

Giant Biogene (2367 HK)

Pioneer in recombinant collagen market

Giant Biogene is a leader in the professional skin treatment industry in China, promoting products based on bioactive ingredients, especially recombinant collagen. Comfy (可复美) and Collgene (可丽金) are the Company's two flagship brands that drove Giant Biogene's growth. The Company's revenue increased at a CAGR of 35.2% from RMB956.7mn in 2019 to RMB2,364.4mn in 2022 and further surged by 63.0% YoY to RMB1,605.7mn in 1H23.

- **An early-mover in the emerging recombinant collagen market.** Frost & Sullivan (F&S) expected China's recombinant collagen market to increase from RMB18.5bn in 2022E to RMB108.3bn in 2027E at a CAGR of 42.4%. Giant Biogene is the first company that has achieved mass production of recombinant collagen-based skincare products globally and also the first that has obtained the medical device registration certificates for recombinant collagen-based products in China. Leveraging its early-mover advantages, Giant Biogene has received strong consumer recognition and high user stickiness in this recombinant collagen emerging market.
- **Expanding functional skincare product lines with strong R&D capabilities.** Giant Biogene accelerated the launch of new functional skincare products during recent years, which has driven the growth of its functional skincare products sales at a CAGR of 48.2% from 2019 to 2022. In 1H23, revenue from functional skincare products was RMB1,197mn, up 95.0% YoY, and contributing 74.5% of the Company's total revenue. Leveraging its strong R&D capabilities, the Company has had a high hit rate in its new products. Comfy has at least one new blockbuster product launch every year since 2019. YTD, Comfy has launched at least seven new products and iterated three existing flagship products including Comfy Collagen Emulsion (可复美胶原乳) which ranked TOP8 in Douyin (抖音)'s Domestic Cream Hot-selling List and Comfy Dundun Single-Use (可复美吨吨次抛) which ranked TOP4 in Douyin's Single-Use Essence Popularity List during the Double 11 of 2023.
- **Collagen-based dermal filler products to unveil a second growth curve.** In China, the injectable recombinant collagen market is a blue ocean market with only two approved products from Shanxi Jinbo (832982 CH). We expect Giant Biogene to have two injectable recombinant collagen products to be approved in 2024E, and another two injectable products to be approved in 2025E. Given Giant Biogene has already built an extensive distribution network and has established strong brand recognition among medical institutions, we think the Company will quickly ramp up its injectable recombinant collagen product sales upon commercialization.
- **Initiate at BUY with TP of HK\$48.87.** We expect Comfy to be the major revenue driver in 2023E-25E. We derive our target price of HK\$48.87 based on DCF valuation (WACC: 11.1%, terminal growth rate: 3.0%), implying 27x FY24E PE, with 25.3% earnings CAGR in 2022-25E.

Earnings Summary

(YE 31 Dec)	FY21A	FY22A	FY23E	FY24E	FY25E
Revenue (RMB mn)	1,552	2,364	3,375	4,358	5,590
YoY growth (%)	30.4	52.3	42.8	29.1	28.3
Attributable net profit (RMB mn)	828	1,002	1,305	1,607	1,972
YoY growth (%)	0.2	21.0	30.3	23.1	22.7
EPS (Reported) (RMB)	0.85	1.43	1.31	1.62	1.98
P/E (x)	37.9	22.6	24.6	19.9	16.3
P/B (x)	30.9	8.0	7.7	5.5	4.1
Net gearing (%)	Net cash	Net cash	Net cash	Net cash	Net cash

Source: Company data, Bloomberg, CMBIGM estimates

BUY

Target Price HK\$48.87
Up/Downside 37.7%
Current Price HK\$35.50

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Stock Data

Mkt Cap (HK\$ mn)	35,323.5
Avg 3 mths t/o (HK\$ mn)	123.6
52w High/Low (HK\$)	58.15/24.80
Total Issued Shares (mn)	995.0

Source: FactSet

Shareholding Structure

Juzi Holding Co., Ltd	58.4%
GBEBT Holding Limited	1.9%

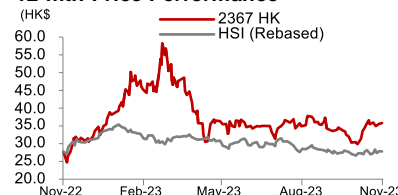
Source: HKEx

Share Performance

	Absolute	Relative
1-mth	16.6%	12.8%
3-mth	2.6%	6.4%
6-mth	-1.4%	7.4%

Source: FactSet

12-mth Price Performance



Source: FactSet

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Investment Thesis

Recombinant collagen market has significant market opportunities

Collagen is the most abundant protein in the human body and possesses multiple biological properties in providing structural support and repairing damaged skin barriers. Thus, collagen has been widely used in beauty and health fields. According to the F&S, the market size of collagen products in China in retail sales value increased from RMB9.7bn in 2017 to RMB28.7bn in 2021, at a CAGR of 31.2% and is expected to further increase from RMB39.7bn in 2022E to RMB173.8bn in 2027E at a CAGR of 34.4%.

Recombinant collagen (rCols) is a promising alternative collagen to natural collagen extracted from animals and has higher market growth potential. Compared to animal-derived collagen, the recombinant human collagen has higher level of biocompatibility, lower level of immunogenicity, lower risk of undetected pathogens, free from cytotoxicity and the ability to be further processed and optimized. Therefore, the market of recombinant collagen expanded at a higher speed than animal-derived collagen. According to the F&S, the market size of recombinant collagen products in China in retail sales value increased from RMB1.5bn in 2017 to RMB10.8bn in 2021, at a CAGR of 63.0% (vs. 21.8% CAGR of animal-derived collagen market) and is expected to further increase from RMB18.5bn in 2022E to RMB108.3bn in 2027E at a CAGR of 42.4% (vs. 25.3% CAGR of animal-derived collagen market). The penetration rate of recombinant collagen products within the overall collagen-based product market increased from 15.9% in 2017 to 37.7% in 2021, and is projected to further increase from 46.6% in 2022E to 62.3% in 2027E.

With a surge in the recombinant collagen market, the Chinese government issued a series of guidelines and regulations to standardize the recombinant collagen industry. Since 2021, the National Medical Products Administration (NMPA) has issued a series of guidelines for the naming, classification and registration of recombinant collagen medical products and raw materials. These guidelines help to boost the healthy development of the recombinant collagen industry.

Offline sales channels lay foundation for brand awareness while online channels drive strong revenue growth

Giant Biogene has established an extensive omni-channel sales network including direct sales and distributors under the Company's dual-pronged "medical institution + mass consumer" sales strategy. Leveraging Comfy's (可复美) medical dressing and other professional skin treatment products, Giant Biogene has initially penetrated into wide sales channels in medical institutions, which has laid a solid foundation of the Company's brand awareness. As of 30 June 2023, Giant Biogene's products have been sold through offline direct sales and distributors to approximately 1,400 public hospitals (vs. 1,300 at the end of 2022), 2,200 private hospitals and clinics (vs. 2,000 at the end of 2022), 500 pharmacy chain brands (vs. 500 at the end of 2022) and 4,000 CS/KA stores across China (vs. 3,500 at the end of 2022). With a professional brand image, Giant Biogene has obtained high customer stickiness. According to the Company, in 2021, approximately 30.2% of the online customers who purchased Comfy branded medical dressings have received professional recommendations and the repurchase rate of Comfy branded products on Tmall reached 42.9%, which was higher than that of Voolga (敷尔佳, 301371 CH) of 36.6%.

In Nov 2023, the Company established the first brick-and-mortar store of Comfy brand in Xi'an, which provides an offline channel to optimize interaction with target customers and to further enhance the brand influence of Comfy.

Online direct sales channel is the major driver of Giant Biogene's revenue growth. Giant Biogene's online sales include 1) direct sales through DTC stores on e-commerce and social media platforms such as Tmall, JD.com, Douyin, Xiaohongshu, and Pinduoduo, and 2) direct sales to e-commerce platforms such as JD.com and Vipshop, which resell Giant Biogene's products to customers through their online retail platforms. As the Giant Biogene has devoted significant resources in online marketing activities, the Company's revenue from online direct sales increased at a CAGR of 103.8% from RMB158.1mn in 2019 to RMB1,338.4mn in 2022. In 1H23, the Company's revenue generated from online direct sales was RMB1,046.0mn, +115.3% YoY, representing 65.1% of the total revenue.

Growing its product lines to become a comprehensive beauty brand

Comfy has positioned its brand as a professional beauty brand offering both medical and functional skin care products. Medical dressings are the cornerstone products of Comfy brand. The Human-like Collagen Dressing is one of Comfy's flagship products, which has been the best-selling product across all of Giant Biogene's products for three consecutive years since 2019. Sales revenue from the Comfy Human-Like Collagen Dressing was RMB457.1mn in 2021, contributing 71.2% of the Company's total medical dressing sales during the period, or 29.4% of the Company's total revenue. The Comfy Human-Like Collagen Dressing is still the best-selling product of Giant Biogene on Comfy's Tmall flagship store to date. In addition, Giant Biogene's total medical dressing sales increased at a CAGR of 26.7% from 2019 to 2022 and further grew by 14.6% YoY to RMB397.8mn in 1H23. In the 618 Festival of 2023, sales of the Comfy Human-like Collagen Dressing ranked No.1 in Tmall's Wound Dressing Category (天猫伤口敷料类目) and No.1 in JD.com's Medical Beauty Care Category (京东医用美护单品). In the Double 11 of 2023, sales of the Comfy Human-like Collagen Dressing once again ranked No.1 in Tmall's Wound Dressing Category and No.1 in JD.com's Medical Beauty Care Category, and ranked No.3 in Douyin's Medical Dressing Hot Product list (抖音械字医用敷料爆款榜). We expect the Comfy medical dressings to maintain solid growth thanks to the increasing penetration of medical aesthetics and strong brand awareness.

In recent years, Giant Biogene accelerated the introduction of new functional skincare products, with major focus on serum/essence, facial mask and moisturizer/cream products which were the Top 3 sub-categories in Tmall and Taobao's Beauty and skincare category in terms of sales revenue, according to Moojing. As of the end of 2022, the Company had 121 SKUs across eight major brands. The Company's new blockbuster products include Comfy Collagen Stick (可复美胶原棒, launched in 2021), Comfy Collagen Emulsion (可复美胶原乳, launched in 2023), Collgene Human-like Collagen LIFTACTIV Tightening Mask (可丽金大膜王, launched in 2021), Collgene Pengpeng Single-Use" (可丽金嘭嘭次抛, launched in 2022). Thanks to the expanding functional skincare product portfolios, Giant Biogene's functional skincare product sales has grown at a CAGR of 48.2% from 2019 to 2022. In 1H23, revenue from functional skincare products was RMB1,197mn, up 95.0% YoY, and contributing 74.5% of the Company's total revenue.

Moreover, we notice the Company's strong capability in blockbuster creation as it has at least one new blockbuster product launch every year since 2019. One of the most successful new products in past three years was Comfy Collagen Stick. During the 618 Festival of 2023, over 35mn units of Comfy Collagen Stick were sold with over 700% YoY increase in GMV. Comfy Collagen Stick ranked TOP1 on Douyin's Annual Essence Bestseller List (年度精华金榜), TOP1 in JD.com's home care category, and TOP3 on Tmall's Hot Product List (爆款单品榜). During the Double 11 of 2023, the GMV of Comfy

Collagen Stick increased over 200% YoY and ranked TOP1 in Tmall's Facial Essence Category (天猫面部精华类目), TOP1 in JD.com's Family Care Category (京东家庭护理单品).

YTD, the Company has launched at least seven new Comfy brand products such as Comfy Aqua Moisturizing Single Use Essence (Dundun Sing-Use 可复美吨吨次抛), Comfy Rare Ginsenoside Anti-acne and Oil Control Essence (可复美秩序水), Comfy Rare Ginsenoside Purifying and Repair Essence Cream (可复美秩序霜) and has iterated three of its existing flagship products such as Comfy Aqua Luminous Moisturizing Essence Mask (可复美小水膜 2.0) and Comfy Revitalizing Repair Masque (可复美冰淇淋面膜 2.0). During the Double 11 of 2023, the Comfy Collagen Emulsion (可复美胶原乳) ranked TOP8 in Douyin's Domestic Cream Hot-selling List (抖音面霜热卖金榜国货). The Comfy Dundun Single-Use Essence ranked TOP4 in Douyin's Single-Use Essence Popularity List (抖音品牌次抛精华液人气榜). The Comfy Rare Ginsenoside Purifying and Repair Essence Cream (可复美秩序霜) ranked TOP8 in Tmall's Oil Control Emulsion Hot-selling List (天猫控油乳液热销榜).

We think the continuous new blockbuster product launch will help Giant Biogene to fast grow its revenue. By establishing a comprehensive functional skin care product portfolio, Giant Biogene will become a major domestic player in China's skin care market with enhancing brand awareness, in our view.

Collagen-based dermal filler to unveil a second growth curve

Recombinant collagen as a filling material has excellent market prospects and high technological barriers. In China, the injectable recombinant collagen market is a blue ocean market with only two approved products from Shanxi Jinbo (832982 CH).

Giant Biogene has rich pipelines of injectable recombinant collagen-based products, including Recombinant Collagen Skin Rejuvenation Serums (重组胶原蛋白液体制剂), Recombinant Collagen Skin Rejuvenation Freeze-Dried Powder (重组胶原蛋白固体制剂), Recombinant Collagen Skin Rejuvenation Gels (重组胶原蛋白凝胶) and Cross-linking Recombinant Collagen Skin Rejuvenation Gels (交联重组胶原蛋白凝胶). Giant Biogene's pipeline injectable products target different indications such as full-face moisturizing, forehead lines/crow's feet, necklines and nasolabial folds, etc. Giant Biogene aims to obtain NMPA's approval for the Recombinant Collagen Skin Rejuvenation Serums (重组胶原蛋白液体制剂) and Recombinant Collagen Skin Rejuvenation Freeze-Dried Powder (重组胶原蛋白固体制剂) in 2024E. We think the remaining two injectable products will obtain approvals in 2025E. Thus, Giant Biogene will be the second company in China to launch recombinant collagen dermal fillers in China with significant early mover advantages, in our view.

Moreover, we see strong sales channel synergies between Giant Biogene's recombinant collagen dermal fillers and medical dressings. Given Giant Biogene has already built an extensive distribution network and has established strong brand recognition among medical institutions, we think the Company will quickly ramp up its injectable recombinant collagen product sales upon commercialization. The Company's distribution channels have covered approximately 1,400 public hospitals, and 2,200 private hospitals and clinics. Therefore, we believe the injectable products may drive Giant Biogene's second growth curve in the long term.

