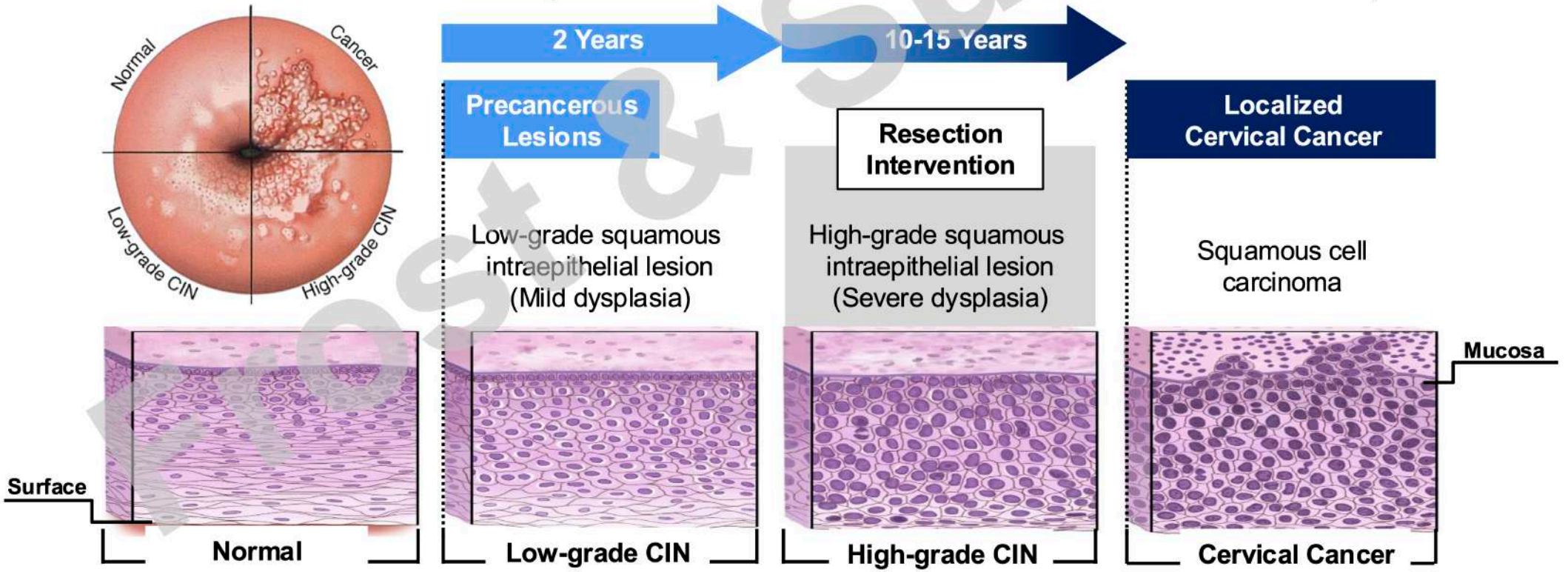


Source: Literature Review, Annual report, Expert interview, Frost & Sullivan Analysis

Overview of Cervical Cancer

- Cervical cancer is another one of the few cancer types that is recommended for regular screening among average-risk populations who have no physical signs or symptoms of cancer, due to its high incidence, high mortality, long tumor development cycle, well defined precancerous stages and heavy treatment burden. Cervical cancer can be prevented or cured if detected at early stages. A precancerous cervical lesion in cervix uteri, which is also called a cervical intraepithelial neoplasia (CIN), may progress to cervical cancer if they remain in the cervix for a long period of time. In about 10% of cases, low-grade CIN progress to high-grade CIN within 2 years. High-grade CIN have the potential to develop into squamous cell carcinoma or adenocarcinoma over about 10 to 15 years if left untreated. Squamous cell carcinoma or adenocarcinoma are cancers that start in the cells lining or gland cells of the cervix. Around 90% of cervical cancers are squamous cell cancers.
- Treatment usually is not required for low-grade CIN. Only 1% of cases of low-grade CIN progress to cervical cancer. Ablation and resection procedures, like Loop electrosurgical excision procedure (LEEP), are recommended for high-grade CIN because it can reduce the risk of cervical cancer by 95% in the first 8 years after treatment.

Progression of CIN to Cervical Cancer (From Precancerous Lesion to Localized Cervical Cancer)



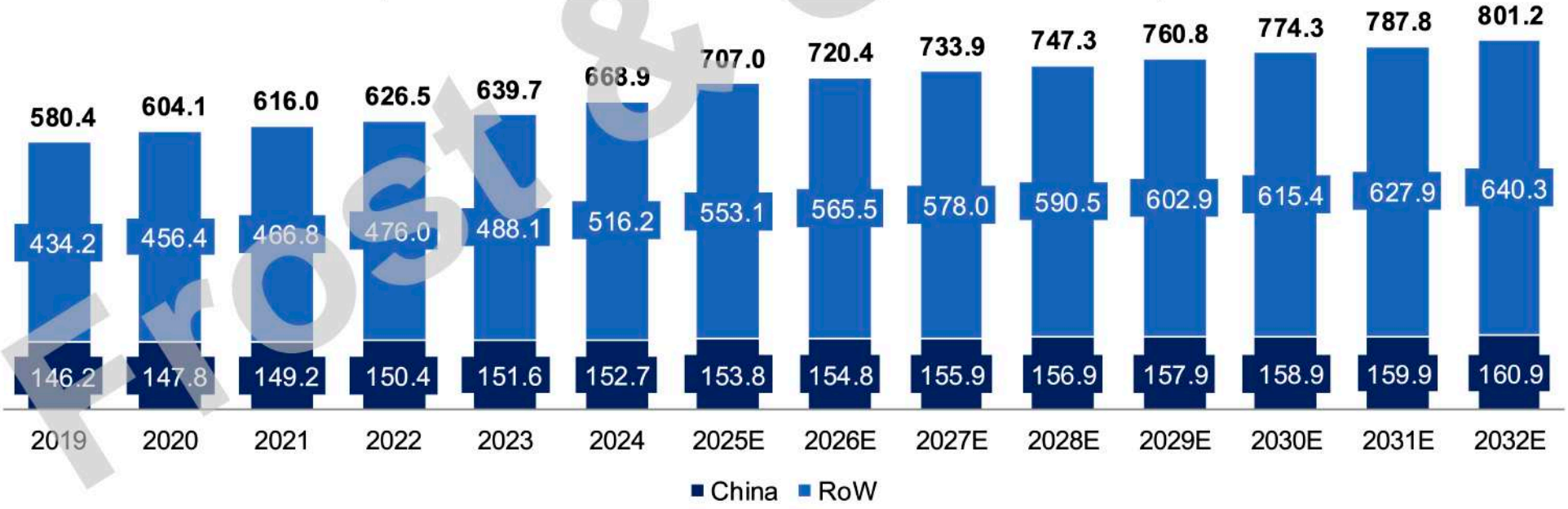
Source: Literature Review, Frost & Sullivan Analysis

Global Incidence of Cervical Cancer, 2019-2032E

- Global new cases of cervical cancer has reached 668.9 thousand in 2024 with a CAGR of 2.9% from 2019 to 2024. It is estimated to be 747.3 thousand in 2028 and 801.2 in 2032, representing a CAGR of 2.8% from 2024 to 2028 and 1.8% from 2028 to 2032.
- Cervical cancer is one of the most frequently occurring cancers in China. The increased pressure, unhealthy diet will continuously increase the risk of developing cervical cancer in China. It is expected to be 156.9 thousand in 2028 and160.9 thousand in 2032, with a CAGR of 0.6% from 2028 to 2032.
- The incidence rate of cervical cancer is approximately 0.011% in China, compared to a global incidence rate of about 0.0080%.

Global incidence of Cervical Cancer, 2019-2032E

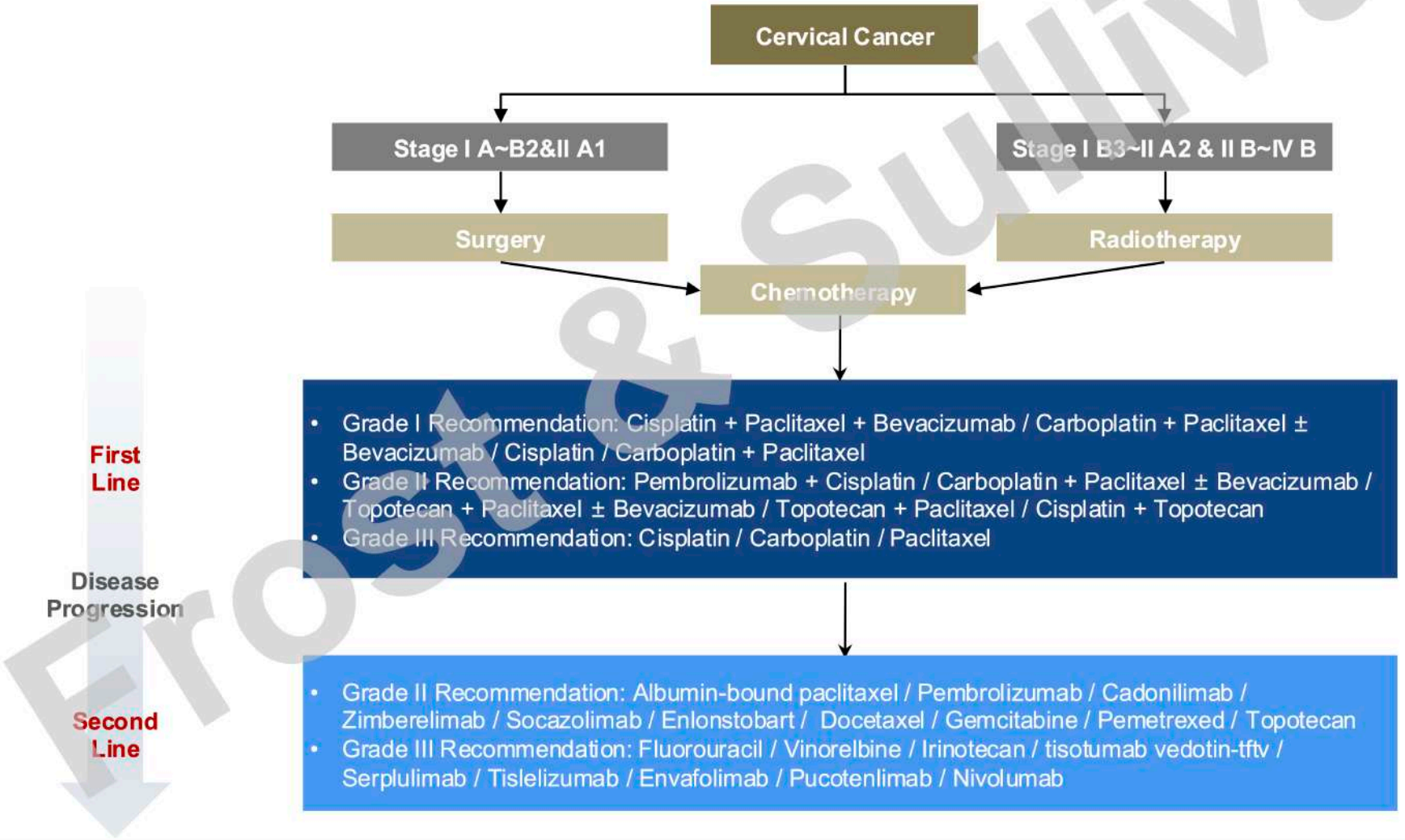
Period	CAGR		
	China	ROW	Global
2019-2024	0.9%	3.5%	2.9%
2024-2028E	0.7%	3.4%	2.8%
2028E-2032E	0.6%	2.0%	1.8%



Source: ACS, NCCR, Frost & Sullivan Analysis

Treatment Paradigm of Cervical Cancer-CSCO

- The treatment of cervical cancer mainly includes surgery and radiotherapy. Chemotherapy is widely used in combination with surgery and radiotherapy and in the treatment of advanced recurrent cervical cancer, using platinum (mainly cisplatin) based monotherapy or combined chemotherapy.



Source: CSCO 2024

NMPA-Approved Biologics for the Treatment of CC, including 1L Combination Therapy and 2L Monotherapy (1/2)

- There are seven NMPA-Approved Biologics for the Treatment of CC, including 1L Combination Therapy and 2L Monotherapy.
- The number of eligible patients for 1L CC treatment in China was approximately 83.5 thousand as of 2024.

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Zimberelimab 誉妥®	Harbin Gloria Pharmaceuticals	mAb	PD-1	Patients with recurrent or metastatic cervical cancer that is positive for PD-L1 expression (CPS≥1) and have progressed after previous treatment with platinum-containing chemotherapy	Monotherapy	2L	2023/6/30	B	~¥11,000
Cadonilimab 开坦尼®	Akeso Biopharma	BsAb	PD-1、CTLA4	Patients with recurrent or metastatic cervical cancer that have progressed after previous treatment with platinum-containing chemotherapy	Monotherapy	2L	2022/6/28	B	~¥48,000
Socazolimab 善克钰®	Sorrento Therapeutics Zhaoke (Guangzhou) Oncology Pharmaceutical Limited	mAb	PD-1	Patients with recurrent or metastatic cervical cancer that have progressed after previous treatment with platinum-containing chemotherapy	Monotherapy	2L	2023/12/19	/	~¥169,000
Enlonstobart 恩舒幸®	CSPC	mAb	PD-1	Patients with recurrent or metastatic cervical cancer that is positive for PD-L1 expression (CPS≥1) and have progressed after previous treatment with platinum-containing chemotherapy	Monotherapy	2L	2024/6/25	B	~¥11,000

Note: As of April 12, 2026

Source: Frost & Sullivan Analysis

NMPA-Approved Biologics for the Treatment of CC, including 1L Combination Therapy and 2L Monotherapy (2/2)

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Iparomlimab/Tuvonralimab 齐倍安®	Qilu Pharmaceuticals	Combination Antibody	PD-1、CTLA4	Patients with recurrent or metastatic cervical cancer that have progressed after previous treatment with platinum-containing chemotherapy	Monotherapy	2L	2024/9/26	/	~¥226,000
Pembrolizumab 可瑞达®	MSD	mAb	PD-1	Patients who have not previously received any definitive surgical, radiation, or systemic therapy for cervical cancer, including investigational agents, and is immunotherapy-naïve	Chemotherapy and radiotherapy	1L	2024/12/6	/	NA[1]
Bevacizumab 安维汀®	Roche	mAb	VEGF	Persistent, recurrent, or metastatic cervical cancer (CC)	Combination of paclitaxel and cisplatin or paclitaxel and topotecan	1L	2021/11/17	B	~¥125,000

Note: As of April 12, 2026

Note: [1]The annual treatment cost cannot be calculated due to the unmet PFS in pivotal clinical trial Keynote-A18

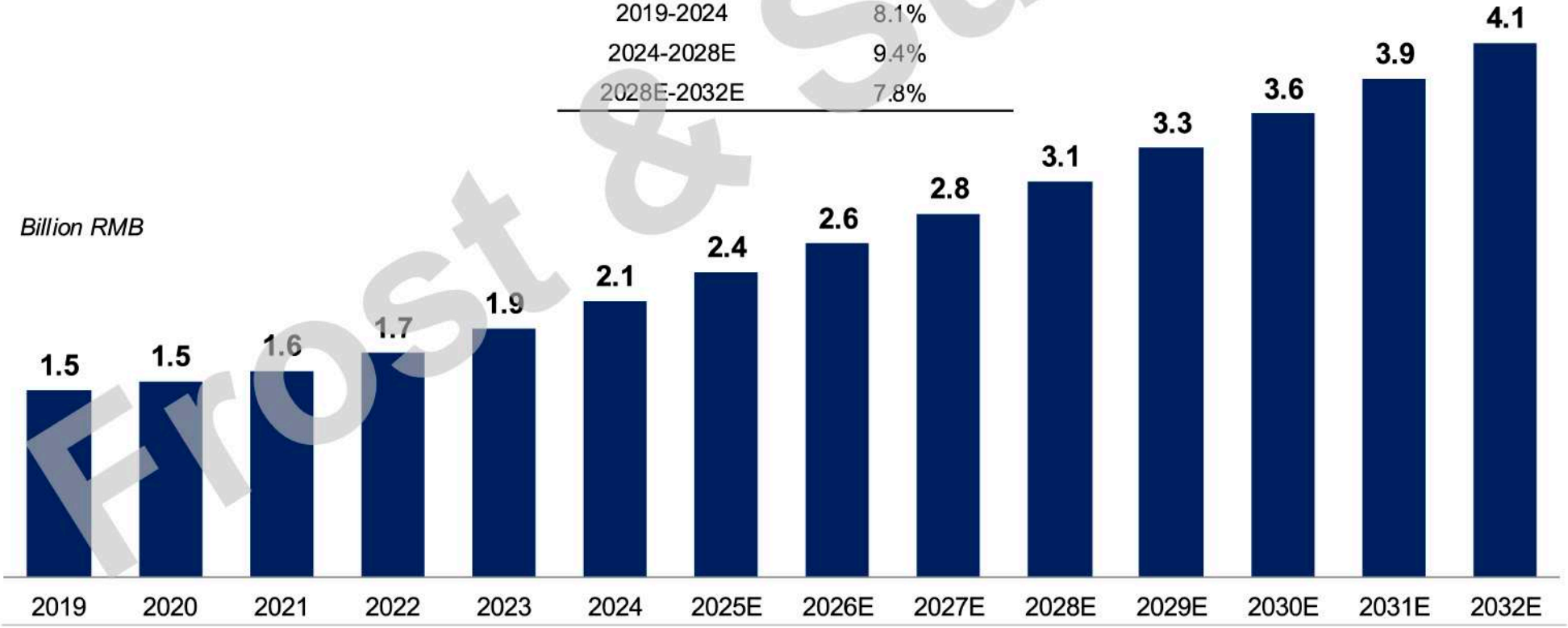
Source: Frost & Sullivan Analysis

China Cervical Cancer Drug Market, 2019-2032E

- The market of cervical cancer drugs in China increased to RMB 2.1 billion in 2024, with the CAGR of 8.1% from 2019 to 2024. It is estimated to grow to RMB 3.1 billion in 2028 and RMB 4.1 billion by 2032, with the CAGR of 9.4% from 2024 to 2028 and 7.8% from 2028 to 2032.