Initiate at BUY with TP of HK\$48.87

We estimate Giant Biogene's revenue of RMB3,375mn/ RMB4,358mn/ in 2023E/ 24E, +42.8% and 29.1% YoY, respectively. We forecast the Company to record attributable net profit of RMB1,305mn/ RMB1,607mn in FY23E/ 24E, +30.3% and 23.1% YoY, respectively. We derive our target price of HK\$48.87 based on a 10-year DCF valuation (WACC: 11.1%, terminal growth rate: 3.0%), implying 27x 24E PE, with 25.3% earnings CAGR in 2022-25E.

Investment risks

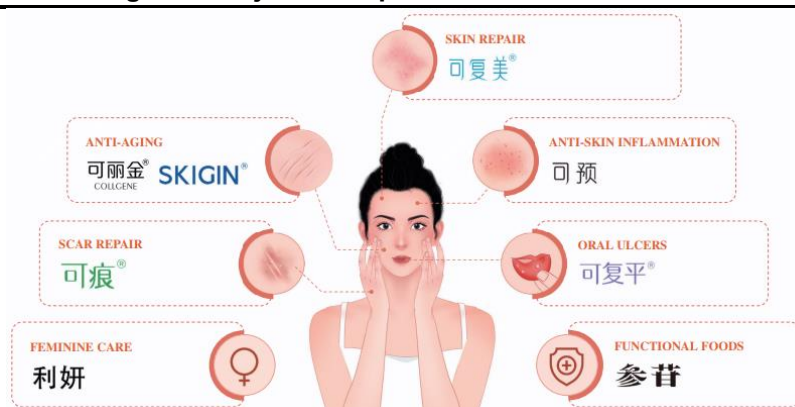
- 1) Intense competition in the skin care market which may lead to price erosion or increase in selling expense ratio;
- 2) Failure of development of injectable products or other new blockbuster products.

Giant Biogene, to capture the fast-growing beauty market opportunities

Giant Biogene focuses on the development and promotion of beauty and health products and has become a leader in the industry of professional skin treatment products in China. The Company has a solid synthetic biological technology platform with two core technologies: recombinant collagen (胶原蛋白) bio-manufacturing technology and highly active rare ginsenoside (人參皂苷) bio-manufacturing technology. Based on its synthetic biological platform, Giant Biogene has developed a comprehensive product portfolio including medical dressings, functional skincare products and functional foods across eight brands named Comfy (可复美), Collgene (可丽金), Keyu (可预), Kehen (可痕), Kefuping (可复平), Leeyen (利妍), SKIGIN (欣菩), and Shengan (参昔). As of the end of 2022, the Company had 121 SKUs across the eight brands.

Comfy and Collgene are Giant Biogene's flagship brands which mainly focus on recombinant collagen-based products, and has contributed significant revenue for the Company. According to the F&S, Comfy and Collgene were the third and the fourth best-selling professional skin treatment brands, with a retail sales value of RMB2.9bn and RMB2.7bn, respectively, in China in 2021.

Figure 1: Giant Biogene's major brand portfolios



Source: Company data, CMBIGM

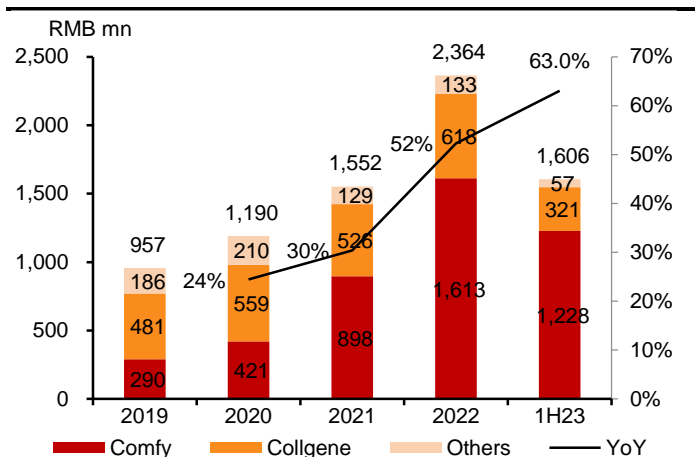
Outstanding growth momentum driven by strong demand in functional skin care

China's skin care and treatment industry is growing fast. The market size was RMB558.1bn in terms of retail sales value in 2021, representing a growth CAGR of 15.2% from 2017 to 2021, and is expected to reach RMB1,159.7bn in 2027E, growing at a CAGR of 13.0% from 2021 to 2027E, according to F&S. Currently, Chinese consumers tend to pay more attention to the skincare ingredients and to seek effective skin treatment solutions that are tailored to the specific skin conditions as the urban lifestyle, such as bedtime procrastination and prolonged exposure to blue light from electronic devices, has given rise to various problematic skin conditions, including skin sensitivity, premature skin aging, chronic eczema and allergies. As a result, collagen-based products, especially recombinant collagen-based products, are gaining increasing awareness among Chinese consumers since collagen offers strong efficacy in repairing damaged skin barriers and addressing such problematic skin conditions.

According to the F&S, Giant Biogene is the first company to achieve mass production of recombinant collagen-based skincare products globally and has obtained the first medical device registration certificate for recombinant collagen-based product in China. Giant Biogene's early-mover advantages result in an outstanding financial performance with revenue increased at a CAGR of 35.2% from RMB956.7mn in 2019 to RMB2,364.4mn in 2022. In 1H23, Giant Biogene's revenue reached RMB1,605.7mn, up by 63.0% YoY.

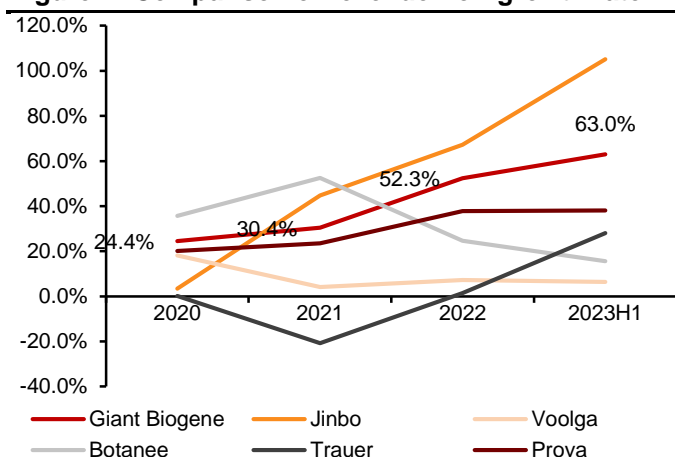
Giant Biogene's attributable net profit increased from RMB552.3mn in 2019 to RMB1,002.0mn in 2022, at a CAGR of 22.0%. The attributable net profit margin dropped from 57.7% in 2019 to 42.4% in 2022 mainly due to the increase in the selling expense rate. In recent years, Giant Biogene devoted significant resources to online sales and marketing activities to capture market opportunities, which led to an increase in the selling expenses from RMB93.8mn in 2019 to RMB706.4mn in 2022 and the selling expense rate climbed from 9.8% in 2019 to 29.9% in 2022. However, the Company's NPM was still higher than most of the competing domestic skin care and treatment peers, which was mainly thanks to Giant Biogene's higher gross margin level and more efficient opex spending.

Figure 2: Breakdown of Giant Biogene's revenue by brands



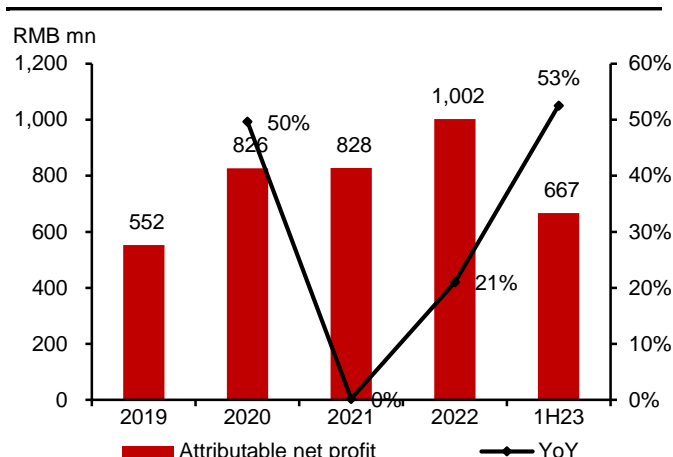
Source: Company data, CMBIGM

Figure 4: Comparison of revenue YoY growth rate



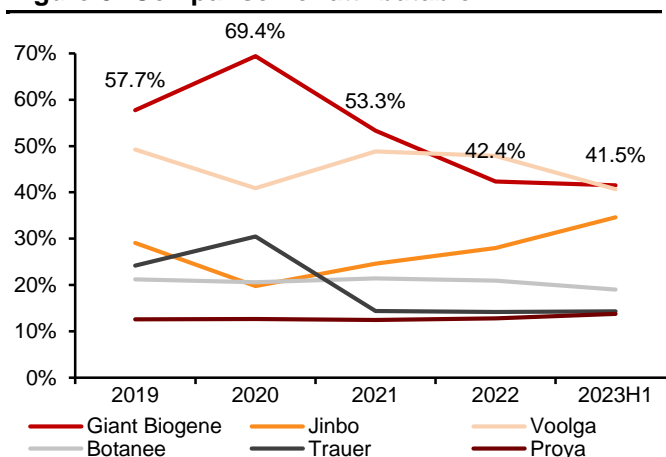
Source: Wind, CMBIGM; Note: Jinbo (锦波生物), Voolga (敦尔佳), Botanee (贝泰妮), Trauer (创尔生物), Proya (珀莱雅)

Figure 3: Attributable net profit of Giant Biogene

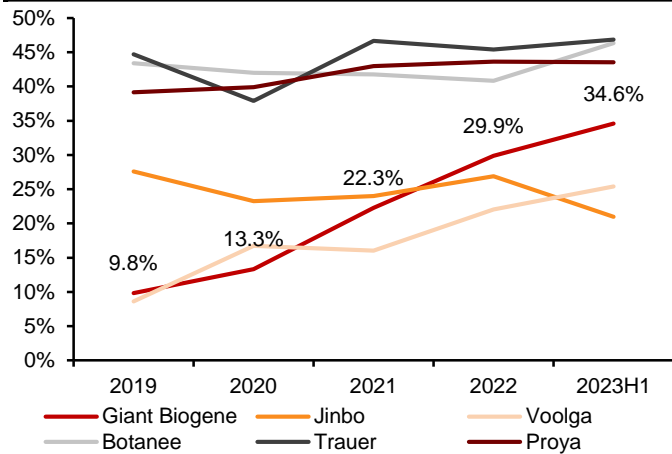


Source: Company data, CMBIGM

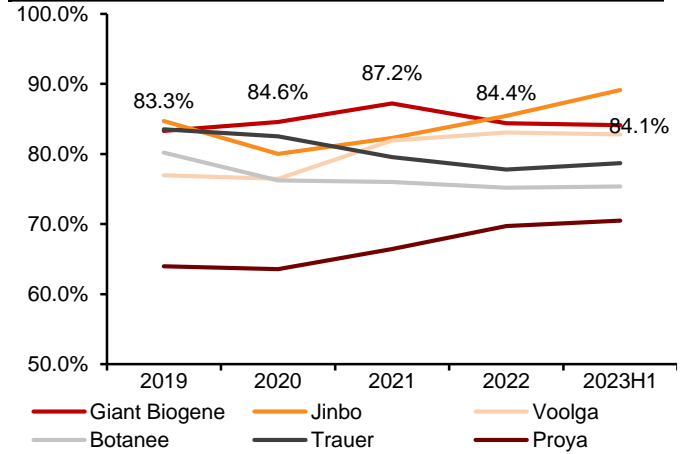
Figure 5: Comparison of attributable NPM



Source: Wind, CMBIGM; Note: Jinbo (锦波生物), Voolga (敦尔佳), Botanee (贝泰妮), Trauer (创尔生物), Proya (珀莱雅)

Figure 6: Comparison of selling expense rate

Source: Wind, CMBIGM; Note: Jinbo (锦波生物), Voolga (敷尔佳), Botanee (贝泰妮), Trauer (创尔生物), Proya (珀莱雅)

Figure 7: Comparison of GPM

Source: Wind, CMBIGM; Note: Jinbo (锦波生物), Voolga (敷尔佳), Botanee (贝泰妮), Trauer (创尔生物), Proya (珀莱雅)

Strong technological advantages in recombinant collagen

Giant Biogene is a pioneer in the innovation of recombinant collagen technology. The Company has built a strong R&D team which is led by the CSO, Dr. Fan Daidi, who also served as the dean in School of Chemical Engineering of Northwest University (西北大学化工学院院长), the director in National Local Joint Engineering Research Center for Biomaterials (生物材料国家地方联合工程研究中心主任) and the dean in Institute of Biomedical Research of Northwest University (西北大学生物医药研究院院长). Dr. Fan and her team successfully developed recombinant collagen technology in 2000. They obtained China's first patent in the field of recombinant collagen, "A Class of Human-like Collagen and its Production Method (一种类人胶原蛋白及其生产方法)" in 2005, which has been applied to the Company's recombinant collagen-based skincare products. Thanks to the strong R&D capabilities and the continuous investments in R&D, Giant Biogene has accumulated a recombinant collagen molecule library and has established mass production capability of recombinant collagen.

Giant Biogene has one of the most diverse recombinant collagen molecule libraries globally, according to the F&S. Giant Biogene has constructed a recombinant collagen molecule library containing 33 kinds of recombinant collagen molecules such as 1) three types of full-length recombinant collagen, namely Type I, Type II and Type III recombinant human collagen, 2) 25 types of functionally enhanced recombinant collagen, and 3) five types of functional fragments of recombinant collagen.

Leveraging the comprehensive molecule library and the industry-leading fermentation and processing technologies, Giant Biogene has developed four primary recombinant collagen products, including Type I recombinant human collagen, Type III recombinant human collagen, recombinant human-like collagen and small-molecule recombinant collagen peptide. With different types of recombinant collagen and collagen combinations, Giant Biogene can develop various skincare products to achieve different efficacies. For example, short collagen polypeptides and small peptides are well soluble in water, making it easier to incorporate such hydrophilic molecules into the cosmetic formulation. Short polypeptides and small peptides can penetrate into deeper levels of the skin, making it possible to regenerate skin properties. On the other hand, large molecular weight of collagen usually has better mechanical strength, and therefore can be used as subcutaneous fillers. Giant

Biogene's Mini recombinant collagen peptide (Mini 重组胶原蛋白肽) is a small molecular weight of 217 Da, which is the smallest molecular weight known in the field of collagen. It can penetrate directly into the hypodermis and promote the regeneration of collagen to attain the wrinkle reduction and anti-aging effects.

Giant Biogene has a big lead over its peers in the production capacity of recombinant collagen. According to the F&S, Giant Biogene has one of the largest recombinant collagen manufacturing facilities with industry-leading fermentation and processing technologies and applies the most comprehensive expression systems globally. As of 2022, Giant Biogene has a recombinant collagen production line with an annual production capacity of 10,880 kg. Giant Biogene also completed the construction of new manufacturing facilities with a designed production capacity of 212,500 kg in 2023.

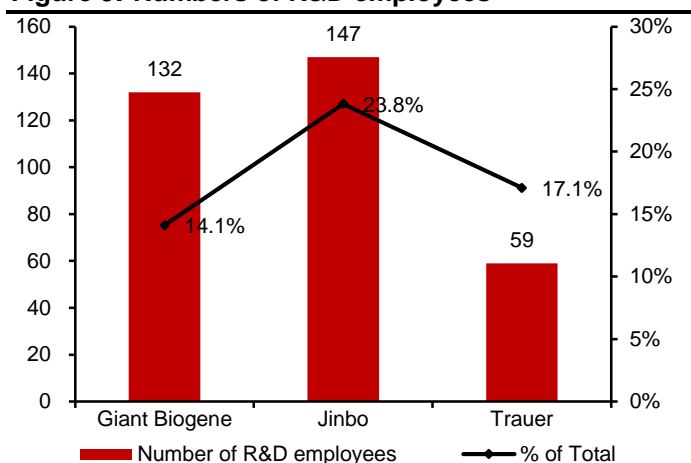
Figure 8: Production capacity of recombinant collagen

Company	Collagen type	Expression system	Production capacity	Yield rate	Purity level
Giant Biogene	Type I and III recombinant human collagen, recombinant human-like collagen, Small-molecule recombinant collagen peptide	<i>E. coli</i> , <i>pichia pastoris</i> , <i>Saccharomyces cerevisiae</i>	10,880kg in 2022 (construction of new manufacturing facilities in Xi'an completed in 2023 with a designed production capacity of 212,500 kg)	90%	99.9%
Shanxi Jinbo (锦波生物)	Type I, III and XVII recombinant collagen	<i>E. coli</i>	101.78kg in 2021 (Type III recombinant collagen)	-	-
Trautec (创健医疗)	Type I, III and XVII recombinant collagen	<i>pichia pastoris</i>	~5,000kg in 2023	-	-
Jland (聚源生物)	Type I and III recombinant collagen	<i>pichia pastoris</i>	Manufacturing facilities established in Apr 2023 with a designed production capacity of 10,000kg	-	99.5%

Source: Company data, Shanxi Jinbo, Jland, Economic View, CMBIGM

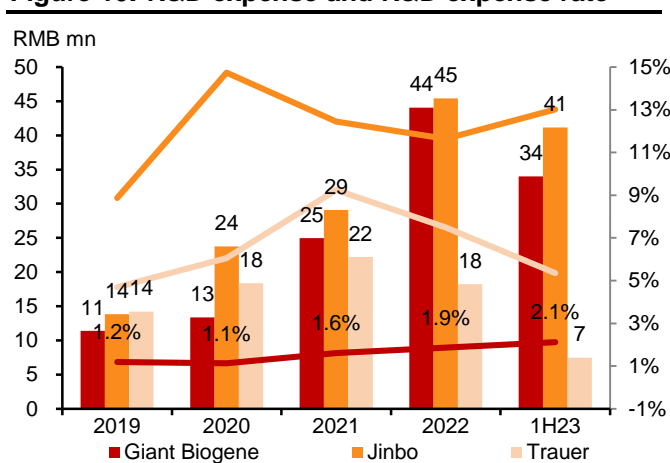
Giant Biogene continued to increase its investment in R&D to strengthen its technological capabilities. As of the end of 2022, Giant Biogene had a total of 132 R&D employees, accounting for 14.1% of the total employees. The Company's R&D expense rate increased from 1.2% in 2019 to 1.9% in 2022 and was 2.1% in 1H23. Based on its synthetic biology platform, Giant Biogene is consistently expanding its bioactive ingredient pipelines such as new types of recombinant collagen, rare ginsenosides, etc.

Figure 9: Numbers of R&D employees

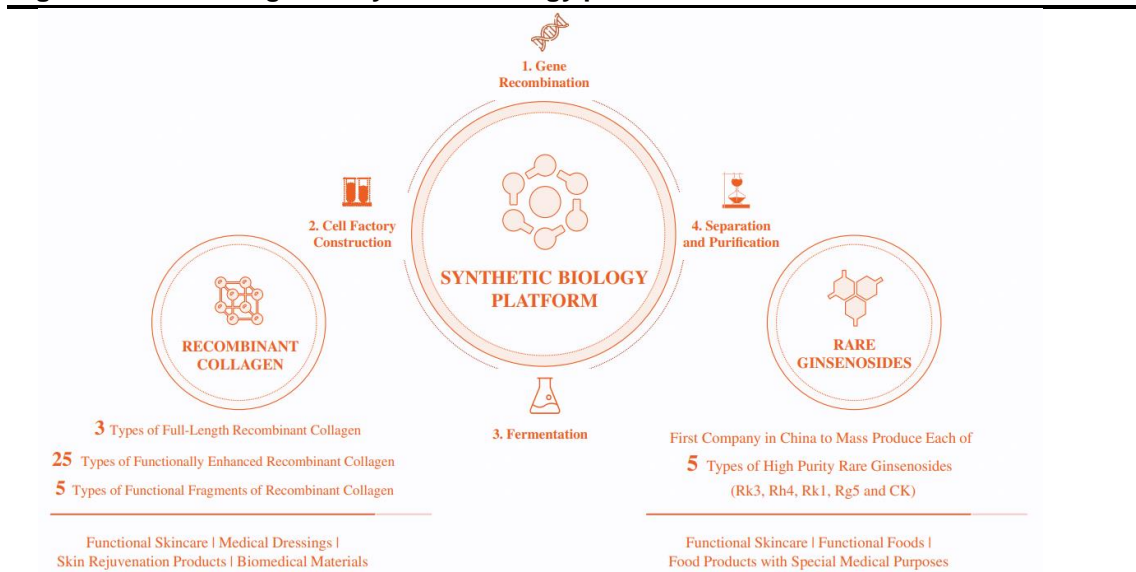


Source: Company data, Wind, CMBIGM
Note: as of 31 Dec 2022

Figure 10: R&D expense and R&D expense rate



Source: Company data, CMBIGM
Note: Lines stand for the R&D expense rate of each company.

Figure 11: Giant Biogene's synthetic biology platform


Source: Company data, CMBIGM

Recombinant collagen has significant market opportunities

Sizable collagen market with wide applications

Collagen is the main structural protein of human tissues and organs such as skin, muscle, bone and blood vessels. It is the most abundant protein in the human body, accounting for approximately 30-40% of the total body proteins. There are four structural levels of a collagen protein including primary structure (amino acid triplet), secondary structure (the α -helix), tertiary structure (triple helix), and quaternary structure (fibrils). It is formed in a triplex helix by three α chains. The chains are distorted around each other to interwoven into a stable, net-like structure and provide elasticity and physical strength to the skin. Moreover, collagen has biological functions which helps heal damaged bones or blood vessels and maintains structural integrity.

Based on the α -chain composition, collagens are categorized into at least 28 distinct types and the most common types are type I through V. Type I comprises 85- 90% of the collagen in the human body and it is also the dominant type of collagen in the skin. Type I collagen fibrils have high tensile strength and can withstand forces to maintain the integrity of human tissue architecture. Type II collagen is a homotrimer in large amounts within the hyaline cartilage and gives cartilage its shock-absorbing properties. Type III collagen is a homotrimer that presents in human muscles, vasculature and skin and has a more elastic structure. Giant Biogene has a mature technology platform to develop and manufacture the above mentioned Type I, Type II and Type III recombinant collagen products.

Figure 12: Classification of collagen

Collage types	Subunits and composition	Composition of molecular aggregates	Function or application	Tissue or organ
Type I	$\alpha 1(I) \times 2, \alpha 2(I)$	Large-diameter cross strip fiber	The organic part of the bone, membranes for guided tissue regeneration	Skin, tendon and bone
Type II	$\alpha 1(II) \times 3$	Small-diameter cross strip fiber	The main constituent of cartilage, cartilage repair, arthritis treatment	Cartilage
Type III	$\alpha 1(III) \times 3$	Small-diameter cross strip fiber	The main constituent of reticular fibers (supporting mesh of soft tissues), hemostats, and tissue sealants	Muscle and vasculature
Type IV	$\alpha 1(IV) \times 2, \alpha 2(IV)$ $\alpha 3(IV) \times 2, \alpha 4(IV)$ $\alpha 5(IV) \times 2, \alpha 6(IV)$	Non-fibrous reticular structure	The major component of the basement membrane, attachment enhancer of cell culture, and diabetic nephropathy indicator	basal lamina, the epithelium-secreted layer of the basement membrane
Type V	$\alpha 1(V), \alpha 2(V), \alpha 3(V)$	Small-diameter cross fibers, or forming molecules with type VI chains	Feedstock for biomaterials in corneal treatments	Hair, cell surfaces, and placenta

Source: Hsiuying Wang, Polymers (Basel), 2021 ([Link](#)), CMBIGM

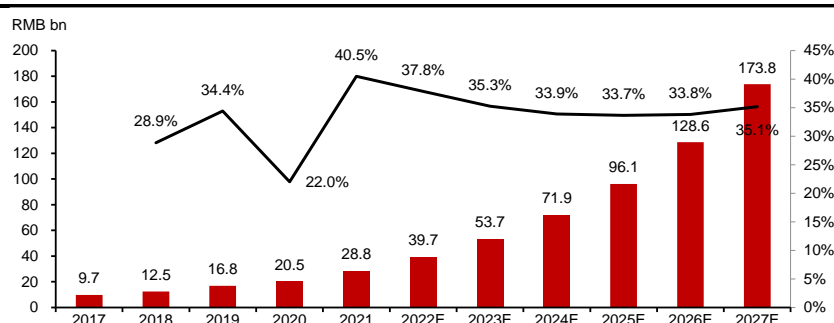
As a bioactive ingredient, collagen is widely used in various fields such as food, biomedical, cosmetics and skin care. It possesses biological properties in providing structural support, promoting hemostasis and cell adhesion, and repairing damaged skin barriers.

Figure 13: Applications of collagen products

Area	Application
Biomedical	Medical dressing for wound repair (skin repair, oral mucosa repair and neurosurgery etc.)
	Drug or cell carrier
	Bone void filler
	Tissue engineering scaffolds
	Hemostatic materials
Skin care	Functional skincare: anti-sensitive, damaged skin barrier repairing, whitening, moisturizing etc.
Non-surgical medical aesthetic	Dermal filler
Food	Food additives
	Food packaging material
	Functional food ingredients

Source: Company data, Trauer, NMPA, CMBIGM

The wide application potential of collagen leads to the rapid market growth. According to the F&S, the market size of collagen products in China in retail sales value increased at a CAGR of 31.2% from RMB9.7bn in 2017 to RMB28.8bn in 2021, and is expected to further increase from RMB39.7bn in 2022E to RMB173.8bn in 2027E at a CAGR of 34.4%.

Figure 14: Collagen-based product market size in China, in retail sales value

Source: F&S, CMBIGM

Recombinant collagen as a better substitute for animal collagen

Currently, collagen can be extracted from animals which is known as animal-derived collagen or be constructed by genetic engineering technology which is regarded as recombinant collagen. Common animal sources of collagen include marine, bovine and porcine. The capacity of animal-derived collagen is limited by the raw material sources and the tedious extraction process including obtaining specific tissues such as animal skins or animal hyaline cartilage, extraction by sodium acetate and acetic acid, purification and isolation. The collagen extracted from animal tissues is at risk of diseases of animal origin and immunogenicity. For example, bovine sources harbour the risk of carrying bovine spongiform encephalopathy while porcine sources may be unsuitable due to certain religious beliefs.

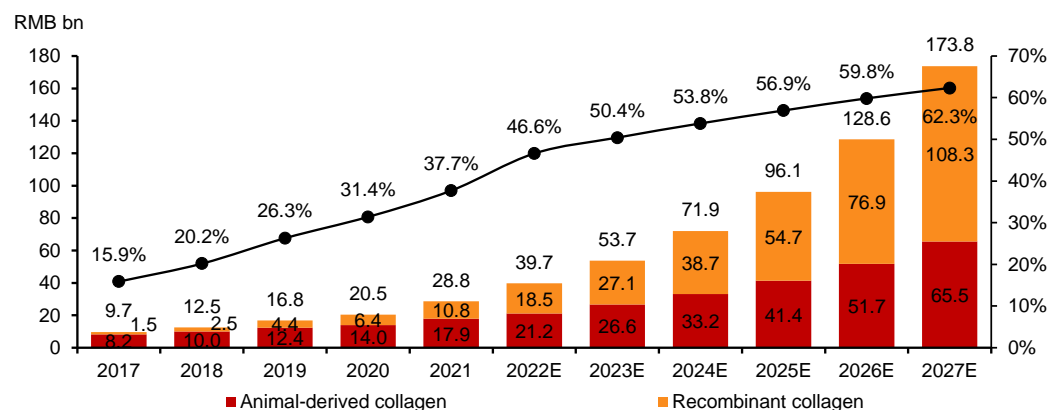
Recombinant collagen (rCols) is a promising alternative collagen. Usually, the targeted human collagen cDNA fragment is connected to the vector and then transferred to the host cells which can produce the recombinant collagen by fermentation. Common recombinant collagen expression systems include *E.coli*, *Pichia pastoris*, animal cells (glands of mice and silkworms), and plant cells (tobacco, corn, barley etc.). The recombinant human collagen was consistent with the primary structure of the natural human collagen that contains various active site and the purification process can minimize or even eliminate viral contamination. As a result, the recombinant human collagen has higher level of biocompatibility, lower level of immunogenicity, lower risk of undetected pathogens, free from cytotoxicity and the ability to be further processed and optimized. However, recombinant collagen lacks stability and degraded during fermentation, purification, and storage, which increases the production cost. Besides, the recombinant collagens constructed with current technologies cannot form the proper tertiary structure and fibrillar assemblies similar to those seen in native tissues; and thus, gives up to a debate on its structural support effect as dermal fillers.