China Cervical Cancer Drug Market, 2019-2032E

Period	CAGR
2019-2024	8.1%
2024-2028E	9.4%
2028E-2032E	7.8%

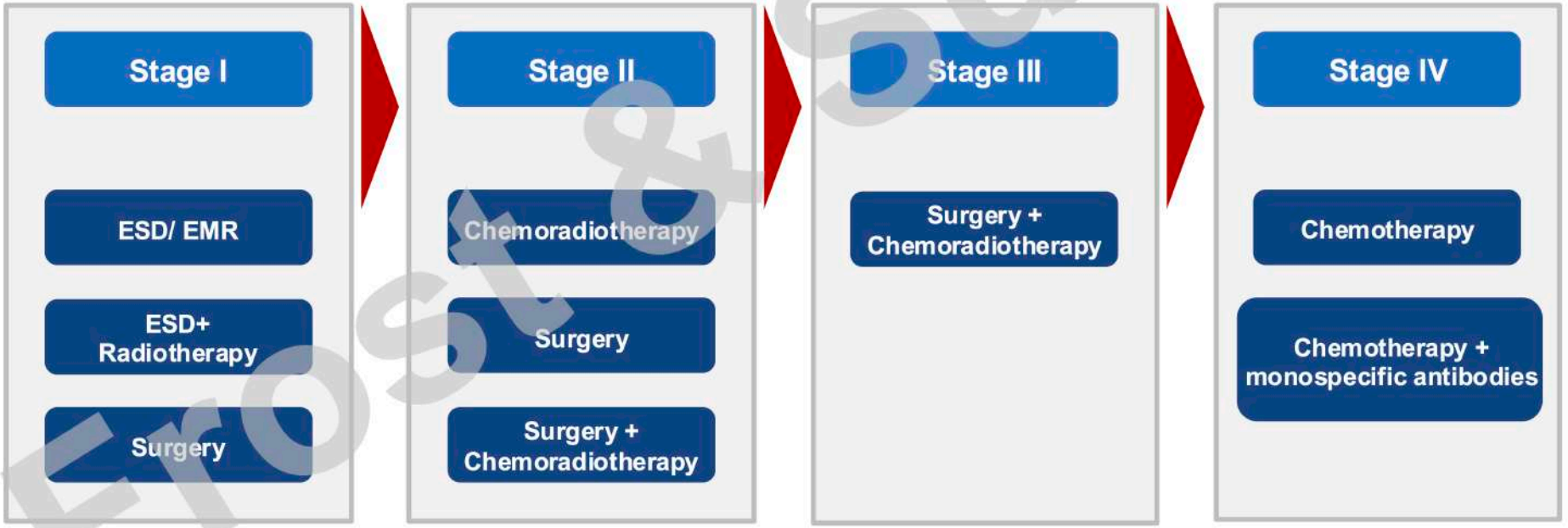


Source: Frost & Sullivan Analysis

Treatment Paradigm of Esophagus Cancer – CSCO (1/2)

CSCO esophageal cancer treatment paradigm includes:

- Neoadjuvant treatment (chemo- or chemoradiotherapy, chemotherapy drugs include platinum, taxanes, fluorouracil, etc.).
- Adjuvant therapy (chemotherapy or chemoradiotherapy, nivolumab, platinum chemotherapy drugs, capecitabine, paclitaxel, docetaxel, etc.).
- Treatment of advanced esophageal cancer (chemoradiotherapy, monoclonal antibodies, monoclonal antibodies combined with chemotherapy drugs, etc. The main chemotherapy drugs include 5-FU, platinum, taxanes, vinorelbine, irinotecan, etc.).



Note: The treatments listed are arranged according to their level of evidence, with treatments supported by more rigorous and reliable research listed first.
Abbreviation: EMR: Endoscopic mucosal resection; ESD: Endoscopic submucosal dissection; MSI-H: Microsatellite instability-high; dMMR: Deficient MisMatch Repair

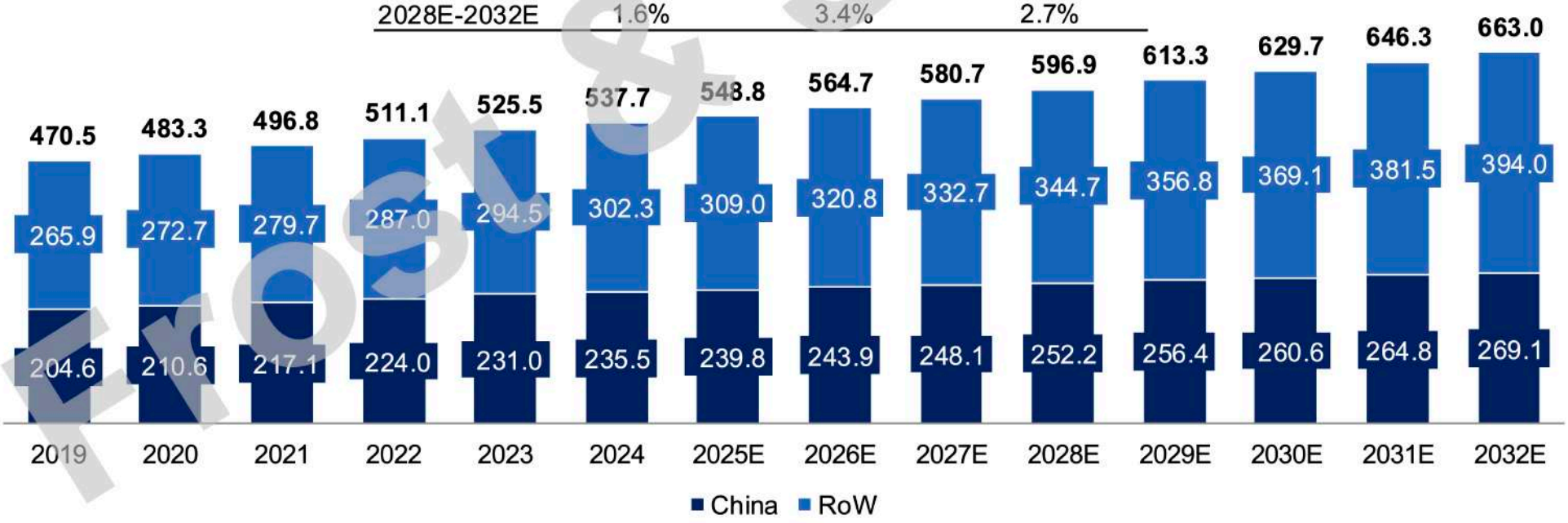
Source: CSCO2024, Frost & Sullivan Analysis

Global Incidence of Esophagus Cancer, 2019-2032E

- Global new cases of esophagus cancer has reached 537.7 thousand in 2024 with a CAGR of 2.9% from 2019 to 2024. It is estimated to be 596.9 thousand in 2028 and 663.0 thousand in 2032, representing a CAGR of 2.6% from 2024 to 2028 and a CAGR of 2.7% from 2028 to 2032.
- Esophagus cancer is one of the most frequently occurring cancers in China and there is an obvious geographical distribution. The increased pressure, unhealthy diet will continuously increase the risk of developing esophagus cancer in China. It is expected to be 252.2 thousand in 2028 and 269.1 thousand in 2032, with a CAGR of 1.7% from 2024 to 2028 and a CAGR of 1.6% from 2028 to 2032.
- The incidence rate of esophageal cancer is approximately 0.016% in China, compared to a global incidence rate of about 0.0066%.

Global incidence of Esophagus Cancer, 2019-2032E

Period	CAGR		
	China	ROW	Global
2019-2024	2.9%	2.6%	2.7%
2024-2028E	1.7%	3.3%	2.6%
2028E-2032E	1.6%	3.4%	2.7%



Source: ACS, NCCR, Frost & Sullivan Analysis

Treatment Paradigm of Esophagus Cancer – CSCO (2/2)

- According to the 2024 CSCO guidelines, first-line treatments for esophageal cancer mainly focus on chemotherapy combined with monoclonal antibodies or immunotherapy. For second-line treatment, monoclonal antibodies and immunotherapy are significant options.

First Line

	Grade I Recommendation	Grade II Recommendation	Grade III Recommendation
HER2+ EAC	• Trastuzumab in combination with cisplatin + 5-FU/capecitabine	• Trastuzumab + Pembrolizumab + Cisplatin / Oxaliplatin + Fluoropyrimidine	• Trastuzumab in combination with other first line chemotherapy
HER2- EAC	• Pembrolizumab + Cisplatin / Oxaliplatin + Fluoropyrimidine (5-FU or Capecitabine) • Nivolumab + Oxaliplatin + Fluoropyrimidine • …	• Nivolumab + Oxaliplatin + Fluoropyrimidine • Sintilimab + Oxaliplatin + Capecitabine • …	
ESCC	• Pembrolizumab + Cisplatin + Fluoropyrimidine • …		

Disease Progression

Second Line

	Grade I Recommendation	Grade II Recommendation	Grade III Recommendation
ESCC	• Camrelizumab • Pemmbrolizumab • Nivolumab • …	• Anlotinib • Docetaxel • Paclitaxel • Irinotecan • Apatinib	• Albumin-Bound Paclitaxel • Camrelizumab + Apatinib
EAC	• Docetaxel • Paclitaxel • Irinotecan • Irinotecan + Fluoropyrimidine • …	• Apatinib • Disitamab Vedotin	

Note: EAC: esophageal adenocarcinoma; ESCC: esophageal squamous-cell carcinoma

Source: CSCO 2024，Frost & Sullivan Analysis

NMPA-Approved Biologics for the Treatment of EC, including 1L Combination Therapy and 2L Monotherapy (1/3)

- Twelve biologic drugs have been approved by the NMPA for second-line monotherapy in esophageal cancer or for first-line combination with other anti-tumor treatments.
- The number of eligible patients for 1L and 2L esophageal cancer treatment in China was approximately 65.0 thousand and 9.7 thousand as of 2024, respectively.

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Toripalimab 拓益®	Junshi Biosciences	mAb	PD-1	Locally advanced unresectable or metastatic gastric or gastroesophageal junction (G/GEJ) adenocarcinoma	Combination chemotherapy with fluoropyrimidine and platinum agents	1L	2022/5/10	B	~¥11,000
Tislelizumab 百泽安®	BeiGene	mAb	PD-1	Locally advanced or metastatic ESCC who have progressed after or are intolerant to first-line standard chemotherapy	Monotherapy	2L	2022/4/8	B	~¥4,000
				Unresectable locally advanced, recurrent, or metastatic ESCC	Paclitaxel and platinum agents or fluoropyrimidine and platinum agents	1L	2023/5/19		~¥18,000
Cadonilimab 开坦尼®	Akeso Biopharma	BsAb	PD-1、CTLA4	Locally advanced unresectable or metastatic gastric or gastroesophageal junction (G/GEJ) adenocarcinoma	Combination chemotherapy with fluoropyrimidine and platinum agents	1L	2024/9/26	/	NA
Sintilimab 达伯舒®	Innovent	mAb	PD-1	Unresectable locally advanced, recurrent, or metastatic ESCC	Paclitaxel and cisplatin or fluorouracil and cisplatin	1L	2022/6/16	B	~¥16,000

Note: As of April 12, 2026

Source: Frost & Sullivan Analysis

NMPA-Approved Biologics for the Treatment of EC, including 1L Combination Therapy and 2L Monotherapy (2/3)

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Camrelizumab 艾瑞卡®	Suzhou Suncadia Biopharma	mAb	PD-1	Locally advanced or metastatic ESCC who have progressed after or are intolerant to first-line standard chemotherapy	Monotherapy	2L	2020/6/17	B	~¥10,000
				Unresectable locally advanced, recurrent, or metastatic ESCC	Paclitaxel and cisplatin	1L	2021/12/8		~¥18,000
Sugemalimab 择捷美®	CStone Pharmaceuticals	mAb	PD-1	Unresectable locally advanced, recurrent, or metastatic ESCC	Combination with fluoropyrimidine and platinum-based chemotherapy agents	1L	2023/12/5	/	~¥153,000
Pembrolizumab 可瑞达®	MSD	mAb	PD-1	Locally advanced or metastatic ESCC patients who have progressed after first-line systemic therapy and whose tumors express PD-L1	Monotherapy	2L	2020/6/17	/	~¥115,000
				Locally advanced unresectable or metastatic esophageal or esophagogastric junction cancer	Platinum-based and fluorouracil-based chemotherapy	1L	2021/9/1	/	~¥226,000
				Locally advanced unresectable or metastatic HER2-negative gastric or gastroesophageal junction adenocarcinoma	Combination chemotherapy with fluoropyrimidine and platinum agents	1L	2023/12/13	/	~¥400,000
				HER2 positive locally advanced unresectable or metastatic gastric or gastroesophageal junction (G/GEJ) adenocarcinoma and whose tumors express PD-L1	Combination with Trastuzumab, fluoropyrimidine and platinum chemotherapy	1L	2024/6/18	/	~¥250,000

Note: [1]The package insert for gastroesophageal cancer is not yet available, and the dosage and administration are unknown.

Note: As of April 12, 2026

Source: Frost & Sullivan Analysis

NMPA-Approved Biologics for the Treatment of EC, including 1L Combination Therapy and 2L Monotherapy (3/3)

Drug Name	Company	Categories	Target	Indication	Combination	Treatment Lines	NMPA Approved Date	Medical Insurance	Annual Cost
Trastuzumab 赫赛汀®	Roche	mAb	HER2	HER2-positive metastatic gastric adenocarcinoma or gastroesophageal junction adenocarcinoma who have not previously received treatment for metastatic disease.	Combination with capecitabine or 5-fluorouracil and cisplatin	1L	2009/7/31	B	~¥150,000
Zolbetuximab 威络益®	Astellas Pharma	mAb	CLDN-18.2	Locally advanced unresectable or metastatic gastric or gastroesophageal junction (GEJ) adenocarcinoma that is CLDN18.2-positive and human epidermal growth factor receptor 2 (HER2)-negative	Combination with chemotherapy regimens containing fluoropyrimidines and platinum agents.	1L	2024/12/25	/	NA
Nivolumab 欧狄沃®	BMS	mAb	PD-1	Locally advanced or metastatic gastric cancer, gastroesophageal junction cancer, or esophageal adenocarcinoma	Combination chemotherapy with fluoropyrimidines and platinum agent	1L	2021/8/25	/	~¥555,000
				Locally advanced or metastatic ESCC	Combination therapy with fluoropyrimidines and platinum-based chemotherapy	1L	2022/6/23		
Serplulimab 汉斯状®	Shanghai Henlius Biopharmaceutical	mAb	PD-1	Locally advanced/recurrent or metastatic esophageal squamous cell carcinoma that is positive for PD-L1.	Combination with fluoropyrimidine and platinum-based chemotherapy	1L	2023/9/19	/	~¥268,000
Retlirafusp alfa 艾泽利®	Jiangsu Hengrui Pharmaceuticals	BsAb	PD-L1, TGFB	Locally advanced unresectable, recurrent, or metastatic Stomach and Stomach esophageal junction adenocarcinoma with PD-L1 positive	Retlirafusp alfa + fluoropyrimidine and platinum-containing chemotherapy	1L	2026/1/5	/	NA

Note: As of April 12, 2026

Source: Frost & Sullivan Analysis

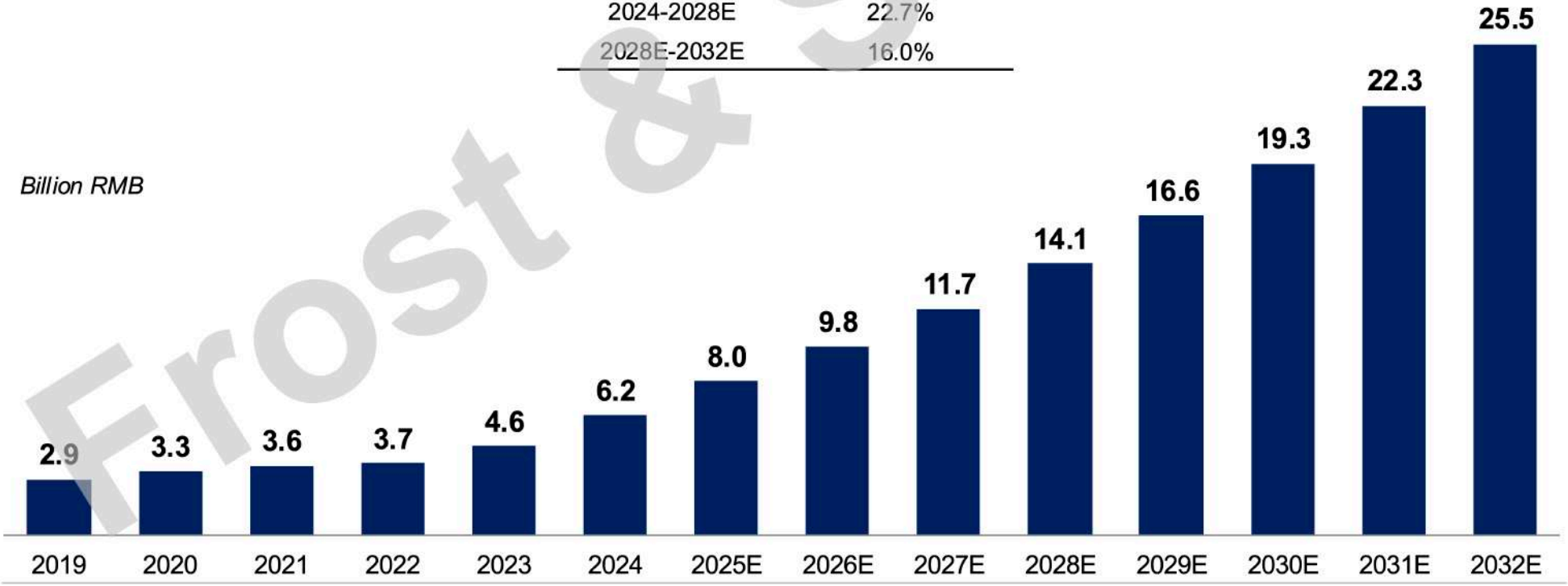
Note: [1]The package insert for gastroesophageal cancer is not yet available, and the dosage and administration are unknown.