Figure 15: Comparison of animal-derived collagen and recombinant collagen

	Animal-derived collagen	Recombinant collagen
Production method	Enzymatic/ acid/ alkali/ salt extraction from mammals and marine animals	Genetic engineering: connect the transferring the constructed DNA sequence to the host
Advantages	Maintained the stable triple helix structure with bioactivity	High safety with low immunogenicity and free from animal-derived pathogens and cytotoxicity; Controllable production process; Better water solubility, ability to be further processed and optimized
Limitations	Risk of pathogen residue such as bovine spongiform encephalopathy; Potential antigenicity and immunogenicity	Cannot form the natural triple helix structure; Concerns on the bioactivity and bio-function; Less resistant to degradation
Related companies	Trauer Biotechnology (创尔生物), Sunmax Biotechnology (双美生物)	Giant biogene (巨子生物), Shanxi Jinbo (锦波生物), Huipu Bio (惠普生物), Marubi Biotech (丸美股份)

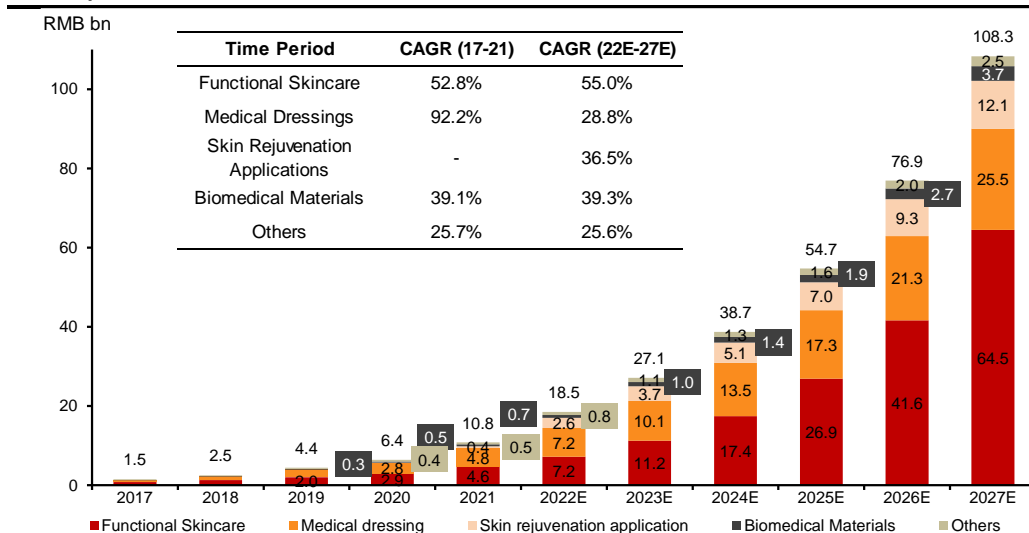
Source: Company data, CMBIGM

Thanks to its advantages in safety and modifiability, the market of recombinant collagen expanded rapidly. According to the F&S, the market size of recombinant collagen products in China in retail sales value increased at a CAGR of 63.0% from RMB1.5bn in 2017 to RMB10.8bn in 2021, and is expected to further increase from RMB18.5bn in 2022E to RMB108.3bn in 2027E at a CAGR of 42.4%. The penetration rate of recombinant collagen products within the overall collagen-based product market increased from 15.9% in 2017 to 37.7% in 2021, and is projected to further increase from 46.6% in 2022E to 62.3% in 2027E, according to F&S.

Figure 16: Collagen-based product market size in China, in retail sales value

Source: F&S, CMBIGM

Recombinant collagen is primarily used in medical dressing and functional skincare. The application also expands to skin rejuvenation, also known as medical aesthetic injection, and health sectors such as biomedical materials and dietary supplement, etc. According to the F&S, from 2017 to 2021, the recombinant collagen-based functional skincare and medical dressing products grew significantly at a CAGR of 52.8% and 92.2%, respectively. In 2021, the market size of rCols-based functional skincare and medical dressing products reached RMB4.6bn and RMB4.8bn, accounting for 42.6% and 44.4% of the total rCols-based product market, respectively. The recombinant collagen-based functional skincare market is expected to further increase at a CAGR of 55.0% from 2022E to 2027E and to reach RMB64.5bn in 2027E. In 2021, the NMPA approved the first recombinant collagen-based injectable product as a Class III medical device. The F&S expected the recombinant collagen-based skin rejuvenation market (i.e. injectable rCols) to grow at a CAGR of 36.5% from 2022E to 2027E and reach RMB12.1bn in 2027E, accounting for 11.2% of the total rCols-based product market.

Figure 17: China's recombinant collagen-based product market size by applications (2017-2027E)

Source: F&S, CMBIGM

Note: Others include applications such as general skincare, dietary supplements and haircare products.

Strengthening government regulation to boost healthy development of the recombinant collagen industry

With a surge in the recombinant collagen market, the Chinese government issued a series of guidelines and regulations to standardize the recombinant collagen industry. Since 2021, the National Medical Products Administration (NMPA) has intensively issued guidelines for the naming, classification and registration of recombinant collagen medical products and raw materials. These guidelines help to boost the healthy development of the recombinant collagen industry.

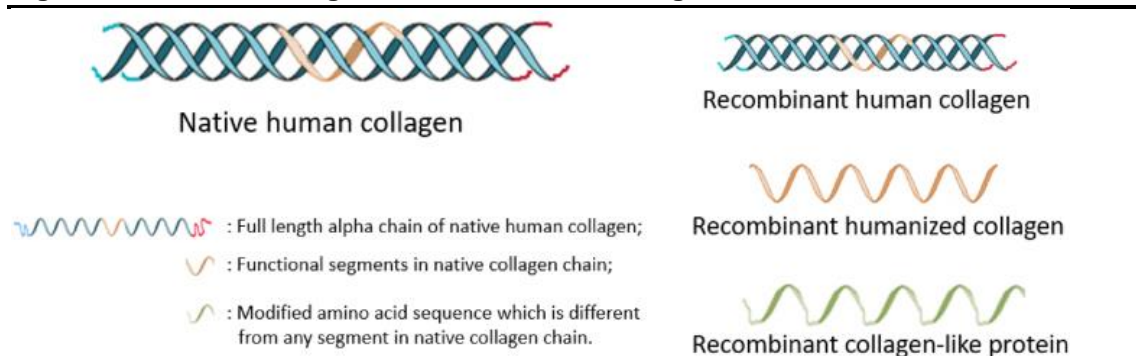
Figure 18: China's regulatory guidelines on recombinant collagen products

Document	Time of issuance	Department	Content
Guidelines for the naming and definition of recombinant collagen biomaterials (重组胶原蛋白生物材料命名指导原则)	2021.3	NMPA	Divided rCols into three categories: 1) recombinant human collagen (重组人胶原蛋白); 2) recombinant humanized collagen (重组人源化胶原蛋白); 3) recombinant collagen-like protein (重组类胶原蛋白)
Principles for the Classification Defining of Recombinant Collagen Medical Products (重组胶原蛋白类医疗产品分类界定原则)	2021.4	NMPA	Normalizes the classification and management of recombinant collagen medical products. A rColb-MD should be regulated as a Class III device if it is applied as an implant, or it would be absorbed when applied as a hemostatic or anti-adhesion device. A rColb-MD should be regulated as Class II device if it is non-absorbable and applied only on body surface.
YY/T 1849-2022, Recombinant Collagen, Pharmaceutical Industry Standards of the People's Republic of China (YY/T 1849-2022 中华人民共和国医药行业标准《重组胶原蛋白》)	2022.1 (implemented in Aug 2022)	NMPA	Specifies the recombinant collagen's standard for quality control, technical requirements, test indicators and methods, etc. Giant Biogene was one of the drafting agents of this industry standard.
Review Key Points of Recombinant Human Collagen Injection Materials for Plastic Surgery (Draft) (整形美容用重组人源化胶原蛋白注射材料技术审评要点(试行))	2022.12	NMPA	Directs manufacturers on type test, preclinical testing, clinical evaluation, and regulatory submission.
Medical device industry standard YY/T 1888-2023 for recombinant humanized collagen (YY/T 1888-2023 重组人源化胶原蛋白医疗器械行业标准)	2023.1	NMPA	Specifies the recombinant humanized collagen's standard for quality control, technical requirements, clinical trial methods, stability, biological evaluation, packaging, transportation and storage, etc.
Guideline on Recombinant Humanized Collagen Raw Materials (重组人源化胶原蛋白原材料评价指导原则)	2023.5	NMPA	Elaborates the four vital points for registration review: material performance study (including testing methods); material Immunological safety; biological risks; stability and direct contact container study.
Guideline on Recombinant Collagen Wound Dressings (重组胶原蛋白创面敷料注册审查指导原则)	2023.5	NMPA	Applies to wound dressing managed as Class II medical devices with recombinant collagen components. The guideline elaborates the key points for registration review, including product name, classification, structure and composition, technology literature review, clinical evaluation, product specification and labelling sample, etc.

Source: NMPA, CMBIGM

NMPA categorized the recombinant collagens (rCols) into three types based on the different compositions and structures between rCols and native human collagens: 1) recombinant human collagen (重组人胶原蛋白), which features a full-length amino acid sequence with a specific type of human collagen and a triple helix structure; 2) recombinant humanized collagen (重组人源化胶原蛋白), which contains a full-length or partial amino acid sequence fragment encoded by a specific type of human collagen gene, or a combination of functional fragments in native human collagen; 3) recombinant collagen-like protein (重组类胶原蛋白), which is an amino acid sequence or fragment encoded by a specific designed or modified collagen gene, or a combination of functional protein fragments. The explicit classification reduced the mess of confusing naming and fake advertising. With clear classification standards, the product quality of rCols will be well guaranteed. These guidelines help to boost the healthy development of the recombinant collagen industry, in our view.

Figure 19: Schematic diagram of native human collagen and rCols classification



Source: NMPA ([Link](#)), CMBIGM

Giant Biogene's synergistic omnichannel distribution network with a dual-pronged "medical institution + mass consumer" sales strategy

Giant Biogene has established an extensive omni-channel sales network including direct sales and distributor under the Company's dual-pronged "medical institution + mass consumer" sales strategy.

The Company's offline sales network covers 1) medical institutions including public and private hospitals, clinics, pharmacies and 2) CS/KAs. CS is Cosmetic Shop such as Watsons, Afiona, THE COLORIST, while KAs are the Key Accounts including Ole', Hualian Group (华联集团) and Hema Fresh (盒马生鲜) etc.

In addition, Giant Biogene's online sales include 1) direct sales through DTC stores on e-commerce and social media platforms such as Tmall, JD.com, Douyin, Xiaohongshu, and Pinduoduo, and 2) direct sales to e-commerce platforms such as JD.com and Vipshop, which resell Giant Biogene's products to customers through their online retail platforms.

Offline sales channels laid foundation for strong brand awareness

Medical institution channel helps establishing Giant Biogene's professional brand image. Leveraging Comfy's (可复美) medical dressing and other professional skin treatment products, Giant Biogene has initially built wide sales channels in medical institutions, which has laid a solid foundation of the Company's professional brand image.

As of 30 June 2023, Giant Biogene's products have been sold through offline direct sales and distributors to approximately 1,400 public hospitals (vs. 1,300 at the end of 2022), 2,200 private hospitals and clinics (vs. 2,000 at the end of 2022), 500 pharmacy chain brands (vs. 500 at the end of 2022).

Giant Biogene keeps participating in formulating industry standards and expert consensus, and organizing academic conferences to further enhance the Company's brand recognition among medical professionals. In 2022, the first industry standard in the field of recombinant collagen, "YY/T 1849-2022, Recombinant Collagen, Pharmaceutical Industry Standards of the People's Republic of China" (YY/T 1849-2022 中华人民共和国医药行业标准《重组胶原蛋白》), and the first expert consensus in the recombinant collagen industry, "The Application of Recombinant Collagen in Skin Diseases and Skin Care" (《重组胶原蛋白在皮肤病与皮肤护理中的应用》) were published. Giant Biogene was one of the drafting members of the two documents. With a professional brand image, Giant Biogene has obtained good customer stickiness. According to the Company, in 2021, approximately 30.2% of the online customers who purchased Comfy branded medical dressings have received professional recommendations and the repurchase rate of Comfy brands on Tmall reached 42.9%, which was higher than that of Voolga (敷尔佳, 301371 CH) of 36.6%.

Giant Biogene expanded its offline mass market sales network through direct sales and distributors. The Company expanded the coverage of CS/KAs to enhance its brand recognition. As of 30 June 2023, the Company has covered approximately 4,000 CS/KA stores across China (vs. 3,500 at the end of 2022), including Watsons, Afiona, THE COLORIST, Ole', Hualian Group (华联集团) and Hema Fresh (盒马生鲜). However, there is still a large gap in the CS/KA coverage between Giant Biogene and Voolga (301371 CH), indicating significant growth potential for Giant Biogene. With growing functional skincare product portfolio, we expect Giant Biogene to continuously expand its offline coverage of CS/KAs, which will also attract higher traffic to its online channels.

Figure 20: Comparison of offline sales network coverage

	Giant Biogene (as of 2023.6.30)	Voolga (敷尔佳) (as of 2022.12.31)	Shanxi Jinbo (锦波生物) (as of 2023.6.30)	Trauer (创尔生物) (as of 2020.6.30)
Medical institution	~3,600	-	~1,500 (coverage of the skin rejuvenation product, WyeMor (薇旍美))	~783 (including over 320 tier III hospitals)
Pharmacy	~500 chain brands (Over 100,000 pharmacies)	~21,000	-	~94
CS/KAs	~4,000	~25,000	-	-

Source: Company data, Voolga, Shanxi Jinbo, Trauer, CMBIGM

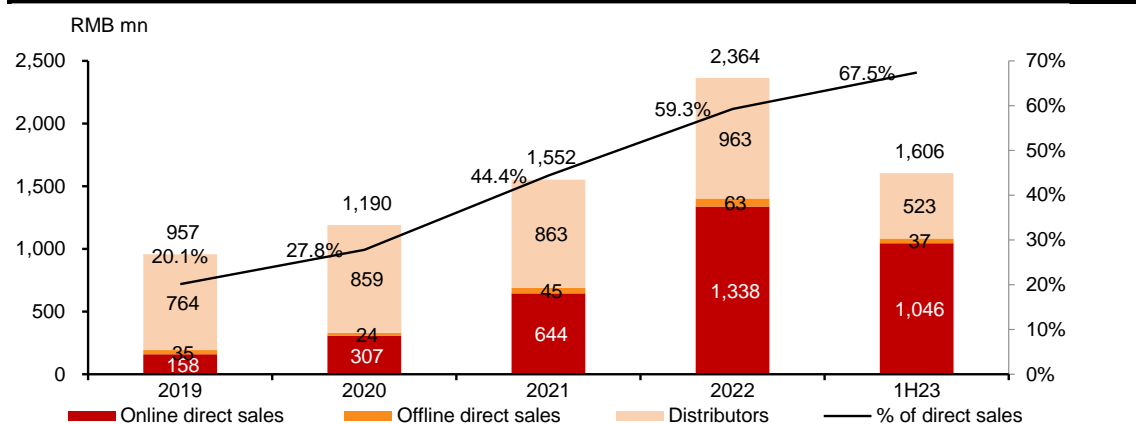
In Nov 2023, the Company established the first brick-and-mortar store of Comfy in Xi'an, which provides an offline channel to optimize interaction with target customers and to further enhance the brand influence of Comfy.

Increasing proportion of revenue from online direct sales

Online direct sales have become a major driver of Giant Biogene's revenue growth. Giant Biogene has put online direct sales channel expansion at its top priority. The revenue from online direct sales increased at a CAGR of 103.8% from RMB158.1mn in 2019 to

RMB1,338.4mn in 2022. In 1H23, the Company's revenue generated from online direct sales was RMB1,046.0mn, +115.3% YoY, representing 65.1% of the total revenue.

Figure 21: Breakdown of Giant Biogene's revenue by sales channel (2019-1H23)



Source: Company data, CMBIGM

Tmall and Taobao are the main online sales platforms of Giant Biogene. Giant Biogene's two core brands, Comfy and Collgene, achieved robust sales revenue growth on Tmall and Taobao while the growth substantially outperformed the industry average. According to the Moojing data, Comfy's sales revenue on Tmall and Taobao increased by 55% YoY and 230% YoY in 2022 and 8M23, respectively, while the total skincare sales on Tmall and Taobao decreased during the period.

We notice that online sales of skincare products are significantly impacted by seasonality, with distinct peaks and troughs tied to shopping festivals such as 618 and Double 11. During the 618 of 2023, the online GMV of Comfy and Collgene increased by over 165% YoY and 70% YoY, respectively. During the Double 11 of 2023, the online GMV of Comfy increased by over 100% YoY while the online GMV of Collgene grew by over 50% YoY. Giant Biogene is striving to generate more traffic to self-live-streaming platform (自播) while lowering the sales proportion from influencer live-streaming platforms (达播). Comfy's GMV from the self-live-streaming on Douyin increased by over 245+% YoY during the 618 of 2023 and its daily GMV from self-live-streaming on Douyin hit a new high during the Double 11 of 2023. Meanwhile, Collgene's GMV from self-live-streaming platforms on Douyin increased by over 70% YoY during the Double 11 of 2023.

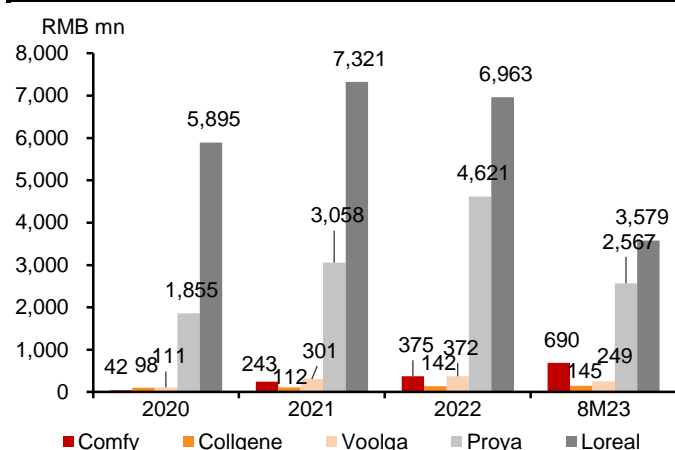
Figure 22: GMV growth of Comfy and Collgene in 618 and Double 11 of 2023

	Comfy	Collgene
GMV on all online channels	+ 165+% YoY	+ 70+% YoY
GMV on Tmall flagship stores	+ 180+% YoY	+ 135+% YoY
GMV on JD DTC flagship stores	+ 80+% YoY	+ 50+% YoY
618	+165+% YoY (flagship stores)	-
	+245+% YoY (Self-live-streaming platforms)	-
GMV on Vipshop flagship stores	+ 75+% YoY	+ 60+% YoY
GMV on Pinduoduo flagship stores	-	+ 170+% YoY

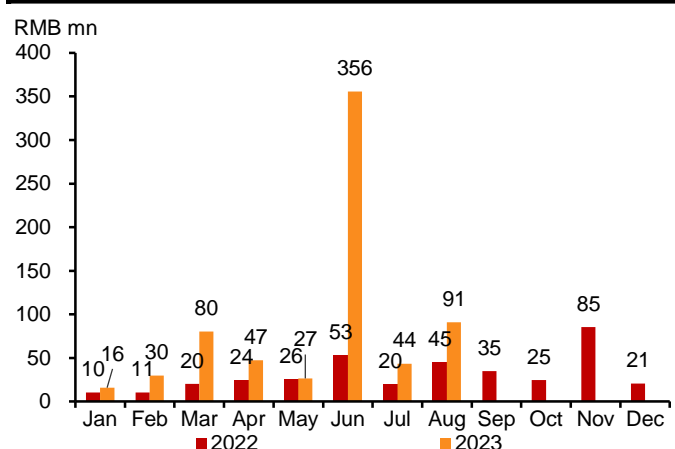
	Comfy	Collgene
GMV on all online channels	+ 100+% YoY	+ 50+% YoY
GMV on Tmall flagship stores	+ 80+% YoY	+ 100+% YoY
GMV on JD.com	+ 100+% YoY	+ 60+% YoY
GMV on Douyin flagship stores	+ 200+% YoY (Flagship stores)	-
GMV on Vipshop flagship stores	+ 150+% YoY	+ 140+% YoY
GMV on Pinduoduo flagship stores	+ 200+% YoY	-

Source: Company data, CMBIGM

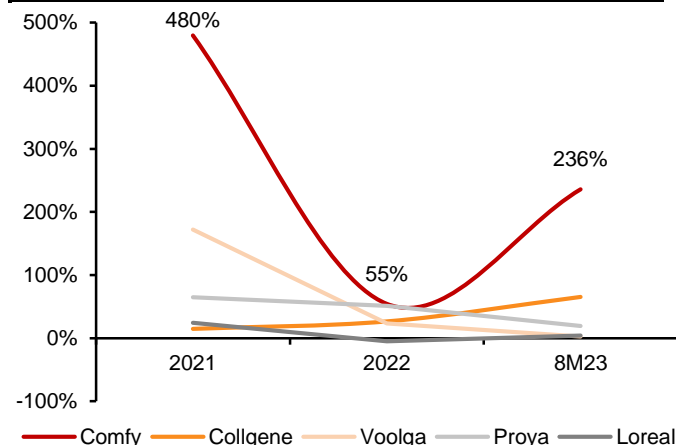
Sales of Comfy on Tmall and Taobao followed a similar pattern with the industry and delivered strong sales revenue growth in each peak season including March, June and August of 2023.

Figure 23: Comparison of sales revenue on Tmall and Taobao, by brand

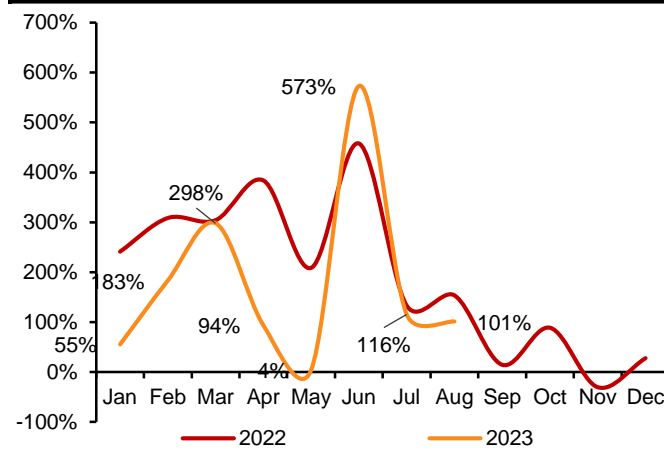
Source: Moojing, CMBIGM

Figure 25: Comfy's sales revenue on Tmall and Taobao in 2022 and 2023

Source: Moojing, CMBIGM

Figure 24: Comparison of sales revenue growth on Tmall and Taobao, by brand

Source: Moojing, CMBIGM

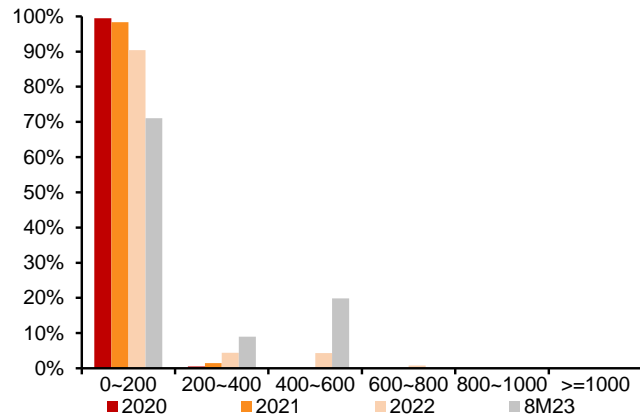
Figure 26: Comfy's sales revenue YoY growth on Tmall and Taobao in 2022 and 2023

Source: Moojing, CMBIGM

Besides, we see a growing proportion of Comfy and Collgene's online sales volume from higher priced SKUs, indicating consistent brand upgrade for Comfy and Collgene. According to Moojing, Comfy's proportion of sales volume from products priced at RMB400-

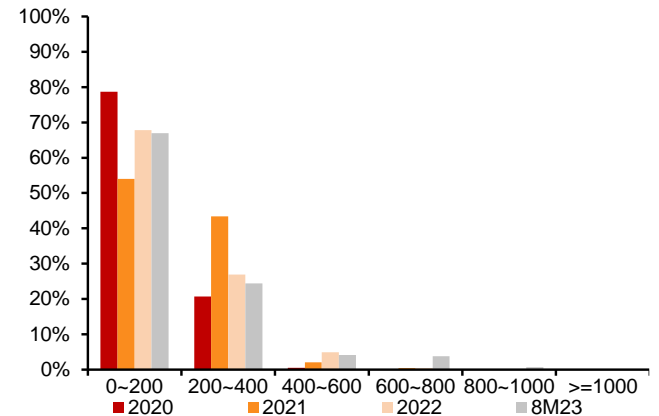
600 increased from zero in 2020 to 4.3% in 2022 and reached 19.8% in 8M23. Collgene's proportion of sales volume from products priced at RMB400-600 increased from 0.4% in 2020 to 4.9% in 2022 and was 4.1% in 8M23.

Figure 27: Price distribution of Comfy on Tmall and Taobao, by sales volume



Source: Moojing, CMBIGM

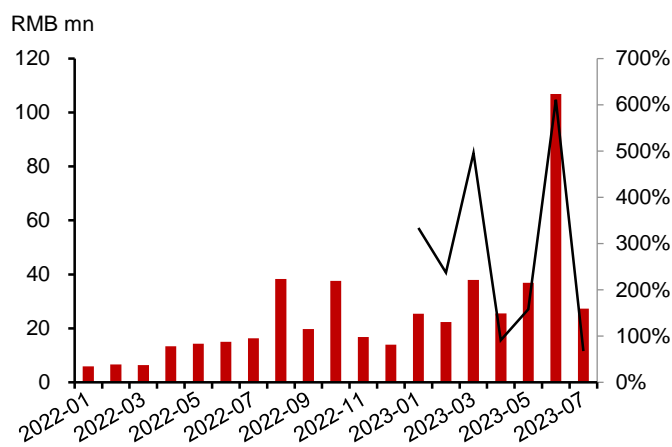
Figure 28: Price distribution of Collgene on Tmall and Taobao, by sales volume



Source: Moojing, CMBIGM

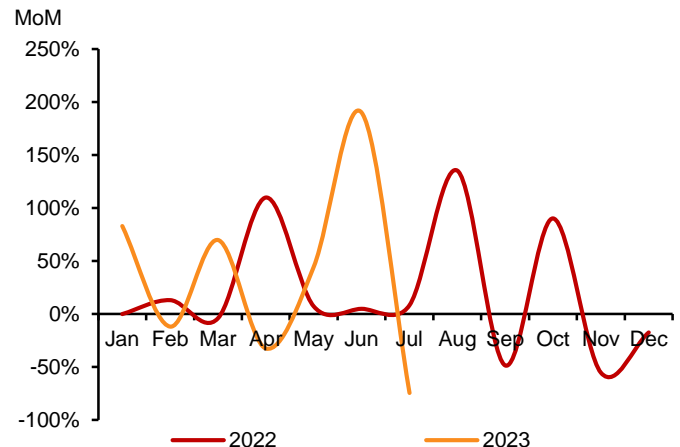
Giant Biogene also promoted its sales on Douyin (抖音), the emerging online retail channel in China. According to Moojing, the number of SKUs of Comfy on Douyin increased from 103 in June 2022 to 218 in June 2023, while the number of SKUs of Collgene on Douyin increased from 49 in June 2022 to 120 in June 2023. In June 2023, Comfy recorded a remarkable 611.3% YoY surge in its sales growth on Douyin, while Collgene observed 270.0% YoY growth in the sales on Douyin, according to Moojing. We expect Douyin, as an emerging online sales channel, will enable Comfy and Collgene to reach wider potential consumers.

Figure 29: Comfy's sales revenue on Douyin



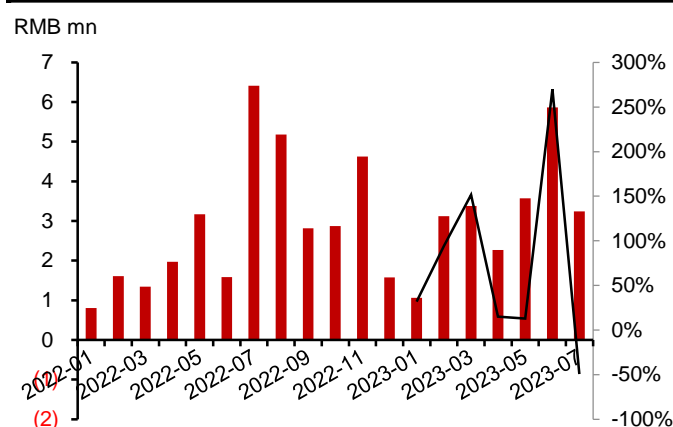
Source: Moojing, CMBIGM

Figure 30: MoM change of Comfy's sales revenue on Douyin



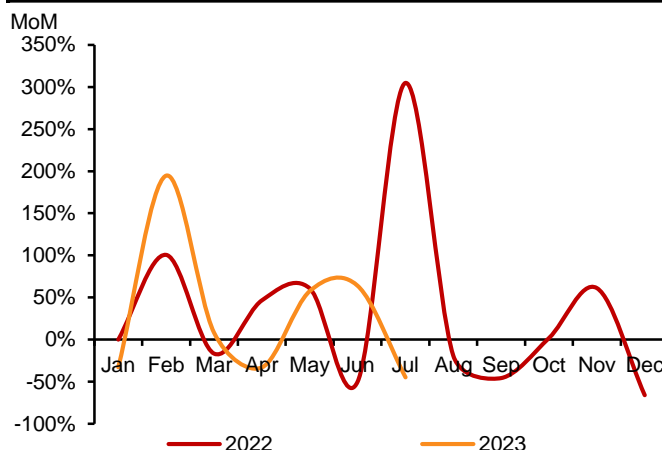
Source: Moojing, CMBIGM

Figure 31: Collgene's sales revenue on Douyin



Source: Moojing, CMBIGM

Figure 32: MoM change of Collgene's sales revenue on Douyin



Source: Moojing, CMBIGM

The number of subscription in major online sales channels provides a proxy of brand recognition. According to our calculation, as of Sep 2023, Comfy's e-commerce stores have higher subscription numbers than other domestic collagen or HA-based functional skincare brands. However, there is still a big gap between Comfy and other leading domestic cosmetic brands such as Proya (珀莱雅) and Winona (薇诺娜), given these brands offer wider product portfolios containing multiple ingredients.