China Esophagus Cancer Drug Market, 2019-2032E

- The market of esophagus cancer drugs in China increased to RMB 6.2 billion in 2024, with the CAGR of 16.4% from 2019 to 2024. It is estimated to grow to RMB 141.1 billion in 2028 and RMB 25.5 billion by 2032, with the CAGR of 22.7% from 2024 to 2028 and 16.0% from 2028 to 2032.

China Esophagus Cancer Drug Market, 2019-2032E

Period	CAGR
2019-2024	16.4%
2024-2028E	22.7%
2028E-2032E	16.0%



Source: Frost & Sullivan Analysis

Growth Drivers and Future Trends of Oncology Drug Market

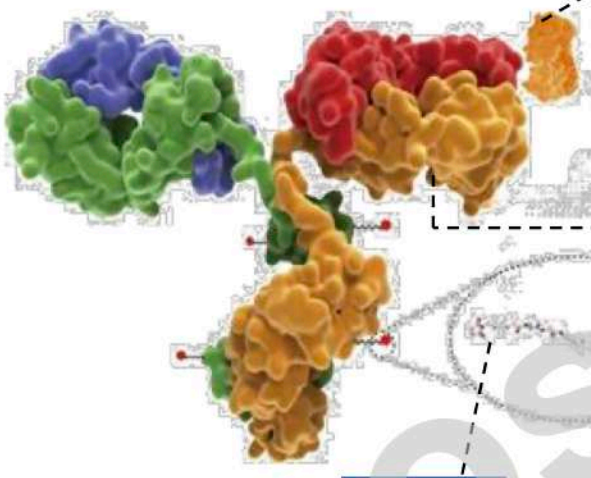
Increasing needs for targeted drugs	• Compared with chemotherapy, targeted drugs can provide better targeting of cancer cells and reduce damage to normal cells. In developed countries, targeted drugs have become the first-line drugs for cancer treatment. It is expected that in the future, with the improvement of medical standards and medical payment capabilities, and the discovery of more biomarkers and targets, more targeted drugs will emerge.
Improving Affordability	• According to WHO, nearly 1 in 6 death worldwide is due to cancer, and approximately 70% of those deaths occur in low- and middle-income countries. Managing cancer is complicated by increasing prices and insufficient benefits for patients and public health of new medicine coming to market. Thus, an improved affordability of patient is a key in pushing oncology drug market forward by alleviating the burden of cancer treatment. In many countries, the cancer reimbursement system is getting more mature, for example. Medicare Program in US and NRDL dynamic reimbursement list in China have both made efforts in realizing cancer patient reimbursement.
Addressing Unmet Clinical Needs in Cancer Treatment	• Cancer patients currently have unmet clinical needs such as the lack of effective treatments for drug-resistant cancers and the need for treatments with fewer side effects. Innovative therapies, such as ADCs, are emerging to address these issues, which can provide direct targeted delivery of cytotoxic drugs to cancer cells, thereby minimizing damage to normal cells and improving treatment efficacy. In addition, ADCs combined with immunotherapy, radiotherapy, or other targeted drugs can further enhance the therapeutic effect and overcome the drug resistance of cancer cells. Emerging oncology drugs represented by ADCs are expected to become the mainstream development trend in the future.
Longer Survival of Cancer Patients	• With expanding treatment options offered to cancer patients, and especially the ones who suffer from drug resistance, the overall survival of those patients is being improved. This indicates that in the future, cancer patients will live longer, revealing the need for developing oncology drugs that can treat patients in later stages. ADCs, as an emerging treatment modality, can precisely target cancer cells and reduce damage to normal cells, showing significant efficacy in treating drug-resistant cancer patients. Driven by this, the oncology drug market is expected to expand continuously.

Source: Frost & Sullivan Analysis

Overview of Antibody-Drug Conjugate (ADC) Therapy

- ADCs are complex molecules composed of an antibody linked to a biologically active (anticancer) agent. ADC targets a specific antigen only found on target cells. Once it binds to the cell, it triggers internalization of the antibody, together with the drug, thus killing the cancer cell. This maximizes efficacy and minimizes systemic exposure. The main structure and mechanism of action of ADC are elaborated below.

Main Structure of ADC



Target Antigen

Recognition of target cancer cell

Antibody

Guidance system for cytotoxic drugs

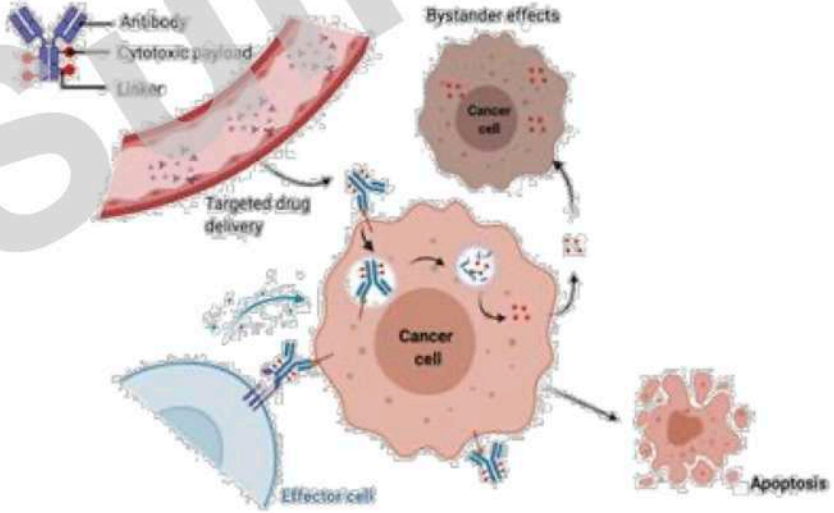
Linker

Bridge between antibody and drugs and to control the releasee of drugs inside cancer cell

Cytotoxic drug

Warhead for destroying cancer cell

Mechanism of Action of ADC



- Once mAb of ADC is bound to the target antigens that specifically expressed on the cancer cells, the ADC is endocytosed/internalized by cells to form an early endosome, followed a maturation into late endosomes and finally fused with lysosomes.
- The cytotoxic payloads are eventually via either chemical or enzyme mediated release in the lysosomes, resulting in cell apoptosis or death via targeting DNA or microtubules.
- When the payload released is permeable or transmembrane, it may also induce bystander effect to enhance the efficacy of ADC.

Source: Antibody drug conjugate: the "biological missile" for targeted cancer therapy, Frost & Sullivan Analysis

Top 5 Commercialized ADC Drugs in the Globe

Trade name	Product	Company	Indications	Target	First approval date	Annual sales in 2023 (Billion USD)	Annual sales in 2024 (Billion USD)
Enhertu	Trastuzumab deruxtecan	Daiichi Sankyo/AstraZeneca	Non-small cell lung cancer, breast cancer, gastric cancer, solid tumor	HER2	FDA: 2019-12-20 PMDA: 2020-03-25 EMA: 2021-01-18 NMPA: 2023-02-21	~2.7	~3.9
Kadcyla	Trastuzumab emtansine	Roche	Breast cancer	HER2	FDA: 2013-02-22 EMA: 2013-11-15 PMDA: 2013-09-20 NMPA: 2020-01-21	~2.2	~2.3
Adcetris	Brentuximab vedotin	Seagen/Takeda	Lymphoma	CD30	FDA: 2011-08-19 EMA: 2012-10-25 PMDA: 2014-01-17 NMPA: 2020-05-12	~1.5	~1.9
Padcev	Enfortumab vedotin	Astellas/Seagen	Urothelial cancer, bladder cancer	Nectin-4	FDA: 2019-12-18 EMA: 2022-04-13 PMDA: 2021-09-27 NMPA: 2024-08-13	~1.2	~2.6
Trodelvy	Sacituzumab govitecan	Gilead	Breast cancer	TROP2	FDA: 2020-04-22 EMA: 2021-11-22 NMPA: 2022-06-07 PMDA: 2024-09-24	~1.1	~1.3

Source: Frost & Sullivan Analysis

Global ADC Market Size and Forecast, 2019-2032E

- The global ADC market has grown rapidly in the past few years, from USD 2.8 billion in 2019 to USD 14.1 billion in 2024, with a CAGR of 37.9%. It is expected to reach USD 18.7 billion in 2025 and USD 94.0 billion in 2032, with a CAGR of 26.0% from 2025 to 2032.
- From 2019 to 2024, the Chinese ADC market is anticipated to grow from USD 0.0 billion to USD 0.5 billion, and is expected to grow to USD 1.0 billion in 2025 and USD14.1 billion in 2032, with a CAGR of 45.9% from 2025 to 2032, which is much faster than that of the global market.

Global ADC Market Size and Forecast, 2019-2032E

Period	CAGR		
	China	RoW	Global
2019-2024	N/A	36.9%	37.9%
2025E-2032E	45.9%	24.1%	26.0%

Source: Frost & Sullivan Analysis

FROST & SULLIVAN

Entry Barrier for Development and Manufacturing of ADCs Drugs

- The unique targeting capabilities and promising clinical trial results of ADCs have made them an exciting and promising treatment in the fight against cancer. However, despite this tremendous growth, drugmakers still face a number of challenges in the development and manufacturing process for ADCs.

Challenges on Development of ADCs

Selection of specific antibody	The ADCs must be able to target cell-surface proteins with tumor-specific membrane expression.
Development of stable linker	The ADCs must be stabilized by a linker that keeps the cytotoxic payload attached during circulation but permits release of the load after cellular internalization.
Selection of efficient cytotoxin	The ADCs must contain a cytotoxin that effectively kills tumor cells

Challenges on Manufacturing of ADCs

Analytical method and conjugation technology	It is important to keep the drug-to-antibody ratio during the whole manufacturing process, which requires advanced and accurate analytical methods to minimize the variability caused by conjugation chemistries and assay methods, ensuring the drug will fall within the necessary specifications. In addition, the conjugation technology makes the manufacturer not only faced with challenges associated with the biologic itself, but also brings the high containment to handle highly potent chemical molecules.
Scale-UP	One of the most notable challenges of scaling up ADCs is the process variation caused by changes in equipment, scale, and raw materials.
Facility	Facility must be designed with proper engineering controls to provide product and personnel protection from highly potent compounds. Also, most smaller companies, and even some larger companies, do not have enough of a pipeline to justify the level of facility investment needed for ADCs and/or cannot keep the facility fully utilized.

Source: Literature Review, Frost & Sullivan analysis

Future Trends of ADCs Drug Market

Novel payloads and linkers	• Although traditional payloads have been proven to be effective, there is a growing focus on exploring novel payloads to expand the range of treatable cancer types and overcome drug resistance, as more patients are treated with, and acquire resistance to, existing ADCs. In addition, beyond the site-specific conjugation methods of existing ADCs, researchers are exploring more sophisticated linker designs aimed to further improve payload delivery and release while reducing off-target toxicity.
Wider coverage of targets and expression levels	• Many solid tumors express low or heterogeneous levels of targets, limiting the applicability of existing ADCs that focus on tumors with high expression levels of targets. Research is underway to develop ADC candidates effective against solid tumors with low expression. For example, recent advancements in ADC design, including the development of topoisomerase-based payloads, have resulted in successful applications of HER2 ADCs for HER2-low BC patients. Novel targets such as HER3 and B7-H3 have also emerged, drawing significant industry attention. Research into these emerging targets aims to broaden the landscape of tumor antigens that can be leveraged for the selective delivery of cytotoxic payloads.
Novel ADC formats	• New formats such as bispecific and multi-specific ADCs are a rising trend in the development of next-generation ADCs. Compared to monospecific ADCs, BsADCs can potentially target and kill tumor cells more precisely by simultaneously targeting two different antigens to overcome tumor heterogenicity, and reduce the risk of off-target toxicity. Some BsADCs can also harness the patient's own immune system through simultaneous immune-modulation to achieve synergistic anti-tumor effects. Moreover, BsADCs can potentially overcome drug resistance to monospecific ADCs by blocking escape pathways, making them more promising for extended duration of response.

Source: Frost & Sullivan analysis

Future Trends of ADCs Drug Market

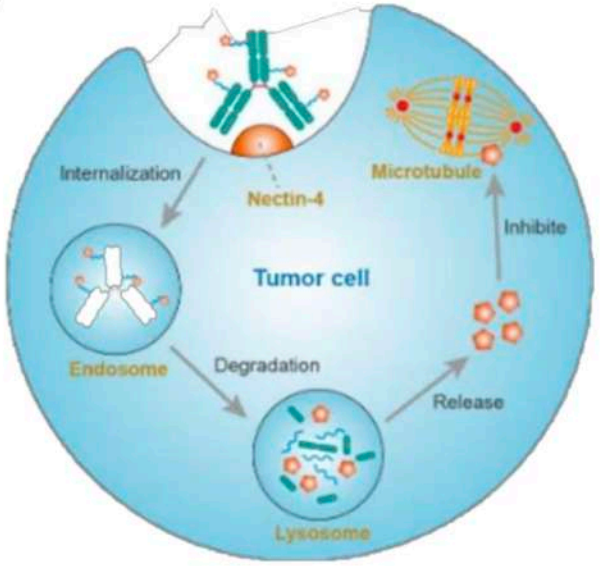
Expansion to non-oncology therapeutic areas	• With technological advances in progress, ADCs are expected to cover a wider range of cancer types as well as expand to non-oncology areas such as autoimmune, metabolic and cardiovascular diseases. With the ability to minimize off-target effects and systemic toxicity through targeting specificity, ADCs have become a promising option for these chronic, non-oncology conditions that require treatments with improved safety profiles. This expansion is likely to bring new market potential for ADCs in the near future.
Combination with other treatment modalities and expansion of treatment lines	• The mechanism of action of ADCs is highly synergistic with other treatment modalities to potentiate tumor cell killing. Combination strategies have shown to be crucial in improving efficacy and promising as first-line treatments for a broader patient population. Notably, a strong biological rationale supports the investigation of combining ADCs with IO to overcome the occurrence of resistance and improve treatment outcomes for cancer patients. ADCs interact with cancer cells and immune cells through mechanisms such as immunogenic cell death, antibody-dependent cell mediated cytotoxicity and dendritic cell activation, leading to synergistic effects when combined with IO therapies such as immune checkpoint inhibitors ("ICIs"). Combination therapies of ADCs with tyrosine kinase inhibitors ("TKIs") have also shown promise in clinical studies to enhance anti-tumor efficacy..
AI-driven R&D	• The growing application of artificial intelligence is expected to empower and accelerate the research and development of ADCs. Through the analysis of large datasets of tumor biology, gene expression profiles and clinical results, AI models can help identify novel and high-potential targets and biomarkers and guide the design and engineering of ADCs with optimal features for the target indication. For example, AI technology can be employed to model the structure of antibodies and predict their binding affinity to the target, as well as assist in the optimization of payloads taking into account factors such as potency, solubility, stability, and pharmacokinetics. In addition, AI technology can also facilitate the development of next-generation ADCs, for example by guiding the selection of targets and assessing the different design formats for BsADCs.

Source: Frost & Sullivan analysis

Mechanism of Action of Nectin-4

- **Nectin-4 (Nectin cell adhesion molecule 4)** is a type I transmembrane cell adhesion molecule belonging to the Nectin family, and is a transmembrane cell adhesion molecule (type I transmembrane protein) with a molecular mass of about 66kda.
- Nectin-4 is overexpressed in a variety of tumor cells, and is used as a marker for cancer recurrence and metastasis, which is associated with poor prognosis of a variety of cancers, including uroepithelial carcinoma, breast cancer, ovarian cancer, pancreatic cancer, non-small cell lung cancer, gastric cancer, hepatocellular carcinoma and bladder cancer.

- Nectin-4, a cell adhesion molecule (CAM), is involved in many cellular processes, including cell adhesion, migration, and proliferation:
- Cell adhesion: Nectin-4 is expressed on the surface of some cancer cells, where it contributes to cell adhesion. Nectin-4 interacts with Afadin to regulate actin cytoskeleton remodeling.
- Migration: Nectin-4 is involved in the migration of tumor cells.
- Proliferation: Nectin-4 is involved in the proliferation of tumor cells.
- Angiogenesis: Nectin-4's extracellular region increases angiogenesis through various molecular pathways. Nectin-4 interacts with endothelial integrin-β4 to promote angiogenesis.
- DNA repair: Nectin-4's intracellular region can interact with importin-α2 and transfer to the nucleus to enhance DNA repair.
- Cell size enlargement: Nectin-4 induces cell size enlargement through the SFK-PI3K pathway and Rac1 activity.



Source: Literature Review, Frost & Sullivan analysis

Competitive Landscape of Nectin-4-Targeting ADC Products in the Globe (1/2)

- There are currently 11 ADC drugs targeting Nectin-4 under clinical stage.

➢ Marketed product targeting Nectin-4 in the globe

Drug	Company	Technology	Target	First approval date	Indications	Combination	Treatment Lines	Annual Treatment Cost
Padcev® Enfortumab vedotin	Pfizer, Seagen, Astellas Pharma, Baxter International	ADC	Nectin-4	FDA: 2019-12-18 NMPA: 2024-08-13	Patients with locally advanced or metastatic urothelial carcinoma who have previously received platinum-containing chemotherapy and treatment with a programmed cell death receptor-1 (PD-1) or programmed cell death ligand-1 (PD-L1) inhibitor	Monotherapy	2L	~$61,000
				FDA: 2023-04-03 NMPA: 2025-01-08	Patients with locally advanced or metastatic urothelial carcinoma	Combination with pembrolizumab for the treatment of adult	1L	~$91,000

➢ Products under development stage in the globe

Products	Company	Global Highest Stage	Country[1]	First Posted Date	Target	Indications[2]
9MW2821*	**Shanghai Institute of Materia Medica Chinese Academy of Sciences, Mabwell , Jiangsu Maiweikang New Drug Development**	**III**	**China**	**2023-12-11**	**Nectin-4**	**Urothelial cancer, Cervical cancer, Muscle invasive bladder cancer, etc.**

Note: As of April 12, 2026

*Footnote: *The FDA issued a study may proceed letter for the Phase I clinical trial of 9MW2821 for Nectin-4 positive metastatic solid tumors in July 2022, and the company communicated with the FDA on the protocol amendment for 9MW2821 as a monotherapy for the treatment of TNBC in patients with resistance to topoisomerase inhibitors based ADC in December 2024. The FDA granted the Fast Track Designation for 9MW2821 for the treatment of locally advanced or metastatic Nectin-4 positive TNBC in July 2024 1: "Country" in the table above indicates the clinical site of the highest phase trial of the drug candidate; 2: "Indications" in the table above indicates the indications of all global pipeline drug candidate*

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Competitive Landscape of Nectin-4-Targeting ADC Products in the Globe (2/2)

- Products under development stage in the globe

Products	Company	Global Highest Stage	Country[1]	First Posted Date	Target	Indications[2]
SHR-A2102	Hengrui Medicine	III	China	2024-12-17	Nectin-4	Urothelial Cancer/Bladder cancer, HR+ HER2- breast cancer, TNBC, etc.
SYS6002	CSPC PHARMA	III	China	2025-12-03	Nectin-4	Cervical cancer, Urothelial Cancer/Bladder cancer, HNSCC, etc.
BAT8007	Bio-Thera Solutions	I	China	2022-12-09	Nectin-4	Solid tumor, Urothelial Cancer, NSCLC, etc.
VBC103	VelaVigo	I/II	China, US	2025-09-26	Nectin-4	Solid tumor, Urothelial Cancer/Bladder cancer
SKB410	Sichuan Kelun-Biotech Biopharma, Merck Sharp & Dohme	I	China	2023-04-25	Nectin-4	Solid tumor
ADRX-0706	Adcentrx, Shanghai Defeng Pharma	I	China, US	2023-09-13	Nectin-4	Solid tumor, Urothelial Cancer, NSCLC, etc.
ETx-22	Eli Lilly, Emergence Therapeutics, LOXO ONCOLOGY	I	US, Australia, Belgium, Japan, Spain	2024-02-02	Nectin-4	Solid tumor, NSLC, Prostate cancer, etc.
LY4052031	Eli Lilly	I	US, Australia, Japan, Korea, Spain, UK	2024-06-18	Nectin-4	NSCLC, Prostate cancer, TNBC, etc.
IPH4502	Innate Pharma	I	US	2025-01-17	Nectin-4	Solid tumor
AK146D1	Akeso Biopharma	I	No location data	2025-04-08	Nectin-4	Solid tumor
ADC2204	Lunan Pharmaceutical Group Corporation	I	China	2026-04-07	Nectin-4	Solid tumor, Endometrial Cancer, Cervical cancer, etc.

Note: As of April 12, 2026

Footnote:1: "Country" in the table above indicates the clinical site of the highest phase trial of the drug candidate; 2: "Indications" inthe table above indicates the indications of all global pipeline drug candidate

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Global Competitive Landscape of Nectin-4-Targeting ADC in EC Treatment

- Products under development stage in the globe

Products	Company	Global Highest Stage	Country	First Posted Date	Target	Indications
Enfortumab vedotin	Pfizer, Seagen, Astellas Pharma, Baxter International	II	US, Japan, Canada	2020-01-13	Nectin-4	Solid Tumor (Including Esophagus Cancer)
9MW2821	**Mabwell**	**I/II**	**China**	**2022-01-30**	**Nectin-4**	**Solid Tumor (Including Esophagus Cancer)**
SHR-A2102	Hengrui Medicine	I/II	China	2024-06-19	Nectin-4	Solid Tumor (Including Esophagus Cancer)
BAT8007	Bio-Thera Solutions	I	China	2022-12-09	Nectin-4	Solid Tumor (Including Esophagus Cancer)
ETx-22	Eli Lilly	I	US, Japan, Australia, Belgium, Spain	2024-02-02	Nectin-4	Solid Tumor (Including Esophagus Cancer)
LY4052031	Eli Lilly	I	US, Spain, Japan, UK, Australia, France	2024-06-18	Nectin-4	Solid Tumor (Including Esophagus Cancer)

Note: As of April 12, 2026

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Global Competitive Landscape of Nectin-4-Targeting ADC in CC Treatment

- Products under development stage in the globe

Products	Company	Global Highest Stage	Country	First Posted Date	Target	Indications
9MW2821	**Mabwell**	**III**	**China**	**2023-12-11**	**Nectin-4**	**Cervical Cancer**
SYS6002	CSPC PHARMA, CSPC Jushi Pharma, Corbus Pharma	III	UK, US, Spain, Turkey, France, Italy, Romania	2025-12-03	Nectin-4	Solid Tumor (Including Cervical Cancer)
SHR-A2102	Jiangsu Hengrui Pharmaceuticals	III	China	2026-02-13	Nectin-4	Solid Tumor (Including Cervical Cancer)
ADRX-0706	Adcentrx	I	US, China	2023-09-12	Nectin-4	Solid Tumor (Including Cervical Cancer)
ETx-22	Eli Lilly	I	US, Japan, Australia, Belgium, Spain	2024-02-02	Nectin-4	Solid Tumor (Including Cervical Cancer)
LY4052031	Eli Lilly	I	US, Spain, Japan, UK, Australia, France	2024-06-18	Nectin-4	Solid Tumor (Including Cervical Cancer)
ADC2204	Lunan Pharmaceutical Group Corporation	I	China	2026-04-07	Nectin-4	Solid Tumor (Including Cervical Cancer)

Note: As of April 12, 2026

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Global Competitive Landscape of Nectin-4-Targeting ADC in UC Treatment

- Products under development stage in the globe

Products	Company	Global Highest Stage	Country	First Posted Date	Target	Indications
9MW2821	**Mabwell**	**III**	**China**	**2023-12-11**	**Nectin-4**	**Urothelial Cancer**
SHR-A2102	Hengrui Medicine	III	China	2024-12-17	Nectin-4	Solid Tumor (Urothelial Cancer)
SYS6002	CSPC PHARMA, CSPC Jushi Pharma, Corbus Pharma	I/II	UK, US, Spain, Turkey, France, Italy, Romania	2024-02-12	Nectin-4	Solid Tumor (Urothelial Cancer)
BAT8007	Bio-Thera Solutions	I	China	2022-12-09	Nectin-4	Solid Tumor (Urothelial Cancer)
ADRX-0706	Adcentrx	I	US, China	2023-09-12	Nectin-4	Solid Tumor (Urothelial Cancer)
ETx-22	Eli Lilly	I	US, Japan, Australia, Belgium, Spain	2024-02-02	Nectin-4	Solid Tumor (Urothelial Cancer)
LY4052031	Eli Lilly	I	US, Spain, Japan, UK, Australia, France	2024-06-18	Nectin-4	Solid Tumor (Urothelial Cancer)
		IND Approval	China	2025-03-27	Nectin-4	Urothelial Cancer
ADC2204	Lunan Pharmaceutical Group Corporation	I	China	2026-04-07	Nectin-4	Solid Tumor (Urothelial Cancer)

Note: As of April 12, 2026

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Global Competitive Landscape of Nectin-4-Targeting ADC in TNBC Treatment

➢ Products under development stage in the globe

Products	Company	Global Highest Stage	Country	First Posted Date	Target	Indications
Enfortumab vedotin	Pfizer, Seagen, Astellas Pharma, Baxter International	II	US, Japan, Canada	2020-01-13	Nectin-4	Solid Tumor (Including TNBC)
9MW2821	**Mabwell**	**II**	**China**	**2024-07-01**	**Nectin-4**	**TNBC**
		I/II	**China**	**2022-01-30**	**Nectin-4**	**Solid Tumor (Including TNBC)**
		I	**US**	**2025-04-03**	**Nectin-4**	**TNBC**
SHR-A2102	Jiangsu Hengrui Pharmaceuticals	II	China	2024-10-18	Nectin-4	TNBC
SYS6002	CSPC PHARMA, CSPC Jushi Pharma, Corbus Pharma	I/II	UK, US, Spain, Turkey, France, Italy, Romania	2024-02-12	Nectin-4	Solid Tumor (Including TNBC)
ADRX-0706	Adcentrx	I	US, China	2023-09-12	Nectin-4	Solid Tumor (Including TNBC)
ETx-22	Eli Lilly	I	US, Japan, Australia, Belgium, Spain	2024-02-02	Nectin-4	Solid Tumor (Including TNBC)
LY4052031	Eli Lilly	I	US, Spain, Japan, UK, Australia, France	2024-06-18	Nectin-4	Solid Tumor (Including TNBC)

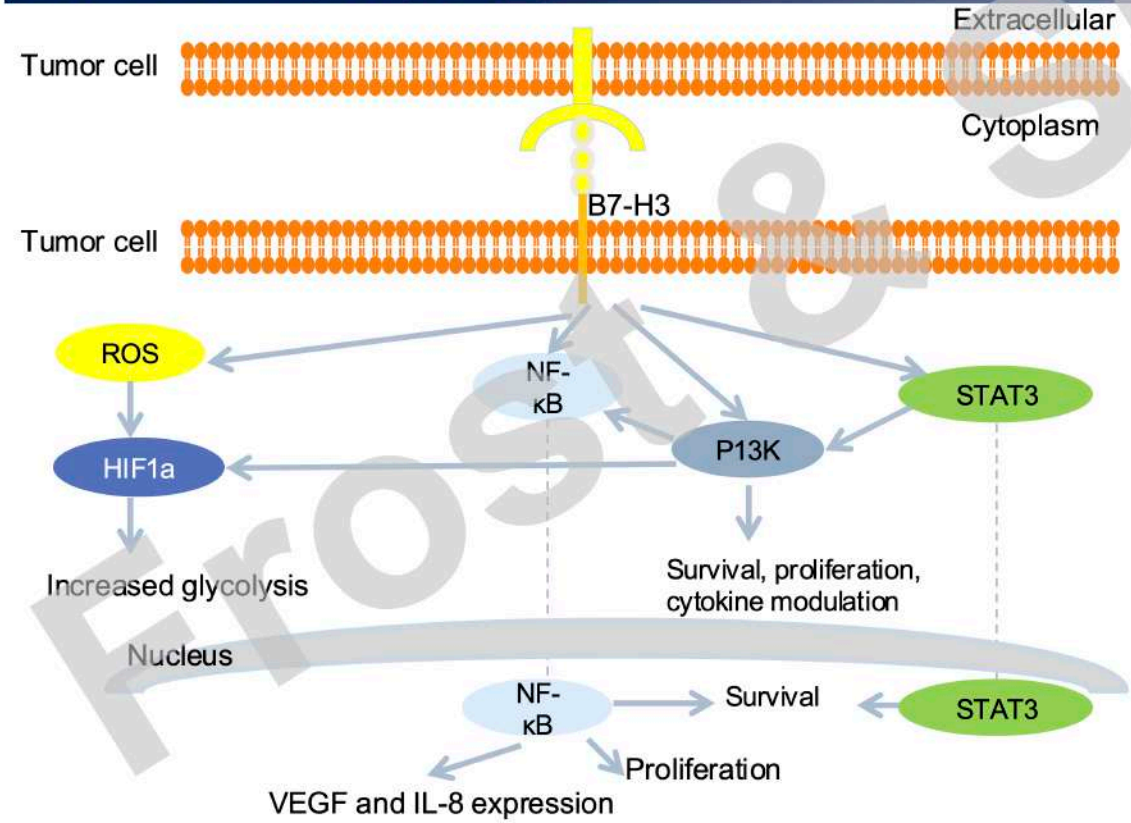
Note: As of April 12, 2026

Source: Clinical trials, CDE, Frost & Sullivan Analysis

Mechanism of Action of B7-H3

- B7-H3 is an important immune checkpoint molecule of the B7 family. It is a type I transmembrane protein consisting of an extracellular region, a transmembrane region, and a short intracellular region. B7-H3 mainly exists in membrane protein and soluble form. Soluble B7-H3 (sB7-H3) is cleaved from membrane protein by metalloproteinase. B7-H3 can effectively inhibit the function of T cells and NK cells, and also has an effect on bone development. B7-H3 can downregulate T helper type 1-mediated immune response, inhibit CD4+T cell activation, and inhibit the production of cytokines, thus possibly promoting the immune escape of cancer cells.

B7-H3 mediated signaling pathway



- B7-H3 is located on the tumor cell membrane and can bind to its ligand to initiate downstream signaling. B7-H3 can inhibit Treg cells, allowing tumors to escape immune responses
- The activation of B7-H3 increases the production of ROS. The increase in ROS further activates HIF1α. HIF1α is a key factor for tumor cells to adapt to hypoxic environments, which can promote glycolysis and increase the survival ability of tumor cells in hypoxic environments.
- The activation of B7-H3 can promote the activation of Akt through the PI3K pathway. Akt regulates cell survival, proliferation and metabolism. The PI3K/Akt pathway can also activate NF-κB, promote cell survival and cytokine regulation. The activation of B7-H3 can also promote the activation of STAT3 through the PI3K/Akt pathway. STAT3 can regulate gene expression and promote cell survival, proliferation and immune escape.

Source: Literature Review, Frost & Sullivan analysis

Overview of Giant Cell Tumor of Bone (GCTB)

- Giant cell tumors of bone (GCTBs) are intermediate malignant bone tumors with high local infiltration ability, which accounts for approximately 5% of all primary bone tumors.
- More than half of these lesions occur in the third and fourth decades of life.
- GCTs are benign tumors with potential for aggressive behavior and capacity to metastasize.
- Histologically, a GCTB is composed of neoplastic mononuclear stromal cells with a monotonous appearance mixed with macrophages and osteoclast-like giant cells.

Clinical Features

- Pain and swelling
- Restricted joint movement
- Frequent radiation to the legs
- Sometimes with bladder, rectal or sexual dysfunction

Most common locations

- Distal Femur
- Proximal Tibia
- Distal Radius
- Sacrum

50% of GCTs arise around the knee region. Other frequent sites include the fibular head, the proximal femur, and the proximal humerus.

Giant Cell Tumor of Bone

Giant Cell Tumor Stromal Cells of Osteoblastic Origin

- Neoplastic component
- Arise from the primitive mesenchymal stromal cell

Mononuclear Histiocytic Cells

- Resemble the monocyte/macrophage family
- Could be recruited from the peripheral blood stream
- Precursors of the multinucleated giant cells

The Multinucleated Giant Cell of an Osteoclast-Monocyte Lineage

- Share many characteristics of osteoclasts and have similar morphologies
- Possess enzymes for bone resorption

The RANK Pathway

The RANK pathway is involved in the pathogenesis of giant cell tumor of bone. This pathway is a key signaling pathway of bone remodeling that plays a critical role in differentiation of precursors into multinucleated osteoclasts, and activation of osteoclasts leading to bone resorption

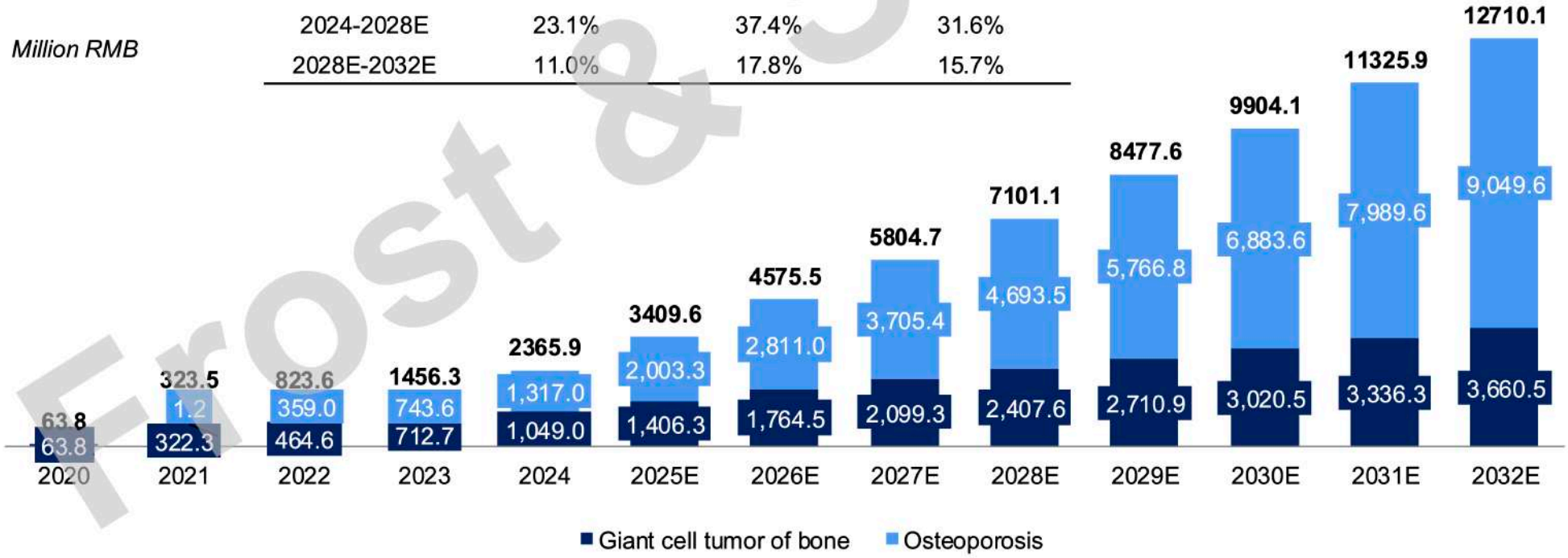
Source: Literature Review, Frost & Sullivan Analysis

China Anti-RANKL Monoclonal Antibody Drug Market, 2020-2032E

- The anti-RANKL mAb for giant cell tumor of bone market size has increased from RMB 63.8 million to RMB 1,049.0 million from 2020 to 2024, at a CAGR of 101.4%. The size is expected to continue to grow, reaching RMB 3,660.5 million in 2032.
- The anti-RANKL mAb for osteoporosis market size increased from RMB 1.2 million in 2021 to RMB 1,317.0 million in 2024. It is expected to grow to RMB 9,049.6 million in 2032.