Figure 33: Comparison of flagship stores subscription (as of 28 Sep 2023)

	Year of brand establishment	Main ingredient	Number of Tmall flagship store memberships (mn)	Number of JD flagship store subscriptions (mn)	Number of Xiaohongshu notes	Number of Douyin flagship store subscriptions (mn)
Comfy from Giant Biogene	2011	Recombinant collagen	3.89 (Giant Biogene: 0.31mn)	7.65 (JD) + 0.29 (DTC)	68k+	1.21
Collgene from Giant Biogene	2009		0.94	0.23 (JD) + 0.16 (DTC)	22k+	0.47
Jipin (肌频) from Jinbo (锦波生物)	2018		0.17	N/A	3k+	0.03
Zhanyan (绽妍)	2014		1.43	0.96 (JD)	21k+	0.12
Trauemy (创尔美) from Trauer (创尔生物)	2008	Animal-derived collagen	1.19	0.19	3k+	0.87
Trauer (创福康) from Trauer (创尔生物)	N/A		1.17	0.13 (DTC)	12k+	0.15
Voolga (敷尔佳)	2017	HA	3.86	0.68 (JD) + 0.19 (DTC)	66k+	0.96
BIOHYALUX (润百颜) from Bloomage (华熙生物)	2012		5.91	8.33 (JD) + 0.50 (DTC)	42k+	1.51
QuadHA (夸迪) from Bloomage (华熙生物)	2018		3.77	2.26 (JD) + 1.27 (DTC)	49k+	0.58

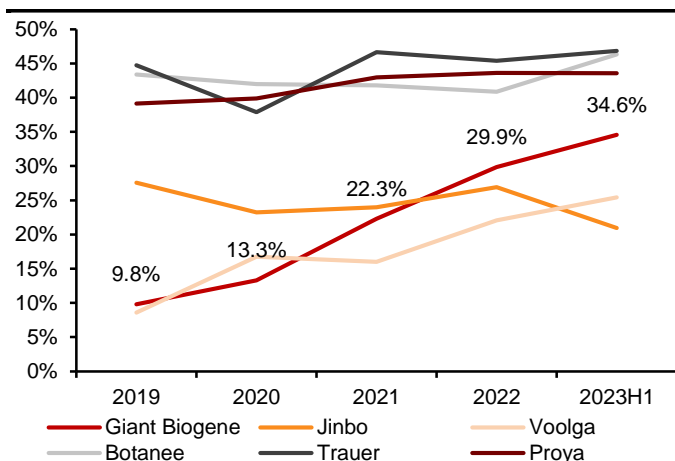
	Year of brand establishment	Main ingredient	Number of Tmall flagship store memberships (mn)	Number of JD flagship store subscriptions (mn)	Number of Xiaohongshu notes	Number of Douyin flagship store subscriptions (mn)
MARUBI (丸美)	2002	Multiple ingredients	8.08	14.14 (JD) + 1.02 (DTC)	43k+	3.06
Winona (薇诺娜) from Botanee (贝泰妮)	2008		15.12	5.58 (JD) + 3.37 (DTC)	162k+	4.39
Proya (珀莱雅)	2006		20.59	12.63 (JD) + 3.02 (DTC)	168k+	10.34
L'oreal (欧莱雅)	1996 entering China market		24.92	22.26 (JD) + 3.21 (DTC)	619k+	~6.04

Source: Tmall, JD.com, Xiaohongshu, Douyin, Official website of each brand, CMBIGM

Note: JD represents 京东自营店 while DTC represents the brands' flagship store.

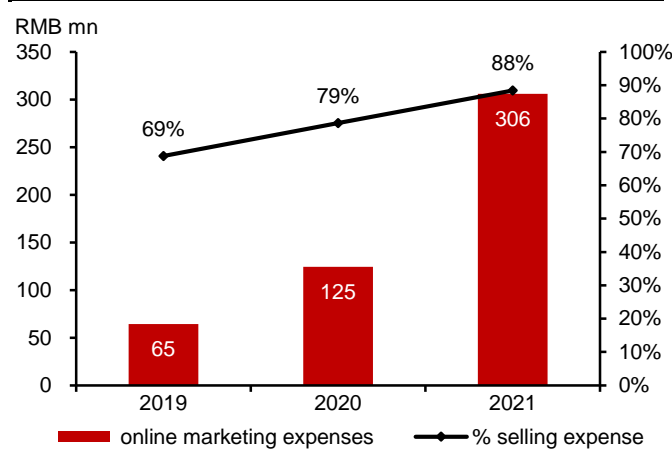
Giant Biogene has devoted great resources on online marketing activities, which resulted in a rapid increase in online marketing expenses which rose from RMB64.5mn in 2019 to RMB306.1mn in 2021 at a CAGR of 117.8%. In 2019, online marketing expenses accounted for a substantial 68.8% of Giant Biogene's total selling expenses. The ratio further climbed to 88.4% in 2021, which was much higher than the other brands such as Voolga (62.3%), Shanxi Jinbo (26.1%) and Trauer (42.2%) during the same period. Nevertheless, Giant Biogene's overall selling expense rate was at the industry average level, lower than Proya, Botanee and Tauer, and higher than Voolga and Shanxi Jinbo. We expect Giant Biogene's intensive online marketing efforts may increase its brand awareness and drive fast online sales growth.

Figure 34: Comparison of selling expense rate



Source: Company data, Wind, CMBIGM

Figure 35: Giant Biogene's online marketing expense



Source: Company data, CMBIGM

Medical dressing and functional skincare products are key revenue drivers

Medical dressings are cornerstone products of Comfy brand

Medical dressings (医用敷料) are designed for skin repair which targets the population with skin issues such as sensitivity, dermatitis and acne, and those who take medical aesthetic procedures. In 2011, Giant Biogene successfully obtained a Class II medical device registration for its Comfy brand Human-like Collagen Dressing. It was the first recombinant

collagen-based product obtained such registration approval in China. Since then, Comfy has gained recognition among medical professionals. Thus, medical dressings has become the flagship products of Comfy brand and Comfy has established a professional brand image among customers and medical professionals.

Comfy's collagen dressings enjoy price premium versus HA products. Currently, common medical dressings sold online are HA or collagen-based. Most of the medical dressing products were approved as Class II medical devices. The average unit prices of collagen-based medical dressings sold at Tmall are around RMB30-45/sheet, higher than the HA-based medical dressings (RMB13-40/sheet). Comfy's medical dressing products include different formulations such as sheet-form, cream and spray. The unit price of Comfy's sheet-form Human-like Collagen Dressing is around RMB39.6/sheet, according the retail prices of the Tmall flagship stores, which is largely in line with the industry average.

Figure 36: Comparison of medical dressing products in China

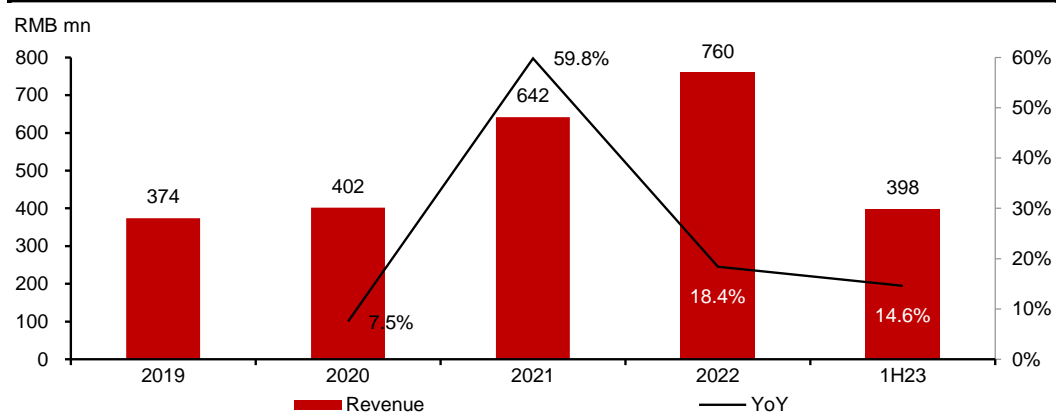
	Name	Core ingredient	Approval	Collagen type	Form	Online retail price	Unit price
	重组胶原蛋白敷料 (陕械注准 20152140026)			Type I	Sheet	RMB198	RMB39.6/sheet
Comfy (可复美)	重组胶原蛋白修复敷料 (陕械注准 20142140018)	Recombinant collagen	Class II medical device	Type I	Cream	RMB268	RMB3.4/g
	重组胶原蛋白生物修复敷料 (陕械注准 20192140042)			Type I	Spray	RMB220	RMB2.2/ml
JUYOU (绽妍)	皮肤修复敷料 (胶原蛋白敷料) (陕械注准 20182140041)	Recombinant collagen	Class II medical device	Type III	Sheet	RMB218	RMB43.6/sheet
Bonneheure (伯纳赫)	医用重组人源胶原蛋白功能敷料贴 (晋械注准 20162640043)	Recombinant collagen	Class II medical device	Type III	Sheet	RMB198	RMB66.0/sheet
Trauer (创福康)	胶原贴敷料(>1000) III 类 (国械注准 20163141290)	Animal-derived collagen	Class III medical device	Type I	Sheet	RMB198	RMB39.6/Sheet
	胶原贴敷料(>500) II 类 (粤械注准 20172140686)		Class II medical device			RMB158	RMB31.6/sheet
WINONA (薇诺娜)	酵母重组胶原蛋白贴敷料 (青械注准 20172640005)	Recombinant collagen	Class II medical device		Sheet	RMB178	RMB29.7/sheet
	透明质酸修护贴敷料 (滇械注准 20192140006)	HA	Class II medical device	-	Sheet	RMB248	RMB41.3/sheet
Voolga (敷尔佳)	医用重组Ⅲ型人源化胶原蛋白贴	Recombinant collagen	Class II medical device	Type III	Sheet	RMB149	RMB29.8/sheet
	医用透明质酸钠修复贴 (白膜/黑膜) (黑械注准 20162140023)	HA	Class II medical device	-	Sheet	RMB135/179	RMB27.0/35.8/sheet
Ful Qun (芙清)	医用促愈功能性敷料 (吉械注准 20192140055)	抗菌十三肽、HA	Class II medical device	-	Sheet	RMB158	RMB31.6/sheet
Cofoe (可孚)	医用透明质酸钠修复贴 (湘械注准 20192140231)	HA	Class II medical device	-	Sheet	RMB65	RMB13.0/sheet
Rongsheng (荣晟)	医用透明质酸敷料 (湘械注准 20212140051)	HA	Class II medical device	-	Sheet	RMB88	RMB17.6/sheet

Source: Tmall, Company websites, NMPA, CMBIGM; Note: Retail prices are from Tmall flagship stores without considering price discounts.

According to the Company, the Human-like Collagen Dressing has been the best-selling product across all of Giant Biogene's products for three consecutive years since 2019 and its sales revenue increased from RMB258.1mn in 2019 to RMB457.1mn in 2021 at a CAGR of 33.1%. In the 618 Festival of 2023, sales of the Comfy Human-like Collagen Dressing ranked No.1 in Tmall's Wound Dressing Category (天猫伤口敷料类目) and No.1 in JD.com's Medical Beauty Care Category (京东医用美护单品). In the Double 11 of 2023, sales of the Comfy Human-like Collagen Dressing once again ranked No.1 in Tmall's Wound Dressing Category and No.1 in JD.com's Medical Beauty Care Category, and ranked No.3 in Douyin's Medical Dressing Hot Product list (抖音械字医用敷料爆款榜).

Giant Biogene's medical dressing revenue increased at a CAGR of 26.7% from 2019 to 2022. In 1H23, the revenue generated from medical dressings reached RMB397.8mn, +14.6% YoY, accounting for 24.8% of the Company's total revenue. We think the growth deceleration was mainly attributable to a growing sales base. The increasing penetration rate of medical aesthetics will continue to drive the demand growth of medical dressings, in our view.

Figure 37: Giant Biogene's medical dressing revenue (2019-1H23)



Source: Company data, CMBIGM

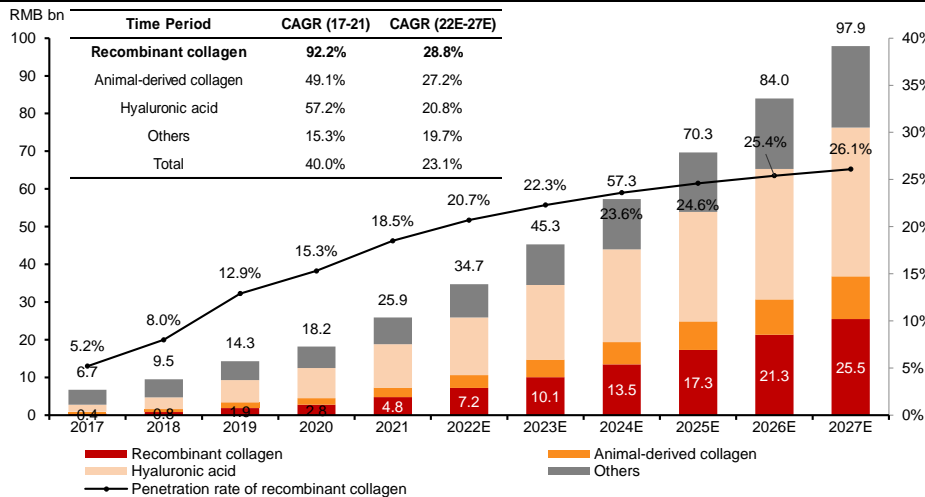
Increasing demand for skin repair drives the growth of the medical dressing market

Medical dressings are adjuvant therapeutic products catered for the skin repair needs following medical procedures, medical aesthetics, injuries, chronic eczema and allergies. In China, collagen-based medical dressing are generally classified as Class II or Class III medical devices depending on whether it is absorbable.

China's medical aesthetics industry especially non-surgical medical aesthetic procedures is undergoing enormous growth. The F&S expected China's market size of non-surgical medical aesthetic procedures to increase from RMB77.3bn in 2020 to RMB119.2bn in 2025E in terms of service revenue and to reach RMB416.6bn in 2030E. Common skin adverse reactions occurred after medical aesthetics include redness, itch, scaling, dry, etc., due to the wound caused by the procedures. Medical dressing can effectively form moisture on the skin surface and act as a barrier between the skin and outside environment to protect the wound from infection. Therefore, medical dressings have become necessary products for medical aesthetic consumers. According to the F&S, the market size of medical dressings in China increased from RMB6.7bn in 2017 to RMB25.9bn in 2021 at a CAGR of 40.0%, and is expected to further increase from RMB34.7bn in 2022 to RMB97.9bn in 2027 at a CAGR of 23.1%.

The main ingredients of medical dressings include collagen (including recombinant collagen and animal-derived collagen) and HA. Recombinant collagen-based products have significantly driven the market growth. According to the F&S, the market size of the recombinant collagen-based medical dressings increased from RMB351.6mn in 2017 to RMB4.8bn in 2021 at a CAGR of 92.2%, and is projected to further grow from RMB7.2bn in 2022E to RMB25.5bn in 2027E at a CAGR of 28.8%.

Figure 38: China's medical dressing market size, in retail sales value



Source: F&S, CMBIGM

Note: Others include ingredients such as alginates.

The penetration rate of recombinant collagen-based medical dressings in the overall medical dressing market increased from 5.2% in 2017 to 18.5% in 2021, and is expected to further increase to 26.1% in 2027E. Before 2021, only 14 recombinant collagen-based medical dressings were approved for addressing skin issues such as allergies, acne or repairing skin especially after medical aesthetics such as photo-rejuvenation. As of 7 Sep 2023, about 100 recombinant collagen-based medical dressing products were approved. We think the upsurge in the number of approved recombinant collagen-based medical dressings will fast drive the increase in penetration.

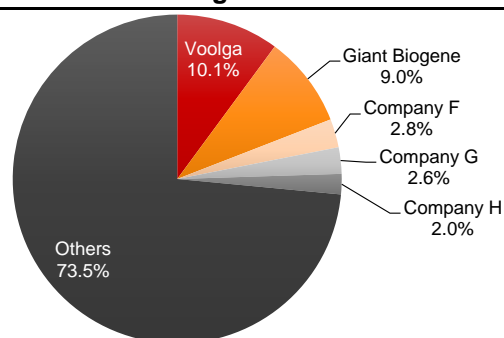
Figure 39: Approved medical dressings based on collagen and HA (as of 7 Sep 2023)

Ingredient	Certificate type	Number of approved products
Recombinant Collagen	Type II	100
Animal-derived Collagen	Type II	27
	Type III	7
HA	Type II	76

Source: Pharmcube, NMPA, CMBIGM

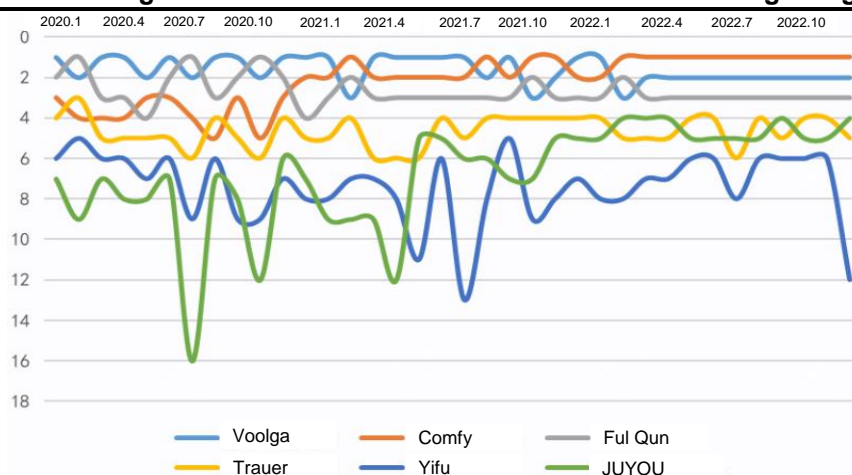
Note: Sorted by 1) ingredients listed in the medical device certificate that includes recombinant collagen, collagen, HA or alginates; 2) the intended use listed in the medical device certificate that includes allergy, laser, photo-rejuvenation, acne, sensitivity, plastic surgery, and facial, etc.

However, China's medical dressing market is fragmented and the top five companies only occupied 26.5% in 2021 in terms of retail sales value, according to the F&S. Giant Biogene ranked second and accounted for 9.0% of the total market while Voolga (敷尔佳, 301371 CH) ranked first with market share of 10.1%. As the medical dressing market expands rapidly, the top companies with well-recognized brand name, good user stickiness and rich portfolios may strengthen their market position, in our view.

Figure 40: Market share of medical dressing brands in China in 2021, in retail sales value

Source: F&S, CMBIGM

According to Tmall's transaction index, Comfy was one of the top two brands in Tmall's Medical Device-dressing Category in 2021 and ranked first in 2022.

Figure 41: Ranking of Tmall's Transaction Index of medical dressing category

Source: Voolga, SYCM, CMBIGM

Note: Transaction Index (交易指数) refers to the transaction value calculated based on the core indicators related to the selling process such as the order numbers, customer numbers, payment amount, payment numbers, etc. It does not equal sales revenue but a higher transaction index indicates higher sales revenue

Expanding functional skincare product lines

Giant Biogene continued diversifying its product portfolios, ranging from medical devices to functional skincare products. As of the end of 2022, the Company had 121 SKUs across eight major brands.

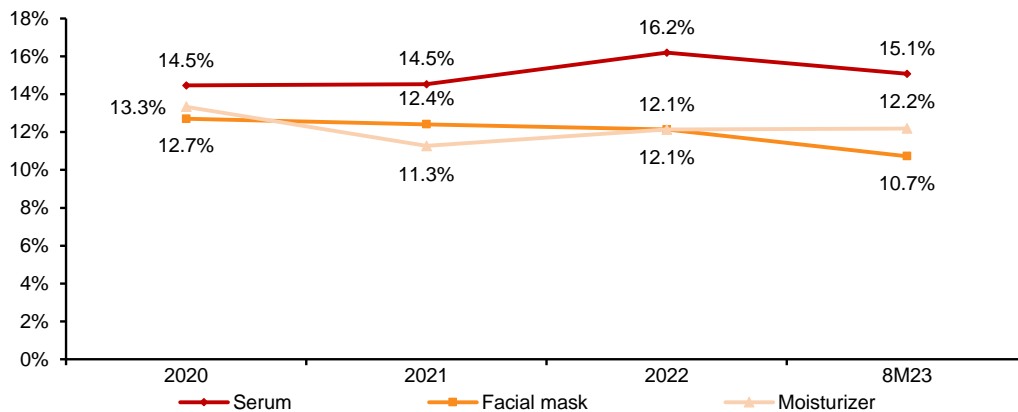
The Company launched a series of blockbuster products which led the industry trend. According to Moojing, serum/essence, facial mask, and moisturizer/cream were the Top 3 sub-categories in Tmall and Taobao's Beauty and Skincare Category in terms of sales revenue, which accounted for 40.5% of the total sales revenue of the Beauty and Skincare Category on Tmall and Taobao. Since 2021, the Company has launched a series of products in the above-mentioned top-selling categories under the Comfy and Collgene brands.

For the Comfy brand, the new blockbuster products include Human-like Recombinant Collagen Restoration Single-Use Essence ("Collagen Stick", 可复美胶原棒, launched in 2021), Recombinant Collagen Repair Essence Emulsion ("Collagen Emulsion", 可复美胶原乳, launched in 2023) and Recombinant Collagen Renewing Soothing Essence Mask

(“Collagen Soothing Mask”, 可复美舒舒贴, launched in 2023).

For the Collgene brand, the new blockbuster products include Human-like Collagen LIFTACTIV Tightening Mask (可丽金大膜王, launched in 2021), Human-like Recombinant Collagen LIFTACTIV Compact and Elastic Single-Use Essence (“Pengpeng Single-Use”, 彭彭次抛), launched in 2022) and Human-like Recombinant Collagen LIFTACTIV Wrinkless and Firming Cream (保龄霜, launched in 2022).

Figure 42: Proportion of beauty and skincare category sales revenue on Tmall and Taobao



Source: Moojing, CMBIGM

Serum products have caught great attention from customers. According to data from FEIGUA (飞瓜), in terms of the number of notes in Xiaohongshu (小红书), there were over 820,000 notes related to serum/essence in 2022, accounting for 37% of the total number of notes in the topic of cosmetic products. Ingredients become an important influencing factor for consumers' purchase decisions. Single-use essences become popular since this kind of products have effective ingredients and are free of preservatives.

Figure 43: Notes related to serum/essence in Xiaohongshu



Source: DY.FEIGUA.CN, CMBIGM

In China's market, major types of ingredient-based serum products include HA, collagen and GHK-Cu (蓝铜胜肽). In general, HA-based essence is cheaper than recombinant collagen and GHK-Cu-based essence. Comfy, Collgene, MARUBI and Jipin are the major recombinant collagen-based single-use essence brands in China. In terms of online retail prices of Tmall flagship stores, Comfy Collagen Stick (可复美胶原棒) and Collgene Pengpeng Single-Use (可丽金彭彭次抛) are priced at the average level with peers while

offer high product quality. These two are blockbuster products of Giant Biogene.

Figure 44: Comparison of single-use essences in China

	Name	Core ingredient	Online retail price (RMB)	Unit price (RMB)
Voolga	透明质酸钠次抛修护液 (1.3ml)	HA	278	9.3
Trauer	胶原透明质酸精华液 (1.7ml)	Animal-derived collagen, HA	319	10.6
Comfy	透明质酸钠藻萃盈润保湿次抛精华液 (1.5ml)	HA	359	12.0
Voolga	御龄紧致次抛精华液 (1.3ml)	HA	378	12.6
QUADHA	战痘次抛精华液 (1.0ml)	HA	418	13.9
Collgene	Human-like 重组胶原蛋白赋能珍萃紧致弹润次抛精华 (Pengpeng Single-Use) (1.2ml)	Recombinant collagen	419	14.0
Trauer	胶原蓝铜胜肽精华液 (1.7ml)	Animal-derived collagen, GHK-Cu	459	15.3
Comfy	human-like 重组胶原蛋白御修护次抛精华 (Collagen Stick) (1.5ml)	Recombinant collagen	469	15.6
Winona	蓝铜胜肽修护精华次抛 (1.5ml)	GHK-Cu	498	16.6
Dr.ALVA	精研弹润修护次抛精华 (1.3ml)	GHK-Cu	518	17.3
BIOHYALUX	屏障调理次抛精华液 (1.5ml)	HA	519	17.3
Winona	光透皙白淡斑精华液 (1.5ml)	Nicotinamide, VC	538	17.9
MARUBI	重组胶原蛋白次抛精华液 (1.5ml)	Recombinant collagen	553	18.4
QUADHA	5D 玻尿酸焕颜精粹次抛精华液 (1.0ml)	HA	628	20.9
Jipin	肌频生物活性蛋白原液	Recombinant collagen	1000	166.7

Source: Tmall, Company website, NMPA, CMBIGM; Note: Retail prices are from Tmall flagship stores without considering price discounts.

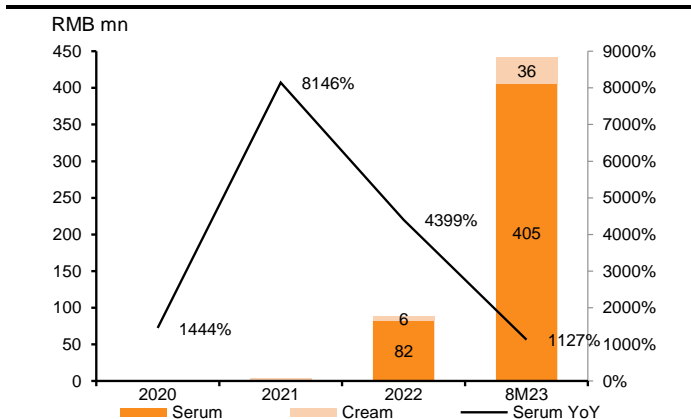
With competitive pricing and Giant Biogene's strong multi-channel promotion efforts, the sales of Comfy Collagen Stick performed very strong. During the 618 Festival of 2023, over 35mn units of Collagen Stick were sold with over 700% YoY increase in GMV. Comfy Collagen Stick ranked TOP1 on Douyin's Annual Essence Bestseller List (年度精华金榜), TOP1 in JD.com's home care category, and TOP3 on Tmall's Hot Product List (爆款单品榜). In the Double 11 of 2023, the GMV of Comfy Collagen Stick increased by over 200% YoY and ranked TOP1 in Tmall's Facial Essence Category (天猫面部精华类目), TOP1 in JD.com's Family Care Category (京东家庭护理单品).

According to Moojing, the sales revenue of Comfy serum products in the Beauty and Skincare Category of Tmall and Taobao increased by 4,399% YoY to RMB81.9mn in 2022 and further grew 1,127% YoY to RMB405.2mn in 8M23. Serum products have contributed a significant 58.7% percentage of Comfy's total sales from Tmall and Taobao in 8M23 (vs. 22.1% in 2022). Thanks to the leap in serum sales, revenue from Comfy brand amounted to RMB1,228mn in 1H23, rose by 101.0% YoY, accounting for 76.5% of the Company's total revenue.

Collgene has established its brand image as the "Recombinant Collagen Anti-Aging Expert". The Collgene Pengpeng Single-Use serum, which applied Mini recombinant collagen peptide with a molecular weight as low as 217Da, can promote collagen regeneration in the dermis. During the 618 Festival of 2023, omni-channel online sales of Pengpeng Single-Use exceeded 1.7mn units, ranking TOP8 in JD.com's Facial Essence Bestseller List (修护面部精华榜) and TOP10 in Tmall's Firming Liquid Essence Hot-selling List (紧致液态精华热卖榜). In the Double 11 of 2023, the omni-channel online sales of Pengpeng Single-Use exceeded 4.6mn units and its GMV increased by over 80% YoY.

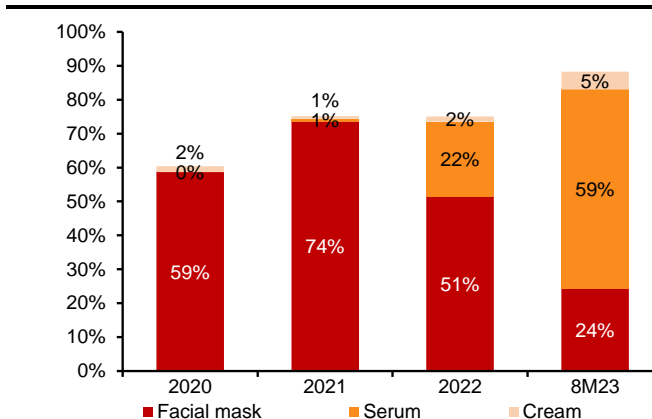
According to Moojing, the sales revenue of Collgene serum products in the Beauty and Skincare Category of Tmall and Taobao increased by 372% YoY to RMB12.0mn in 2022 and reached RMB42.3mn in 8M23, up 728% YoY. Serum products have contributed 29.1% of Collgene's total sales from Tmall and Taobao in 8M23, vs 2.3% in 2021 and 8.6% in 2022.