China Anti-RANKL Monoclonal Antibody Drug Market, 2020-2032E

CAGR	Giant cell tumor of bone	Osteoporosis	Total
2020-2024	101.4%	N/A	146.8%
2024-2028E	23.1%	37.4%	31.6%
2028E-2032E	11.0%	17.8%	15.7%



Source: Frost & Sullivan Analysis

Competitive Landscape of Products for GCTB in China

- There are five marketed drugs for GCTB in China, with Prolia being the first to receive NMPA approval in May 2019.
- There are currently three clinical-stage products for GCTB in China.

➢ Marketed products for GCTB

Trade name	Product	Company	Technology	Target	Strength	NMPA first approved year	Type of health insurance
XGEVA 安加维®	Denosumab	Amgen	Monospecific antibody	RANKL	120mg	2019-05-21	B
Jinlisheng 津立生®	Naloxumab	CSPC Pharma, 3s guojian Pharma	Monospecific antibody	RANKL	120mg	2023-09-05	B
Maiweijian 迈卫健®	**Denosumab-TK006**	**Mabwell**	**Monospecific antibody**	**RANKL**	**120mg**	**2024-03-29**	**B**
Ludaxin 鲁达欣®	Denosumab-QL1206	Qilu Pharmaceutical	Monospecific antibody	RANKL	120mg	2024-04-24	B
Boluojia 博洛加®	Denosumab-LY06006	Shandong Boan Biotech	Monospecific antibody	RANKL	120mg	2024-05-21	B

➢ Products under development stage

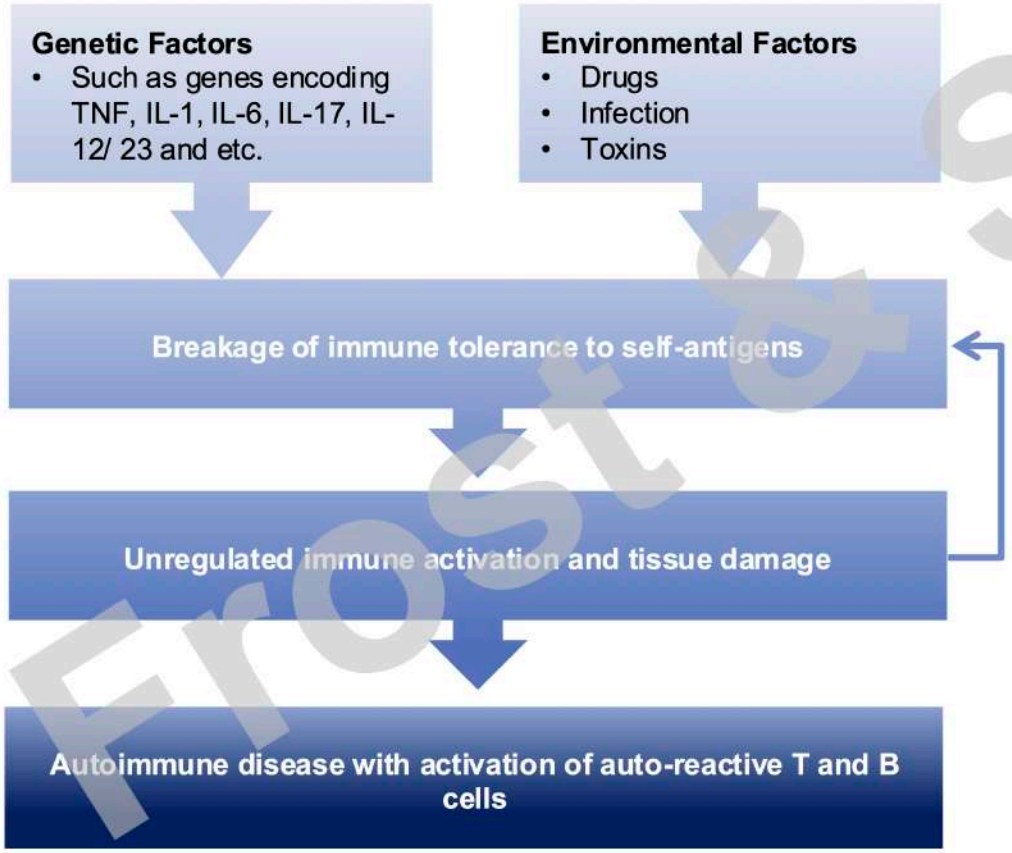
Products	Company	Technology	Target	Stage	First Posted Date
Denosumab-HL05	Hansoh Pharma, Shanghai Hansoh BioMedical	Monospecific antibody	RANKL	NDA	2025-12-11
Denosumab-HS-20090				I	2023-03-13
GB223	Genor Biopharma	Monospecific antibody	RANKL	I	2019-01-17

Note: As April 12, 2026.

Source: NMPA, CDE, Frost & Sullivan Analysis

Overview of Autoimmune Disease

- An autoimmune disease is a condition in which the body's immune system mistakenly attacks the body, which can be associated with either abnormally low activity or over-activity of the immune system.
- There are more than one hundred different types of autoimmune disorders, which can affect almost any part of the body, including the heart, brain, nerves, muscles, skin, eyes, joints, lungs, kidneys, glands, the digestive tract, and blood vessels.



Mechanisms for Autoimmune Diseases

- Autoimmune diseases can be divided into organ-specific and systemic autoimmune diseases based on the self-antigens targeted by immune cells.
- The exact underlying pathophysiology of these illnesses is still unknown, while autoimmune diseases arise in the context of a break in the immune tolerance to self.
- The mechanisms for the abrogation of immune self-tolerance appear to be multifactorial, including genetic and environmental, which will lead to unregulated immune activation against self-antigens and subsequent tissue destruction.
- B cells and T cells recognize self-antigens and dominate the phenotype of the patient with autoimmunity, although other immune components including antigen-presenting cells and complement are involved in various steps from initiation of the autoimmune response to tissue destruction.

Source: Literature Review, Frost & Sullivan analysis

Treatment Revolution for Auto-immune Disease

Anti-inflammatory Agents

- Treatments were generally effective for alleviating of pain, fever, and inflammatory responses, but were limited to treating the symptoms of the disease.

Salicylates → **NSAIDs**, **Glucocorticoids**, **DMARDs**

- Active components of Willow spp.
- Identified in the mid-19th century
- Due to the chemical advances in the 19th–20th centuries.

Targeted Biologics

- Targeted Biologics target the underlying sources of autoimmune disease, which improves physical functioning and prevents irreversible damage, making disease remission possible.

Anti-TNF Antibodies

- Total five innovative TNF-targeting drugs have been approved.

Interleukin Related Drugs

- Include marketed drugs targeting at IL-1, IL-6,IL-17, IL-23, etc.

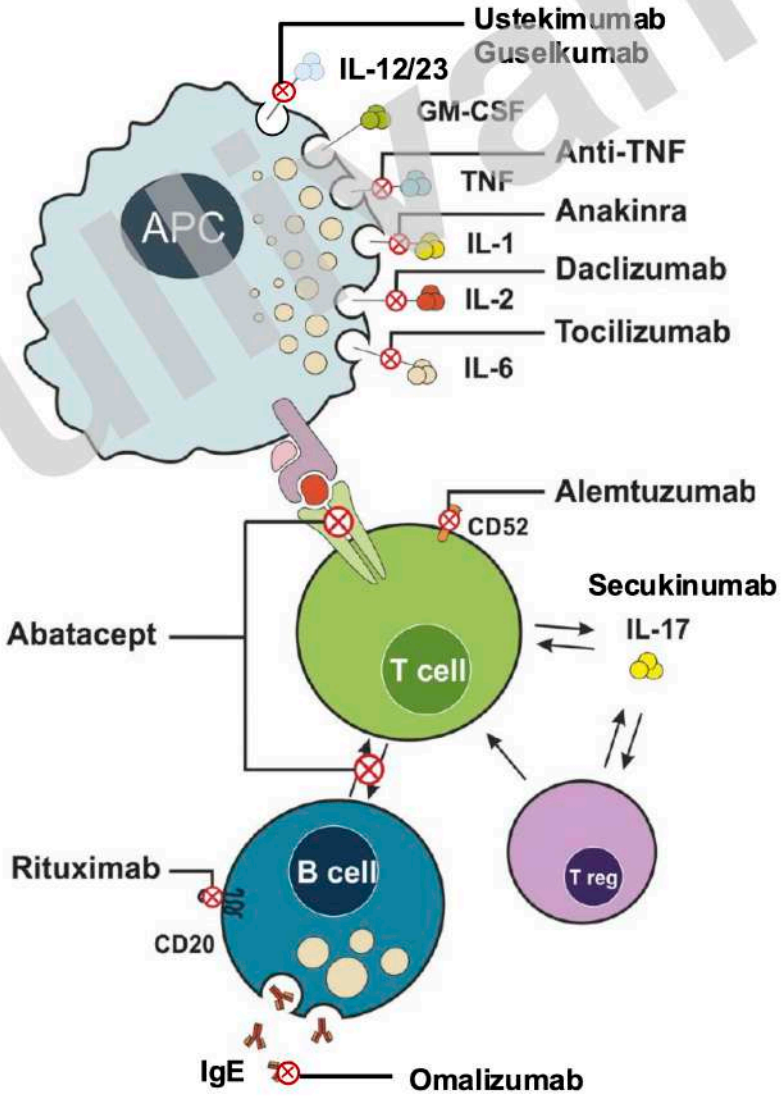
JAK Inhibitors

- Include JAK1, JAK2, TYK2 and JAK3.

Others

- Include other monoclonal antibodies targeting at CD20, CD22, CD28, BLyS, BTK inhibitors etc.

Future: More effective therapies being developed



Note:
NSAIDs: Non-steroidal anti-inflammatory drugs
DMARDs: Disease-modifying anti-rheumatic drugs

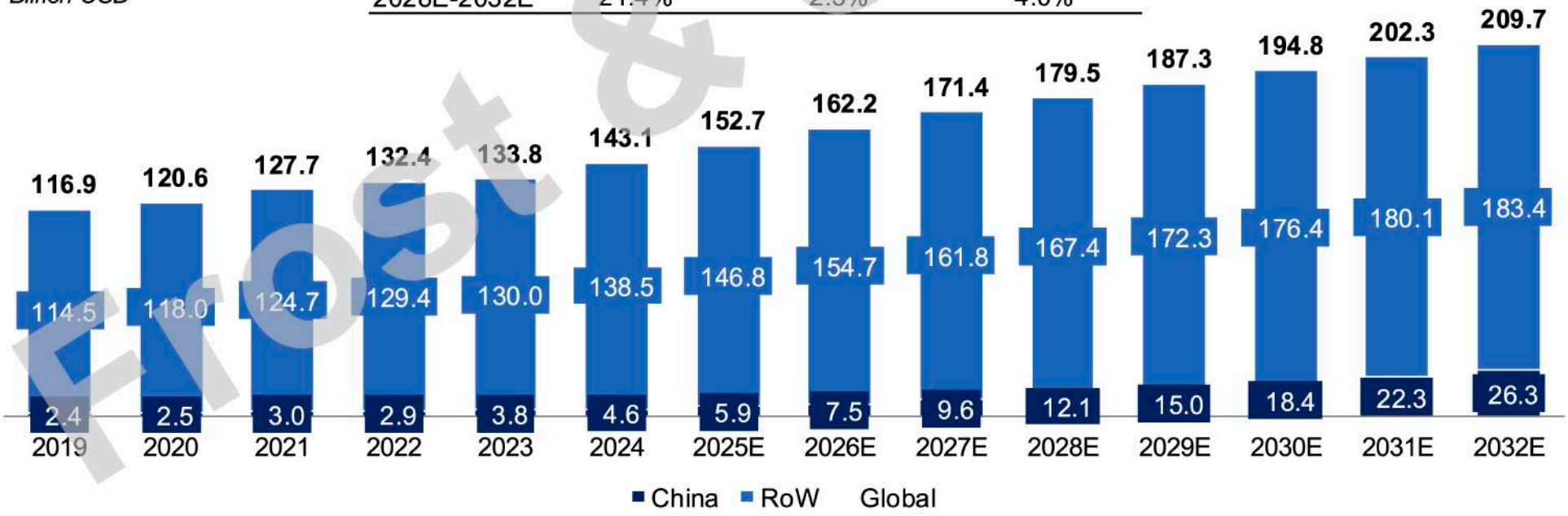
Source: Literature Review, Frost & Sullivan analysis

Global Autoimmune Disease Drugs Market, 2019-2032E

- The global market of autoimmune disease drug increased from USD 116.9 billion to USD 143.1 billion with a CAGR of 4.1% from 2019 to 2024. The number is projected to reach USD 179.5 billion in 2028 to USD 192.3 billion in 2032 with a CAGR of 5.8% from 2024 to 2028 and a CAGR of 4.0% from 2028 to 2032.
- The China market of autoimmune disease drug increased from USD 2.4 billion to USD 4.6 billion with a CAGR of 14.2% from 2019 to 2024. The number is projected to reach USD 12.1 billion in 2028 and USD 26.3 billion in 2032 with a CAGR of 27.6% from 2024 to 2028 and 21.4% from 2028 to 2032.

Global Autoimmune Disease Drugs Market, 2019-2032E

Period	CAGR		
	China	ROW	Global
2019-2024	14.2%	3.9%	4.1%
2024-2028E	27.6%	4.8%	5.8%
2028E-2032E	21.4%	2.3%	4.0%



Source: Frost & Sullivan Analysis

Growth Drivers of Autoimmune Diseases Market

The Increasing Number of Rheumatology and Immunology Departments	• China has a vast population, with a significant number of individuals affected by autoimmune diseases. According to statistics from the National Health Commission, approximately 80 million people in China suffer from these conditions. The country is increasingly prioritizing the management of autoimmune diseases, as evidenced by the "Guidelines for the Construction and Management of Rheumatology and Immunology Departments in General Hospitals (Trial)" (《综合医院风湿免疫科建设与管理指南(试行)》) issued in October 2019. This guideline mandates that all tertiary hospitals establish independent rheumatology and immunology departments and recommends that comprehensive hospitals at the secondary level or higher also create such departments. As more diagnostic and treatment institutions implement these guidelines and establish dedicated departments, access to medical resources for autoimmune diseases will significantly improve, leading to enhanced diagnosis and treatment opportunities for patients.
Large patient base and long-term treatment	• Autoimmune diseases are difficult to cure. Once they develop, most patients require long-term or even lifelong medication, and for some, the severity of their condition severely impacts their quality of life. Autoimmune diseases have now become the third most common chronic disease, following cardiovascular disease and cancer.
Growing public awareness of autoimmune diseases	• To date, more than 100 types of autoimmune diseases have been identified. As public awareness of disease diagnosis and management grows, more patients recognize the importance of early detection and proactive care. This increased health consciousness contributes to higher diagnosis and treatment rates for autoimmune diseases. Consequently, more people are seeking medical guidance earlier, which has raised the demand for effective management of autoimmune conditions.
The rise of biologics	• The primary therapeutic objectives in autoimmune disease management are symptom alleviation, functional preservation, and slowing the progression of tissue damage. Historically, pharmacologic treatments for autoimmune diseases were categorized into three main classes: nonsteroidal anti-inflammatory drugs (NSAIDs), steroidal anti-inflammatory drugs (SAIDs), and disease-modifying antirheumatic drugs (DMARDs). Recently, however, biologic therapies have emerged as recommended treatment options due to their superior efficacy over traditional approaches. The growing affordability and accessibility of biologics are expected to significantly expand their role in the autoimmune disease market, driving substantial growth in future therapeutic strategies.

Source: Frost & Sullivan Analysis

Future Trends of Autoimmune Diseases Market

More indications to be covered with innovative biologics	• At present, autoimmune diseases remain incurable; however, deeper insights into their pathophysiology and related biological pathways are driving the development of innovative biologic therapies. These advanced biologics not only expand the pharmacologic options available to autoimmune patients but also broaden the scope of treatable indications within this disease category. Consequently, such advancements hold potential for significantly enhancing therapeutic approaches across various autoimmune disorders.
Increasing Penetration of Biologics	• Numerous biologics for autoimmune diseases are currently in development, with many anticipated to enter the market in the near future. As the availability of biologic options increases and prices are projected to decrease, their adoption among autoimmune disease patients is expected to rise significantly. Notably, among the top ten best-selling drugs globally in 2023, three are indicated for autoimmune diseases, all of which are biologics. This underscores the substantial market potential and growing clinical prominence of biologic therapies in the autoimmune treatment landscape.
Novel therapies targeting unmet clinical needs	• Nonsteroidal anti-inflammatory drugs (NSAIDs) effectively alleviate clinical symptoms and reduce localized inflammation; however, they do not address the underlying disease activity or progression. Steroidal anti-inflammatory drugs (SAIDs) provide rapid relief but are associated with numerous potential side effects and a risk of disease relapse upon discontinuation. Conversely, disease-modifying antirheumatic drugs (DMARDs) exhibit a delayed onset of action and necessitate prolonged administration. As a result, there exists a significant unmet clinical need for innovative therapeutic options. The market for autoimmune disease treatments is poised for expansion as novel therapies enter clinical use, offering potential benefits for patients who are dissatisfied with the efficacy of current treatment regimens.
Rapid rise of domestic biosimilars	• With the launch of domestically produced biosimilars, price reductions and inclusion in medical insurance, as well as an increased willingness among patients and doctors to use biologics, the biosimilar market is experiencing rapid growth. This trend will continue to expand, providing cost-effective alternatives to original biologics and improving patient access to essential treatments.

Source: Frost & Sullivan Analysis

Overview of ST2/IL-33 Pathway

- Interleukin-33 (IL-33), a member of the IL-1 family of cytokines, is an alarmin that is constitutively expressed in epithelial cells and released on cell injury or on exposure to allergens, toxins, or infections.
- The IL-33 receptor, ST2 (alias of IL1RL1), is classified as a member of the IL-1R family. It is expressed on keratinocytes, endothelial cells, fibroblasts, and inflammatory cells, including type 2 innate lymphoid cells (ILC2s), monocytes, natural killer cells, T lymphocytes, mast cells, basophils, and eosinop.
- 20–40% of patients with COPD exhibit type 2 inflammation.
- Preliminary studies indicate that the IL33/ST2 signaling pathway is effective in treating COPD without distinguishing between inflammatory pathway phenotypes, meaning it covers both Type 2 and non-Type 2 COPD populations.

IL-33/ST2 pathway and inflammation

- In human, ST2 gene encodes at least 3 alternative splicing isoforms: a membrane-bound receptor, ST2L; a secreted, soluble form, sST2; and a variant form, ST2V. ST2L is a member of the TLR/IL-1R superfamily. ST2L is expressed primarily on mast cells and on Th2 cells. Interleukin-33 (IL33), which signals through binding to ST2L and then forms a complex with IL-1RAcP. The formation of this complex leads to the recruitment of MyD88, IRAK1, IRAK4, and TRAF6, which then activates the NF-kB and MAPK signaling pathways, increasing the expression of Th2-associated cytokines, IL-4, IL-5, and IL-13.
- The Th2 cytokines, such as IL-4, IL-5 and IL-13, are pivotal in regulating the allergic phenotype, the IgE response or the inflammatory cell-mediated function.

Source: Literature Review, Frost & Sullivan analysis

Overview of COPD

- COPD is recognized as a disease with a heavy medical burden globally and there remain large unmet needs for the evaluation and treatment of patients with COPD, especially in the aspects of misdiagnosis.
- COPD will cause de destruction of barriers between alveoli inside lungs, causing airways to get swollen and clogged with mucus. Stale air then gets stuck inside the lung and it becomes harder for the lung to get enough fresh oxygen with each breath. In most cases, COPD develops very slowly, symptoms may come over years before being diagnosed.
- According to public information and literature review, it is being increasingly recognized that approximately 20 percent to 40 percent of patients with COPD have a predominant type 2 inflammation, this is commonly detected by elevated blood eosinophil counts.

Key Symptoms:

- Breathing difficulty
- Cough
- Mucus (Sputum) production and wheezing

Cause of disease:

- Long-term exposure to irritating gases like chemical fumes or toxic substances at work
- Particular matter (most frequently cigarette smoke and secondhand smoke)
- Genetic reasons, defect in DNA called "alpha-1 antitrypsin deficiency"
- Untreated asthma

Stage One	Mild COPD
GOLD Standard	FEV_1 about 80% or more of normal
Clinical Features	Slight limitations to breathing, some patients would experience cough and phlegm
Stage Two	**Moderate COPD**
GOLD Standard	FEV_1 between 50% and 80% of normal
Clinical Features	More coughing and mucus production, medical care needed for breathing limitation treatment
Stage Three	**Severe COPD**
GOLD Standard	FEV_1 between 30% and 50% of normal
Clinical Features	Large impact on patient's quality of life, easy to feel fatigue and have difficulty exercising
Stage Four	**End-Stage COPD**
GOLD Standard	Lower FEV_1 than stage 3 or low blood oxygen levels
Clinical Features	Affects patient's life profoundly, life-threatening flare-ups and breathing issues, having trouble with oxygen receiving and develop hypoxia or hypoxemia, cyanosis and other symptoms

Prevention and Treatment

- COPD is a disease that can be prevented and treated with airflow limitation. The airflow limitation is not completely reversible and shows a progressive development. It is related to the abnormal inflammatory response of the lungs to harmful gases such as cigarette smoke or harmful particles.
- The main treatment method is to prevent and control chronic inflammation mainly by drug treatment, reduce the clinical symptoms of patients, and improve their life. At the same time, COPD patients can also be treated by rehabilitation, oxygen therapy and surgery.

Note: FEV_1: Forced Expiratory Volume in 1 second

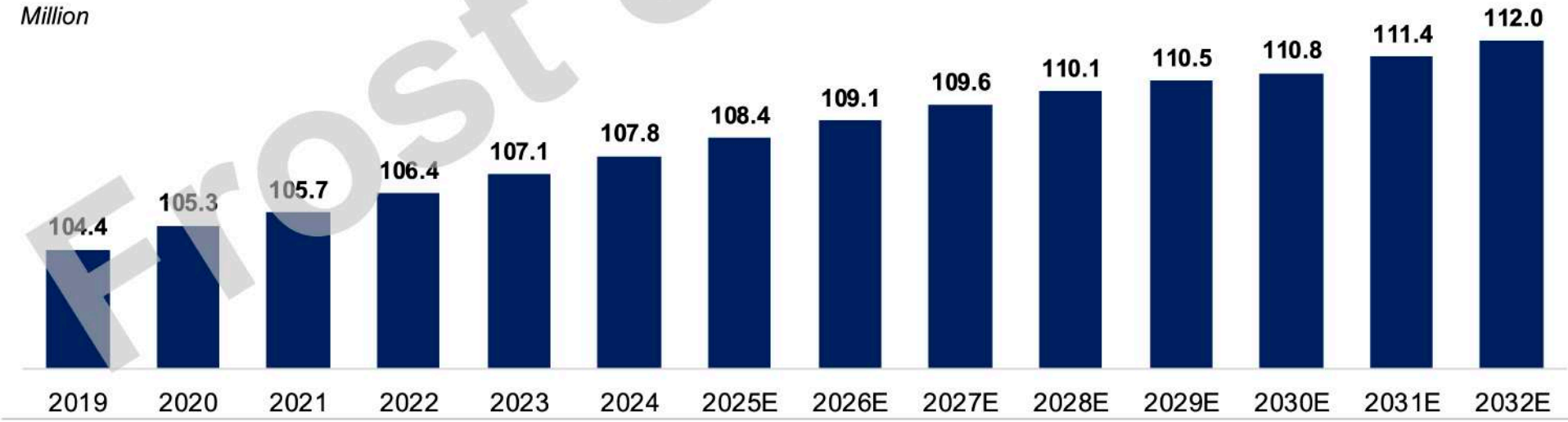
Source: Literature Review, Frost & Sullivan analysis

Prevalence of COPD in China, 2019-2032E

- In 2024, the number of COPD patients in China is as high as 107.8 million. The number is expected to reach 110.1 in 2028 and 112.0 million in 2032 at a CAGR of 0.5% from 2024 to 2028 and 0.4% from 2028 to 2032.
- The prevalence rate of COPD in China is approximately 7.6%.

Prevalence of COPD in China, 2019-2032E

Period	CAGR
2019-2024	0.6%
2024-2028E	0.5%
2028E-2032E	0.4%



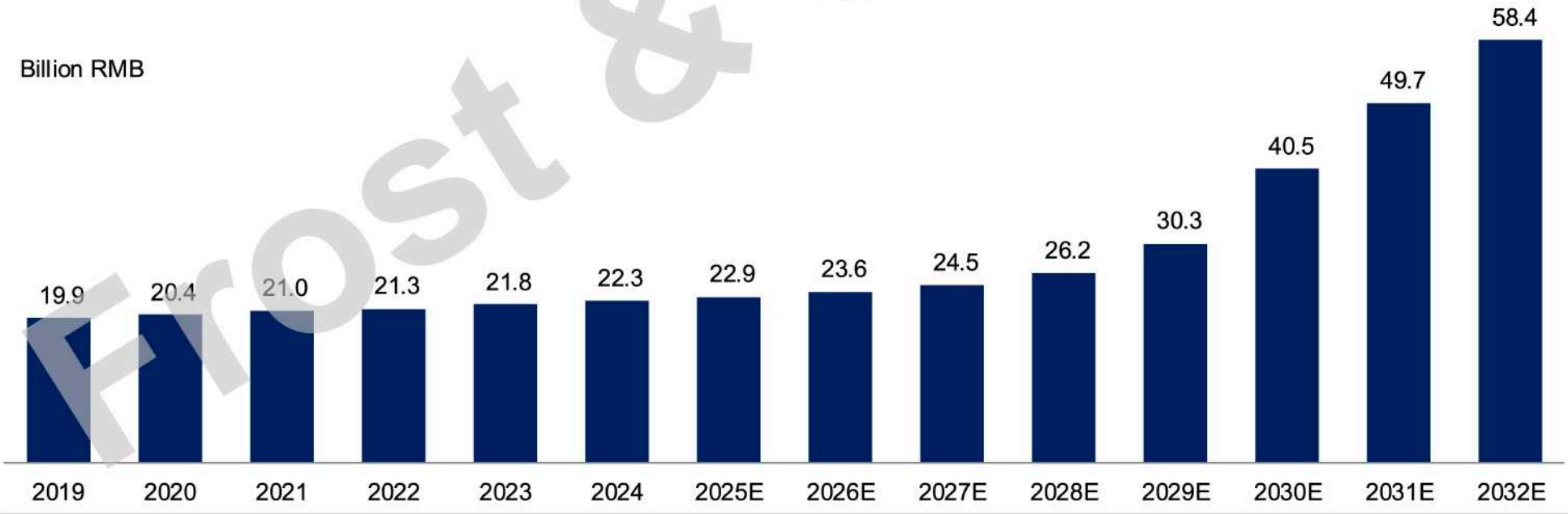
Source: Literature Review, Frost & Sullivan Analysis

China COPD Drug Market Size, 2019-2032E

- China's COPD drug market size reached RMB 22.3 billion in 2024, with a CAGR of 2.3% from 2019 to 2024. The market size will climb to RMB 26.2 billion in 2028 and RMB 58.4 billion in 2032, representing a CAGR of 4.0% from 2024 to 2028 and 22.2% from 2023 to 2032.
- Biologics are emerging as a key growth driver in the COPD drug market, particularly targeting the IL family of cytokines. Some of the main targets include IL-11, IL-13, and IL-17, which play a significant role in COPD pathogenesis.

China COPD Drug Market Size, 2019-2032E

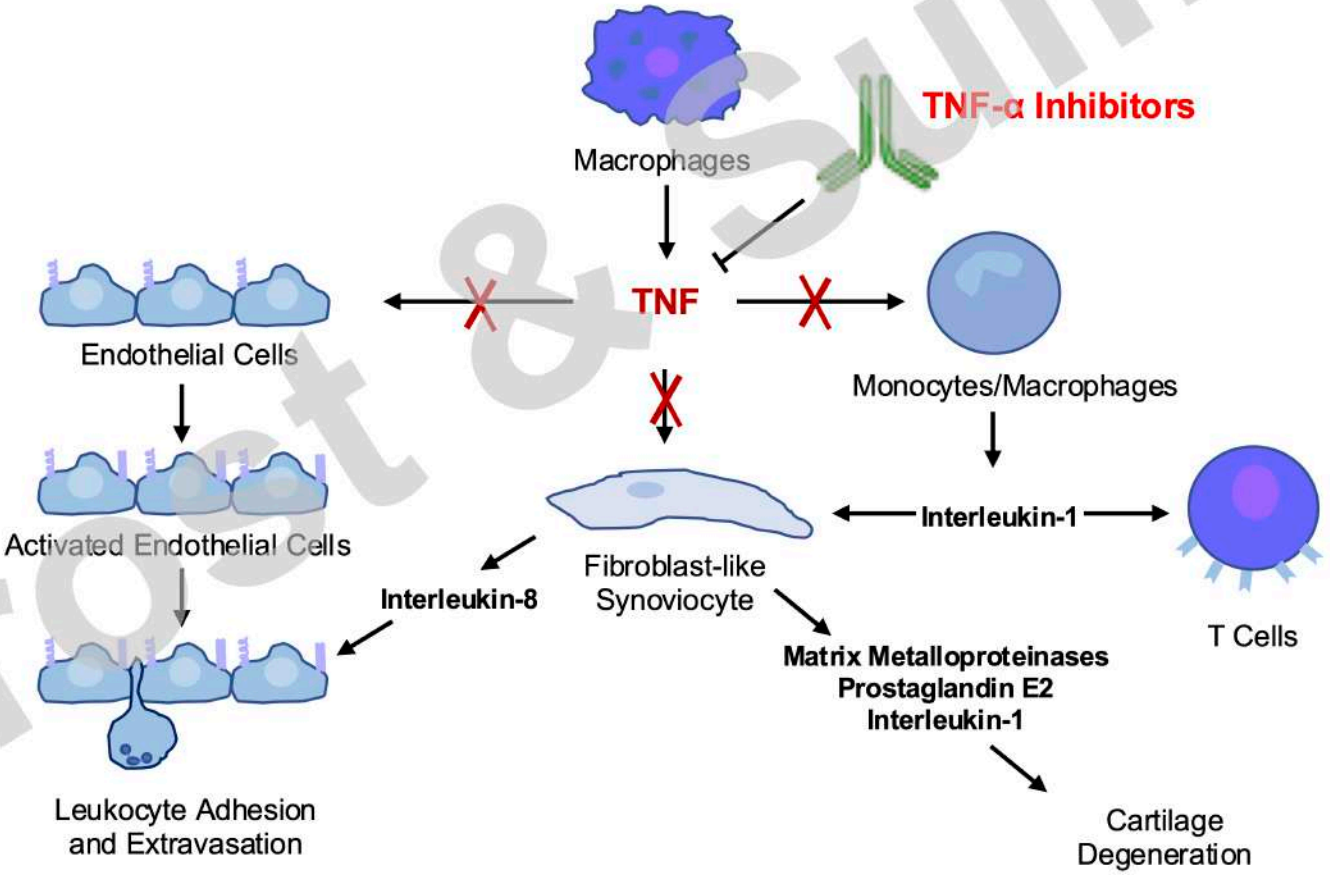
Period	CAGR
2019-2024	2.3%
2024-2028E	4.0%
2028E-2032E	22.2%



Source: Frost & Sullivan Analysis

Overview of TNF-α Inhibitors in Treating Autoimmune Diseases

- TNF-α (Tumor Necrosis Factor-α) is a pro-inflammatory cytokine mainly produced by activated macrophages and monocytes. It is in the upstream initiation stage of the inflammatory cascade and mediates a variety of inflammatory diseases. It plays a direct pathogenic role and induces the production of other inflammatory factors and plays a role in tissue destruction. Studies have shown that TNF-α is an important target for the treatment of autoimmune diseases including rheumatoid arthritis, ankylosing spondylitis, psoriasis, and Crohn's disease.
- TNF-α inhibitors are a class of biological agents used to treat autoimmune diseases. They bind to TNF-α with specificity and high affinity, preventing it from binding to TNF-α receptors on the cell surface, thereby inhibiting the biological activity of TNF-α and achieving the effect of treating autoimmune diseases.



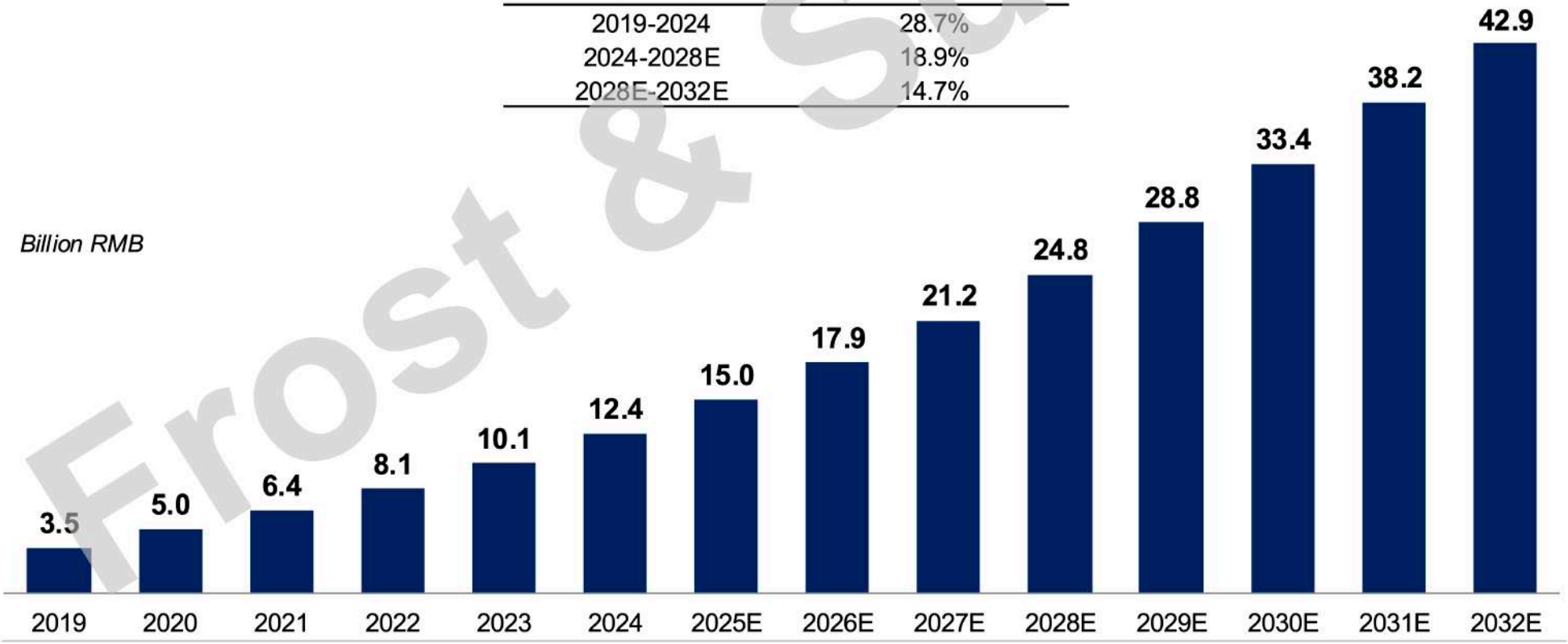
Source: Literature Review, Frost & Sullivan analysis

China Market Size of TNF-α Targeted Drugs, 2019-2032E

- The market of TNF-α targeted drugs in China increased to RMB 12.4 billion in 2024, with the CAGR of 28.7% from 2019 to 2024. It is estimated to grow to RMB24.8 billion in 2028 and RMB 42.9 billion by 2032, with the CAGR of 18.9% from 2024 to 2028 and 14.7% from 2028 to 2032.

Market Size of TNF-α Targeted Drugs, 2019-2032E

Period	CAGR
2019-2024	28.7%
2024-2028E	18.9%
2028E-2032E	14.7%



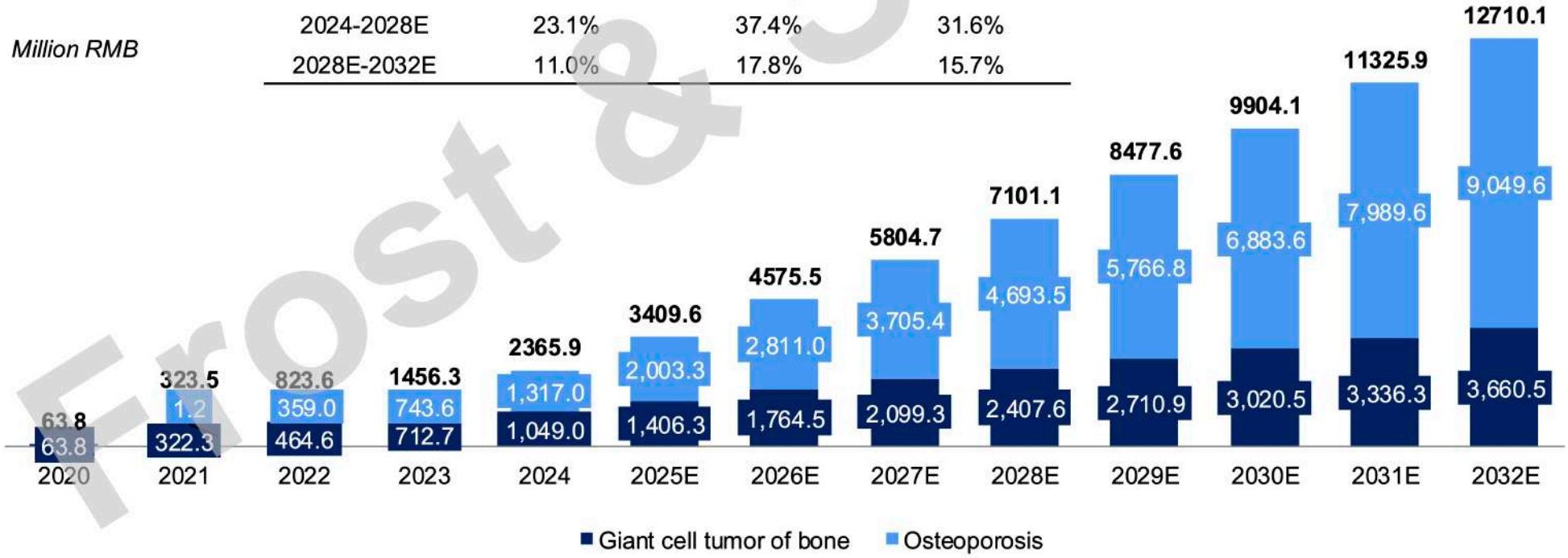
Source: Frost & Sullivan Analysis

China Anti-RANKL Monoclonal Antibody Drug Market, 2020-2032E

- The anti-RANKL mAb for osteoporosis market size has increased from RMB 1.2 million in 2021 to RMB 1,317.0 million. The size is expected to continue to grow, reaching RMB 4,693.5 million in 2028 and RMB 9,049.6 in 2032.
- The anti-RANKL mAb for osteoporosis market size increased from RMB 1.2 million in 2021 to RMB 1,317.0 million in 2024. It is expected to grow to RMB 9,049.6 million in 2032 with a CAGR of 31.6% from 2024 to 2028 and 15.7% from 2028 to 2032.

China Anti-RANKL Monoclonal Antibody Drug Market, 2020-2032E

CAGR	Giant cell tumor of bone	Osteoporosis	Total
2020-2024	101.4%	N/A	146.8%
2024-2028E	23.1%	37.4%	31.6%
2028E-2032E	11.0%	17.8%	15.7%



Source: Frost & Sullivan Analysis

Overview of Osteoporosis

- Osteoporosis (OP) is a systemic skeletal disease characterized by decreased bone mass and destruction of bone microstructure, resulting in increased bone brittleness and risk of fracture OP can be categorized as primary OP which refers to senile, idiopathic and postmenopausal osteoporosis (PMO), and as secondary OP which is associated with a variety of factors, such as endocrine disorders, nutritional deficiencies, drug use, liver and kidney disease, alcoholism, and so on.

Categories

Primary OP

- Primary OP includes postmenopausal OP, senile OP, and idiopathic OP. Postmenopausal OP usually occurs within 5 to 10 years after menopause.

Secondary OP

- Secondary OP is osteoporosis caused by any disease and/or drug that affects bone metabolism and other known causes.

Impact of Osteoporosis

- It is a serious public health problem, with about 200 million people being affected worldwide
- Economic burden
- Heighten risk of fracture in individuals with low bone density
- Untreated osteoporosis can lead to a vicious cycle of recurrent fracture(s), may resulting indisability and premature death

Source: Literature Review, Frost & Sullivan Analysis

Competitive Landscape of Marketed RANKL Monoclonal Antibodies in China - Osteoporosis

The table below shows the marketed RANKL monoclonal antibodies for a range of indications in China.

Trade name	Product	Company	Indications	NMPA first approved date	Type of health insurance
Prolia 普罗力®	Denosumab	Amgen	Postmenopausal osteoporosis, osteoporosis in men, glucocorticoid-induced osteoporosis	2020/6/17	B
Boyoubei 博优倍®	Denosumab	BoAn Biotech	Postmenopausal osteoporosis	2022/11/8	B
Mailishu 迈利舒®	**Denosumab**	**Mabwell**	**Postmenopausal osteoporosis**	**2023/3/28**	**B**
Lukexin 鲁可欣®	Denosumab	Qilu Pharmaceutical	Postmenopausal osteoporosis	2023/9/28	B
Henggai 恒盖®	Denosumab	Feiyang Biotech	Postmenopausal osteoporosis, osteoporosis in men	2024/9/3	B

Note: As of April 12, 2026

Source: NMPA, Frost & Sullivan Analysis

Overview of Osteoarthritis

- Osteoarthritis is a joint disease characterized by the fibrillation, cracking, and ulceration of articular cartilage due to multiple factors. The etiology of osteoarthritis remains unclear, but its development is associated with factors such as age, obesity, inflammation, trauma, and genetic predispositions. The pathological features of osteoarthritis include the degeneration and destruction of articular cartilage, sclerosis or cystic changes in the subchondral bone, osteophyte formation at the joint margins, and muscle atrophy and weakness.

Osteoarthritis

Knee Osteoarthritis

- Knee osteoarthritis is a chronic, degenerative joint disease, characterized pathologically by damage to the articular cartilage and subchondral bone, as well as synovitis. The etiology of knee osteoarthritis is very complex, with major causes including chronic overuse, acute trauma, osteoporosis, and genetic factors. The primary symptoms are knee joint pain and functional impairment.

Hip Osteoarthritis

- Hip osteoarthritis is a form of osteoarthritic disease resulting from the degeneration of articular cartilage or alterations in bone structure due to the long-term uneven loading of the hip joint surface. Patients typically present with chronic joint pain and compromised motor function. The etiology is not definitively established, but it is widely accepted that factors such as aging, trauma, inflammation, obesity, and metabolic processes are implicated.

Hand Osteoarthritis

- Finger osteoarthritis is a chronic condition primarily characterized by joint pain and is classified within the rheumatic diseases. This disease is often observed in middle-aged and elderly individuals who are overweight or obese, with the most commonly affected areas being the knees, fingers, neck, and lumbar spine. The primary symptoms include joint pain and stiffness, and in severe cases, there may be joint swelling and muscle atrophy.

Risk Factors

Age	Gender	Genetic Factors	Race
Obesity	Diet	Joint Injury	Occupation

Source: Frost & Sullivan Analysis

Overview of Retinal Diseases

- Retinal diseases, which are often characterized by leakage of fluid, hemorrhage and fibrous scarring in the eye, and develop from the back surface of the eye (i.e. fungus) and the vitreous around, include wet age-related macular degeneration (wAMD), diabetic macular edema (DME), retinal vein occlusion (RVO) and myopic choroidal neovascularization (mCNV) not secondary to AMD. These diseases are major causes of visual impairment and blindness worldwide. Retinal diseases can cause irreversible loss of visual acuity, which can have a major impact on patients' vision-related quality of life and overall wellbeing.

wAMD

- Age-related macular degeneration (AMD) is a degenerative retinal disease that causes progressive loss of central vision. It's the leading cause of irreversible blindness in aged people
- In AMD patients, approximately 10% are wAMD. However, 80%~90% cases of vision loss are from wAMD patients.
- In the wAMD, new blood vessels grow and leak blood and fluid under the macula. This can lead to retinal detachment, scarring, and irreversible vision loss。
- Although AMD tends to occur in one eye at a time, approximately 50% of patients who have wAMD in one eye will also develop this condition in their second eye within 5 years.
- Major risk factors of wAMD includes: aging, genetics, smoking, AMD in one eye, etc.

DME

- DME is a complication of diabetes wherein the patient loses the central vision to a certain degree. The condition occurs due to leakage of intraretinal fluid or lipid into the macular area from microaneurysms or damaged blood vessels.
- Before the development of DME, diabetic retinopathy (DR) firstly occurs, which damages the blood vessels in the retina, resulting in vision impairment. These blood vessels continue to build up pressure in the eye and leak fluid, leading to DME.
- The prevalence of DME is rapidly accelerating along with the increasing number of diabetic patients, which becomes a growing healthcare concern.
- Major risk factors of DME includes: diabetes, hypertension, hyperpermeability of the retinal vasculature, etc.

RVO

- RVO occurs when the central retinal vein, the blood vessel that drains the retina, or one of its branches becomes blocked, which can lead to blurry vision or loss of vision in the eyes.
- RVO may be categorized by the anatomy of the occluded vein and the degree of ischemia produced. The two major RVO types are central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO).
- Major risk factors of RVO includes: aging, hypertension, arteriosclerosis, hyperlipidemia, etc.

mCNV

- mCNV is a complication of myopia that causes visual impairment. In myopic eyes, the elongation of the anteroposterior axis causes stress, which induces the creation of new blood vessels in the choroid. It is this neovascularistion that causes the decrease in visual acuity.
- mCNV can happen in one or both eyes. More than 30% with mCNV in one eye will develop it in the other eye within 8 years.
- Major risk factors of mCNV includes: myopia, aging, female gender, macular changes, etc.

Source: Literature Review, Frost & Sullivan Analysis

Competitive Landscape of Marketed VEGFA-Targeting Products for Ophthalmology Diseases in China

- There are 8 marketed VEGF-targeting antibody drugs for ophthalmology diseases in China. Aflibercept was the first to receive NMPA approval in February 2018.

➢ Marketed VEGF-targeting products for ophthalmology disease

Drug	Company	Technology	Target	First approval year	NRDL
Aflibercept	Regeneron Pharma, Sanofi, Bayer AG, Santen Pharma	Antibody-fusion protein	VEGF	2018-02-02	B
Ranibizumab	Roche, Genentech, Novartis	Monospecific antibody, Antibody fragments	VEGFA	2018-11-16	B
Conbercept-KH902	Chengdu Kanghong Pharma	Antibody-fusion protein	VEGF	2019-05-17	B
Aflibercept-QL1207	Qilu Pharmaceutical	Antibody-fusion protein	VEGF	2023-12-13	B
Faricimab	Roche, Genentech, Chugai Pharma	Bispecific antibody	ANGPT2, VEGFA	2023-12-13	B
Ranibizumab-QL1205	BioCND, Qilu Pharmaceutical	Monospecific antibody, Antibody fragments	VEGFA	2024-08-13	B
Brolucizumab	Novartis	Monospecific antibody	VEGFA	2025-05-27	/
Aflibercept-LY09004	Luye Pharma Group	Antibody-fusion protein	VEGF	2025-11-25	/

Note: As of April 12, 2026

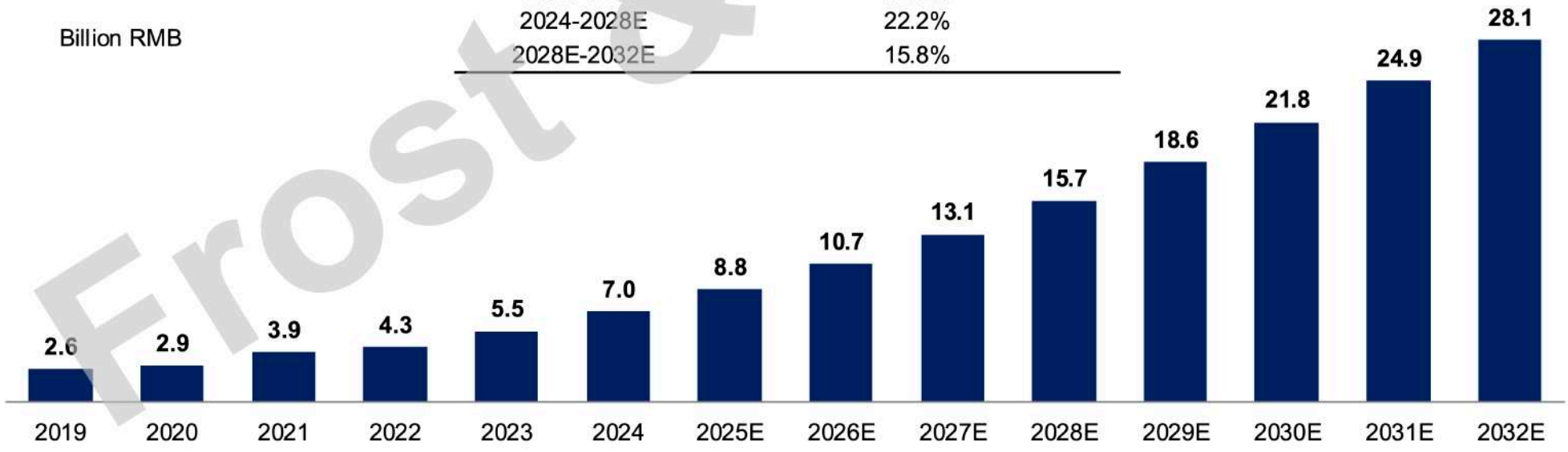
Source: NMPA, Frost & Sullivan Analysis

China Market Size of Anti-VEGF Agents for Retinal Diseases, 2019-2032E

- Vascular endothelial growth factor ("VEGF") is a sub-family of growth factors produced by many cells that stimulates the formation of blood vessels. They are important signaling proteins involved in angiogenesis.
- The market size of anti-VEGF agents for retinal disease in China is experiencing a rapid growth. The market size of anti-VEGF agents for retinal disease in China has grown from RMB 2.6 billion in 2019 to RMB 7.0 billion in 2024, with a CAGR of 22.0%. The market will keep growing to RMB 15.7 billion in 2028 and RMB 28.1 billion in 2032, with a CAGR of 22.2% from 2024 to 2028 and 15.8% from 2028 to 2032.
- VEGF-targeting antibody drugs have become a cornerstone in the treatment landscape, particularly for conditions marked by neovascularization and vascular leakage such as age-related macular degeneration (AMD), diabetic retinopathy (DR), and retinal vein occlusion (RVO).

China Market Size of Anti-VEGF Agents for Retinal Diseases, 2019-2032E

Period	CAGR
2019-2024	22.0%
2024-2028E	22.2%
2028E-2032E	15.8%



Source: Annual Reports of Listed Medical Companies, NCCR, MOHRSS, Frost & Sullivan Analysis

Competitive Landscape of Pipeline VEGFA-Targeting Antibody Products for Ophthalmology Diseases in China (1/2)

- There are currently 26 Drugs VEGFA-Targeting Antibody Products under Clinical Development for Ophthalmology diseases in China.

Products	Company	Target	Stage	First Posted Date	Indications
Ranibizumab-HJY28	East China Pharmaceutical, Hangzhou Zhongmeihuadong Pharmaceutical	VEGFA	NDA	2025-05-30	wAMD
Bevacizumab-TAB014	TOT Biopharm(Suzhou)Co.,Ltd.	VEGFA	NDA	2025-06-12	wAMD
Ranibizumab-JL14002	Jecho Biopharmaceuticals	VEGFA	NDA	2025-06-18	wAMD
Bevacizumab -HLX04-O	Shanghai Henlius Biotec	VEGFA	NDA	2025-08-13	wAMD
Aflibercept-9MW0813	**Mabwell Bioscience**	**VEGF**	**NDA**	**2025-09-19**	**DME, wAMD**
flimrufusp alfa	Remegen, Santen Pharmaceutical	FGF2, VEGF	NDA	2025-09-30	DME
Bevacizumab-601A	3SBio	VEGF	NDA	2025-10-15	RVO
Vilacizumab	Bio-Thera Solutions	VEGF	NDA	2025-12-19	wAMD
Ranibizumab-RG6321	Roche, Genentech	VEGFA	III	2022-10-03	wAMD
Aflibercept - JZB05	Jingze Biopharmaceutical	VEGF	III	2023-09-04	DME
9MW0211	**Mabwell Bioscience,**	**VEGFA**	**II/III**	**2020-12-25**	**wAMD**
HB002.1M	Huahai Pharmaceutica	VEGF	II	2020-06-09	wAMD, DME
Bevacizumab-JY028	Beijing east biotech	VEGFA	II	2022-07-26	wAMD
ASKG712	Beijing Aosaikang, AskGene Pharma	ANGPT2, VEGFA	II	2024-08-30	wAMD
Y400	Wuhan Youzhiyou Biopharmaceutical	ANGPT2, VEGFA	I/II	2023-06-19	wAMD
RRG001	Shanghai Refreshgene Therapeutics	VEGF	I/II	2023-11-21	wAMD
XMVA09	Starrygene Therapeutics Company Limited	ANGPT2, VEGF	I/II	2024-04-12	wAMD
SCT520FF	Sinocelltech Group Limited	VEGF	I/II	2024-10-15	wAMD
OCUL101	Shenzhen Oukejian Biomedical Technology	C5, VEGF	I/II	2025-03-14	wAMD, DME, Geographic atrophy
SOLOT-Eye	Stainwei Biotech	VEGF	I	2018-11-01	wAMD, DME

Note: As of April 12, 2026; Ranibizumab R30 was not included as the development of it has been discontinued. BD311 was not included as the trial status was unclear.

Source: CDE, Frost & Sullivan Analysis

Competitive Landscape of Pipeline VEGFA-Targeting Antibody Products for Ophthalmology Diseases in China (2/2)

Products	Company	Target	Stage	First Posted Date	Indications
Bevacizumab-MG021	North China Pharmaceutical Company Ltd.	VEGFA	I	2020-07-23	wAMD
IBI304	Innovent	VEGF	I	2021-03-03	RVO
BD311	Shanghai Bendao Gene Technology Co., Ltd	VEGFA	I	2021-10-29	DME, wAMD, RVO
IBI324	Innovent	ANGPT2, VEGFA	I	2022-06-17	DME
IBI333	Innovent	VEGFA, VEGFC	I	2022-10-20	wAMD
GB10	Shan Dong Kexing Biopharm CO.,Ltd.	ANGPT2, VEGF	I	2026-01-26	wAMD

Note: As of April 12, 2026

Source: CDE, Frost & Sullivan Analysis

Overview of β-Thalassemias

- Beta-thalassemias are a group of hereditary blood disorders characterized by anomalies in the synthesis of the beta chains of hemoglobin resulting in variable phenotypes ranging from severe anemia to clinically asymptomatic individuals.
- Complications eventually include growth retardation, intercurrent infections, progressive hepatosplenomegaly, skeletal abnormalities, and severe iron overload. Moreover, Iron overload causes a threat to vital organs such as the liver and, initiates events of the pathologic progression involving apoptosis, fibrosis, and ultimately cardiac dysfunction, and even life-threatening.

Main forms- According to severity

Thalassemia major

Individuals with thalassemia major usually present within the first 2 years of life with severe anemia, requiring regular red blood cell (RBC) transfusions.

Thalassemia intermedia

Patients with thalassemia intermedia present later in life with moderate anemia and do not require regular transfusions.

Thalassemia minor

Thalassemia minor is clinically asymptomatic, but some subjects may have moderate anemia.

Main forms- According to transfusion-dependent

β-thalassemia are classified into transfusion-dependent thalassemia (TDT) and non–transfusion-dependent thalassemia (NTDT), based on patients' clinical severity whether they require regular blood transfusions to survive (TDT) or not (NTDT).

Hepcidin in β-thalassemia

- Iron overload is the principal cause of morbidity and mortality in β-thalassemia with or without transfusion dependence. Iron homeostasis is regulated by the hepatic peptide hormone hepcidin. Hepcidin controls dietary iron absorption, plasma iron concentrations, and tissue iron distribution. Hepcidin deficiency is the main or contributing factor of iron overload in iron-loading anemias such as β-thalassemia. Hepcidin deficiency results from a strong suppressive effect of the high erythropoietic activity on hepcidin expression. Although in thalassemia major patients iron absorption contributes less to the total iron load than transfusions, in non-transfused thalassemia, low hepcidin and the consequent hyperabsorption of dietary iron is the major cause of systemic iron overload.

Hepcidin and TMPRSS6

- TMPRSS6 is a type II transmembrane serine protease encoded by the TMPRSS6 gene, primarily expressed in the liver.
- TMPRSS6 negatively regulates synthesis of the iron regulatory hormone hepcidin. Therefore,TMPRSS6-targeted drug can inhibit iron absorption by regulating hepcidin expression, which is beneficial to reducing or preventing iron overload in β-thalassemia.

Source: Literature Review, Frost & Sullivan Analysis

Competitive Landscape of TMPRSS6-Targeting Products under Clinical Development in the Globe

The following table shows TMPRSS6-targeting products currently in clinical development globally.

Products	Company	Stage	First Posted Date	Ingredient Category	Indications
Sapablursen	Ionis Pharmaceuticals	III	2026-02-24	ASO	Stage III: Polycythemia vera
REGN7999	Regeneron Pharma	II	2024/5/20	Monospecific Antibody	Stage II: Iron overload, β-Thalassemias
9MW3011	Mabwell/Disc Medicine	II	2025/5/22	Monospecific Antibody	Stage II: Polycythemia vera Stage I: β-Thalassemias, Iron overload
Divesiran	Silence Therapeutics	I/II	2022/8/12	siRNA	Stage I/II: Polycythemia vera; Stage I: Myelodysplastic syndrome, β-Thalassemias
TMPRSS6-targeted siRNA	Novo Nordisk	I	2025/3/25	siRNA	Stage I: Hematochromatosis
BEBT-507	BeBetter Med	I	2025/4/21	siRNA	Stage I: Polycythemia Vera
AG-236	Agios Pharmaceuticals	I	2025/7/20	siRNA	Stage I: Healthy Participants

Note: As of April 12 ,2026.

Source: ClinicalTrials, CDE, Frost & Sullivan Analysis

Overview of Polycythemia Vera

- Polycythemia vera (PV) is a JAK2-mutated myeloproliferative neoplasm characterized by increased erythrocyte count, leading to increased risk of pulmonary hypertension and thrombosis.
- The mainstay of therapy for PV is therapeutic phlebotomy to reduce the hematocrit (HCT) level and minimize the risk of thrombosis.

Symptoms and Potential Risks

- Leukocytosis
- Thrombocytosis
- Splenomegaly
- Pruritus
- Microcirculatory disturbances
- Increased risk of thrombosis
- Progression into myelofibrosis
- Increased risk of acute myeloid leukemia

Treatment of PV

- There is no current cure for PV, and the most common treatment is phlebotomy to reduce the hematocrit (HCT) level to ≤ 45%, which can minimize the risk of thrombosis. However, the effect of phlebotomy is transient, until patients become iron deficient.
- Pharmacologically induced iron-restricted erythropoiesis may be superior to intermittent phlebotomy, where the removal of red blood cells(RBCs) is rapidly compensated. Such agents may treat the erythrocytosis of PV by limiting iron availability to erythroid precursors, thereby inhibiting JAK2-stimulated erythropoiesis and reducing RBC production. Therefore, systemic iron restriction could be effective in treating PV patients.

Source: Literature Review, Frost & Sullivan Analysis

Appendix

- The company's sales strategy and distribution model are in line with the industry norm in the pharmaceutical industry.
- The production of ADCs presents distinct challenges due to their complex structure, the need for precise conjugation, and the management of toxicity, all of which make the production process highly intricate. As a result, few companies possess the in-house capabilities required to address the full spectrum of challenges involved in ADC manufacturing.
- The carefully picked therapeutic areas that the company commit to, namely oncology and age-related diseases including autoimmune disorders ophthalmology and orthopedics, further distinguish the company as a unique leader in China.
- Iron overload anemia represented by B-thalassemia and erythrocyte diseases are typically classified as rare diseases across regions worldwide.
- The company is the first company to publish the efficacy data of Nectin-4 targeting ADC in TNBC globally.
- 9MW2821 was the most advanced among all Nectin-4 targeting ADCs for urothelial carcinoma in China in terms of clinical development stage and only second to Padcev, the only FDA-approved Nectin-4 targeting ADC, globally, and it was the first and only Nectin-4 targeting ADC globally to enter a pivotal Phase III trial for cervical cancer.
- As of the Latest Practicable Date, 9WM2821 was the first Nectin-4 targeting ADC globally to enter a pivotal Phase III clinical trial for CC.
- 9MW2821 is the first Nectin-4 targeting ADC originated from a company in China to enter pivotal Phase III clinical trials for UC as either a monotherapy or a combination therapy and for CC as a monotherapy.
- 9MW1911 is the first domestically-developed large molecule targeting non-Th2 pathway with most advanced clinical development stage in China.
- The first B7-H3 ADC is estimated to be approved in 2027.
- Padcev was approved by NMPA in August 2024 for adult patients with locally advanced or metastatic uroepithelial carcinoma (mUC) who have been previously treated with platinum-containing chemotherapy and programmed death receptor-1 (PD-1) or programmed death ligand-1 (PD-L1) inhibitors. The approval is based on results from the EV-203 clinical trial data, which met the primary endpoint ORR (IRC): 37.5% (95% CI, 22.7-54.2) and the secondary endpoint mPFS (IRC): 4.67m.
- A Phase III clinical trial of 9MW2821 as a monotherapy for the treatment of recurrent or metastatic CC as a second or third line treatment, which is the first and the only CC trial with Nectin-4 targeting ADC drugs globally.

Source: Frost & Sullivan Analysis

Appendix

- Leading pharmaceutical companies, especially those with established end-to-end capabilities from early discovery to commercialization, are poised to capture such considerable market potential in a competitive market.
- Leading pharmaceutical companies' ability to integrate and optimize various stages of the value chain from research and development to manufacturing and distribution, allows the company to improve efficiency, streamline operations and have faster time-to-market.
- Elderly people often face multiple health issues and may therefore suffer from a combination of age-related conditions.
- Cancer is a broad group of diseases that involve uncontrolled growth and development of cells in the body, and is one of the foremost reasons of deaths throughout the world.
- Over the past century, cancer treatments have experienced significant evolution from surgery, radiotherapy, chemotherapy, immuno-oncology therapies to targeted therapies, such as antibody-based therapies.
- In recent years, an increasing number of innovative cancer therapies have been approved globally.
- In 2024, global cancer incidence reached 21.3 million cases and continues to rise due to aging and lifestyle factors.
- Emerging innovative therapies have shown substantial clinical progress, driven by an improved understanding of tumorigenesis and advancements in therapeutic technologies.
- Expanding combination therapy represents a promising direction for the future of oncology drug development, potentially leading to more robust and personalized treatment regimens.
- ADCs are one of the fastest-growing treatment modalities for cancer.
- The development of ADCs demands extensive expertise across biologics, small molecules, and bioprocessing, encompassing the entire research and manufacturing spectrum.
- Biopharmaceutical companies with end-to-end capabilities are well-positioned to meet the increasing demands for ADC development and production.
- Biopharmaceutical companies with end-to-end capabilities enable rapid progression from discovery to clinical application, enhancing the potential for innovative ADC candidates to reach the market efficiently.
- B7-H3 overexpression is associated with poor prognosis due to its role in immune suppression and tumor progression.
- Given its pivotal role in immune regulation and cancer progression, B7-H3 is being actively explored as a potential therapeutic target for immunotherapy.

Source: Frost & Sullivan Analysis

Appendix

- G-CSF is a key factor that promotes the production and release of neutrophils from the bone marrow into the periphery, regulating their early development, survival, migration, and activation by binding to its receptor.
- As of the Latest Practicable Date, the only approved biologic for COPD was the IL-4R monoclonal antibody Dupilumab, with other late-stage therapies including IL-4R and IL-5/IL-5R monoclonal antibodies.
- However, globally there were no approved biologic therapies for COPD with non-Th2 pathway phenotype as of the same date, representing a larger patient population with significant clinical needs and market potential.
- The global rare disease market is a sector of biopharmaceutical market focused on the discovery, development and commercialization of medicines for the treatment of diseases which affect a small number of people, compared with other prevalent diseases in the general population.
- Collectively, rare diseases are estimated to affect 3.5%-5.9% of the world's population.
- Rare blood diseases related to iron metabolism involve complex mechanisms, including genetic defects that affect iron absorption, transport, and utilization.
- Risk factors of rare blood diseases encompass both genetic predispositions and environmental influences, such as dietary iron intake and chronic inflammation.
- The disease burden of rare blood diseases is significant, with economic implications due to long-term treatment needs, and challenges in accessibility and safety, particularly for managing iron overload and organ damage.
- By binding hepcidin to its receptor ferroprotein, it promotes internalization and degradation, reducing intestinal iron absorption and the release of stored iron from macrophages and hepatocytes, thereby controlling blood iron levels.
- In line with market practice, we do not prohibit our distributors from engaging sub-distributors subject to the compliance with the Two-Invoice System.
- In China, the treatment of COPD commonly involves a range of medications. Bronchodilators are frequently used, including short-acting ones like salbutamol, as well as long-acting options such as formoterol. Inhaled corticosteroids (ICS) are also utilized. Other drugs that may be prescribed include theophylline derivatives such as doxofylline, and targeted biologics such as Dupilumab.
- The annual treatment cost of Maiweijian for adult patients and skeletally mature adolescent patients (defined as having at least one mature long bone and a body weight ≥ 45 kg) with giant cell tumor of bone that is not surgically resectable or where surgical resection may lead to severe functional impairment is approximately RMB 15,000 per year.

Source: Frost & Sullivan Analysis

Appendix

- The annual treatment cost of Mailishu for osteoporosis in postmenopausal women at high risk of fractures is approximately RMB 1,200 per year.
- In 2024, Mailishu accounted for approximately 6.2% of the market share of Anti-RANKL monoclonal antibody drug market in China.
- The annual treatment cost for adult patients with moderate to severe active rheumatoid arthritis who have had an inadequate response to disease-modifying antirheumatic drugs (DMARDs), including methotrexate, and are using Junmaikang in combination with methotrexate is approximately RMB 24,000.
- The annual treatment cost for adult patients with severe active ankylosing spondylitis who have had an inadequate response to conventional therapy is approximately RMB 24,000.
- The annual treatment cost for adult patients with moderate to severe chronic plaque psoriasis who achieve adequate response within the initial 16 weeks of treatment is approximately RMB 26,000. For those who do not achieve adequate response within the initial 16 weeks and require higher doses for a period, the annual treatment cost is approximately RMB 37,000.
- In 2024, Junmaikang accounted for approximately 0.2% of the market share of all approved adalimumab products in China.
- The osteoarthritis drug market in China exceed RMB 10 billion in 2024.
- In 2020, the global incidence of HSK was approximately 25 million, with approximately 7.4 million in China. This trend of growth continues to rise annually, and the number of patients in China is expected to exceed 10 million by 2030.
- In 2024, the prevalence of PV in China was approximately 75 thousand. The number of PV patient is expected to be around 74 thousand by 2032 due to drop in the China population.
- The number of TOPi ADC treated TNBC patients in 2024 in China was approximately 17.8 thousand.
- In the United States, the number of TOPi ADC treated TNBC patients in 2024 was approximately 15.0 thousand.
- The osteoarthritis drug market in China exceeded RMB10 billion in 2024.
- As of the Latest Practicable Date, there was no B7-H3 targeting ADC drug approved globally. There were 23 B7-H3 targeting ADC drug candidates being clinically developed for the treatment of solid tumors globally.
- As of the Latest Practicable Date, there were 21 TNF-a antibody or targeted fusion protein drugs that have been approved for the treatment of various autoimmune diseases in China.
- As of the Latest Practicable Date, there were five RANKL antibody drugs approved in China for osteoporosis. As of the Latest Practicable Date, there were nine RANKL targeting monoclonal antibody candidates being clinically developed for the treatment of osteoporosis, among other orthopedic indications in China.

Source: Frost & Sullivan Analysis

Appendix

- As of the Latest Practicable Date, none of our commercialized products had been selected to join the drug procurement catalogue under the central procurement scheme in China. Also, none of the peer products for our commercialized products had been selected to join the drug procurement catalogue under the central procurement scheme. China's central procurement scheme (at the national level) predominately focuses on chemical drugs and traditional Chinese medicines, which our current commercialized products do not cover. Although the list of drugs that enter the central procurement scheme applies to all provinces in China, there are variations as to how the central procurement scheme is implemented in different provinces, such as those regarding purchase quantity, reimbursement standards and implementation timeline for a particular drug. Auhui Province is currently leading a pilot program of central procurement scheme for biologic drugs (including biosimilars). The specific policies and regulations of this pilot program have not been finalized. There is a lack of concrete official plan regarding whether, when and how the central procurement scheme for biologic drugs may be later implemented in other provinces.