Figure 45: Comfy's sales revenue of serum and cream on Tmall and Taobao



Source: Moojing, CMBIGM

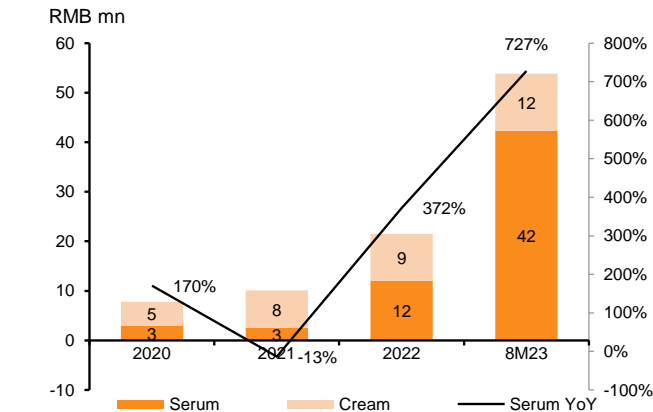
Figure 46: TOP 3 categories Comfy's sales revenue on Tmall and Taobao



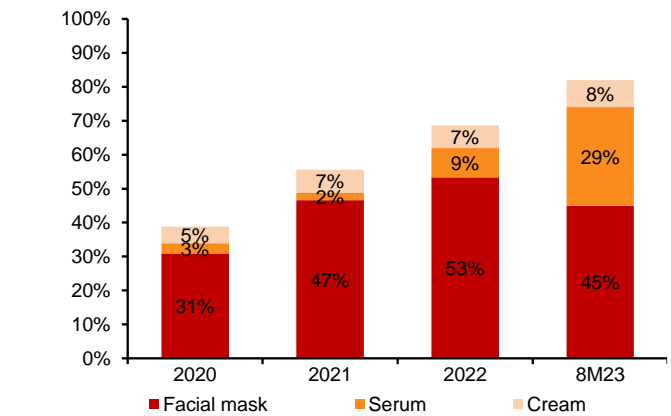
Source: Moojing, CMBIGM

Figure 47: Collgene's sales revenue of serum and cream on Tmall and Taobao

Figure 48: TOP 3 categories Collgene's sales revenue on Tmall and Taobao

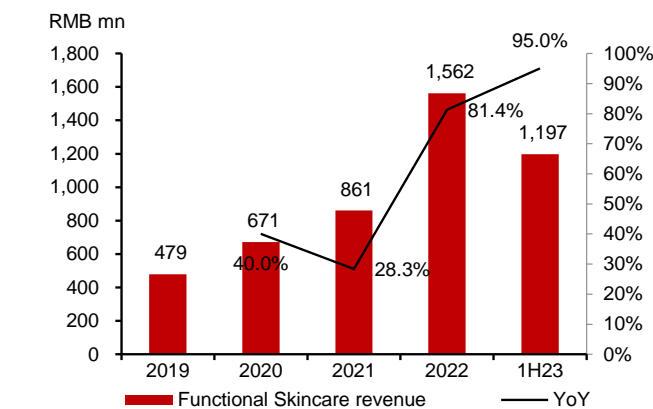


Source: Moojing, CMBIGM

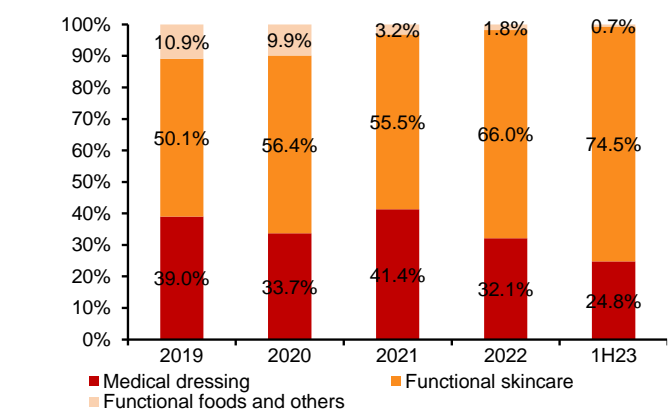


Source: Moojing, CMBIGM

Giant Biogene also has many new products with blockbuster potential. For example, Comfy Collagen Emulsion (可复美胶原乳) and Comfy Collagen Soothing Mask (可复美舒舒贴) has ranked TOP1 in the Tmall New Product List for several times since its launch. Thanks to the expanding functional skincare product portfolios, sales in Giant Biogene's functional skincare products grew at a CAGR of 48.2% from 2019 to 2022. In 1H23, revenue from functional skincare products was RMB1,197mn, up 95.0% YoY, and contributing 74.5% of the Company's total revenue.

Figure 49: Giant Biogene's functional skincare revenue**Figure 50: Breakdown of Giant Biogene's revenue, by product category**

Source: Company data, Wind, CMBIGM



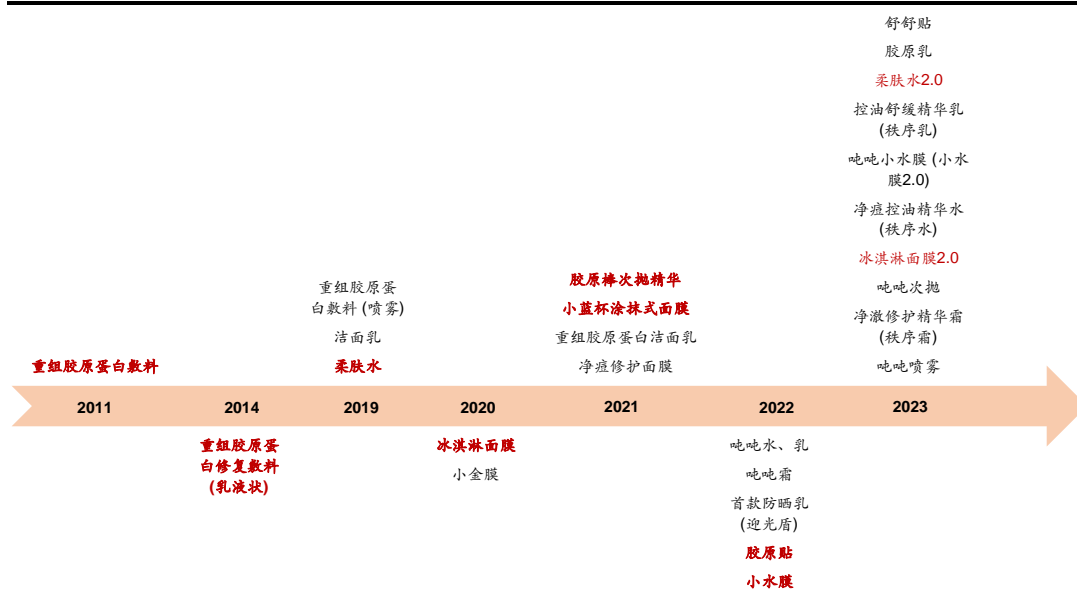
Source: Company data, CMBIGM

Giant Biogene has accelerated the introduction of new functional skincare products in recent years. YTD, the Company has launched at least seven new Comfy brand products such as Comfy Aqua Moisturizing Single Use Essence (Dundun Sing-Use 可复美吨吨次抛), Comfy Rare Ginsenoside Anti-acne and Oil Control Essence (可复美秩序水), Comfy Rare Ginsenoside Purifying and Repair Essence Cream (可复美秩序霜) and has iterated three of its existing flagship products such as Comfy Aqua Luminous Moisturizing Essence Mask (可复美小水膜 2.0) and Comfy Revitalizing Repair Masque (可复美冰淇淋面膜 2.0).

Moreover, we see the Company's strong capability in blockbuster creation as it has at least one new blockbuster Comfy product launch every year since 2019. During the Double 11 of 2023, the Comfy Recombinant collagen repair Essence Emulsion (可复美胶原乳) ranked TOP1 in Douyin's most-favoured Repairing Essence Emulsion (修护精粹乳好评榜) and TOP8 in Douyin's Domestic Cream Hot-selling List (抖音面霜热卖金榜国货). The Comfy Dundun Single-Use ranked TOP4 in Douyin's Single-Use Essence Popularity List (抖音品

牌次抛精华液人气榜). The Comfy Rare insenoside Purifying and Repair Essence Cream (可复美秩序霜) ranked TOP8 in Tmall's Oil Control Emulsion Hot-selling List (天猫控油乳液热销榜). We think the consistent blockbuster product launch will help Giant Biogene to fast grow its revenue base.

Figure 51: Timeline of major products launch of Comfy brand



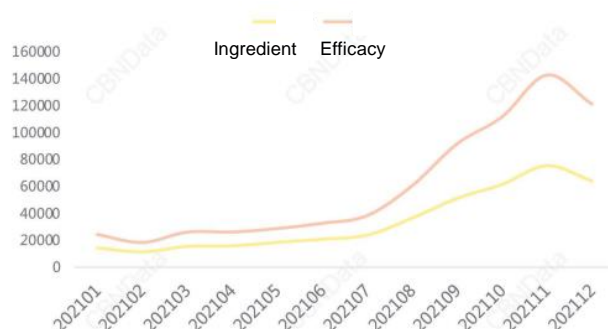
Source: Company data, Tmall, CMBIGM

Note: Products in red are the TOP10 best-selling products on Comfy's Tmall flagship store based on the sale volumes showing on Tmall.

Recombinant collagen-based products lead the functional skincare market growth

Functional skincare products target consumers with problematic skin conditions and address the skin conditions using active ingredients such as collagen, hyaluronic acid and plant extracts with proven benefits to skin health. According to the "618 Skincare Market Research in 2023 (2023 年 618 护肤市场大数据调研)" ([Link](#)), customers placed the highest value on the efficacy when purchasing skincare products. Consumers are more interested in cosmetic ingredients, experiences and prices when purchasing for the first time. According to CBNDData, the number of ingredients and efficacy notes related to skincare products in Xiaohongshu was rising, indicating customers' increasing emphasis on product efficacy.

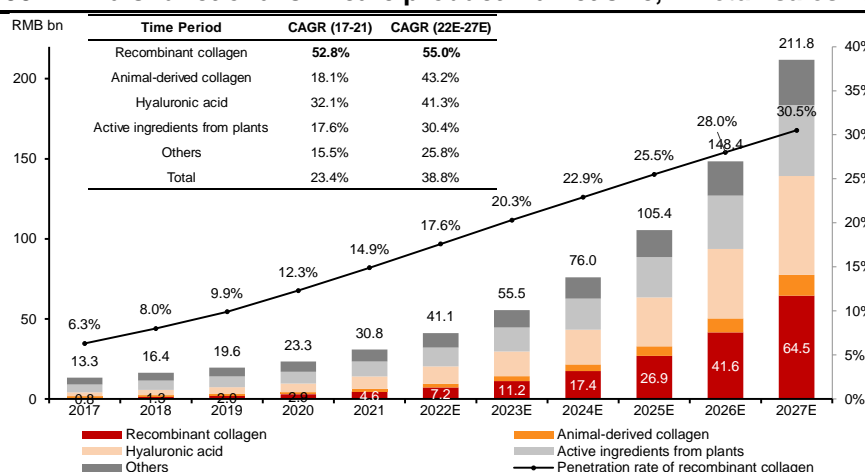
Figure 52: Number of ingredients and efficacy notes in Xiaohongshu (2021.01-2021.12)



Source: CBNDData, CMBIGM

Thanks to the rising concerns on product efficacy, China's functional skincare market has experienced rapid growth in the recent few years. According to the F&S, in terms of retail sales value, the functional skincare market size increased from RMB13.3bn in 2017 to RMB30.8bn in 2021 at a CAGR of 23.4%, and may further reach RMB211.8bn in 2027E at a CAGR of 38.8% from 2022E to 2027E.

Collagen was one of the main constituents of functional skincare formulations due to its excellent ability of moisturizing, regenerating, and film-forming properties to reduce transepidermal water loss. Moreover, research has shown that collagen accelerates wound healing and helps tissue to regenerate. Therefore, the collagen-based functional skincare product market has grown from RMB1.6bn in 2017 to RMB6.2bn in 2021 at a CAGR of 38.8%. It is expected to grow from RMB9.4bn in 2022E to RMB77.5bn in 2027E at a CAGR of 52.6%, which is growing faster than hyaluronic acid-based products. Given the significant advantages of recombinant collagen over animal-derived collagen, the penetration rate of recombinant collagen-based functional skincare products increased from 6.3% to 14.9% from 2017 to 2021. The F&S expected the penetration of recombinant collagen-based functional skin care products to further grow from 17.6% in 2022E to 30.5% in 2027E and the market size of the recombinant collagen-based functional skincare products to reach RMB64.5bn in 2027E, growing at a CAGR of 55.0% from 2022E to 2027E.

Figure 53: China's functional skincare product market size, in retail sales value

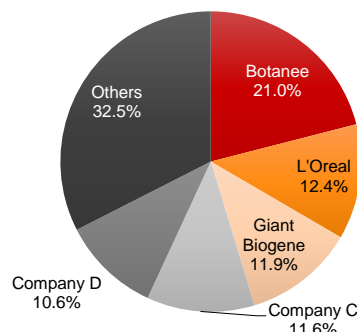
Source: F&S, CMBIGM

Note: Others include ingredients such as ergothioneine and polyglutamic acid.

According to the F&S, the CR5 of China's functional skincare market was 67.5% in terms of retail sales value in 2021, suggesting a relatively concentrated market although there are approximately hundreds of brands in the market. Giant Biogene with 11.9% market share ranked third in the functional skincare market in 2021, while Botanee ranked first with

market share of 21.0%. For the functional skin care market, we think that the R&D ability, market education on the ingredients and brand awareness have created the high barriers-to-entry compared to general skincare products and have led to the high market concentration rate.

Figure 54: Market share of functional skincare brands in China in 2021, in retail sales value



Source: F&S, CMBIGM

As customers are accumulating deep understanding on skincare products and more domestic brands are introducing products with diverse ingredients, the competition of functional skincare market is intensifying. However, in 2021, the NMPA released the *Cosmetic Efficacy Claims Evaluation Standard* (化妆品功效宣传评价规范) and required the functional skincare products to do efficacy evaluation. For instance, the NMPA requires brands to provide trial data to support their claims on efficacy. In our view, disclosing clinical evidence on product efficacy will improve consumers' trust and stickiness to the brand.

Collagen-based dermal filler products to unveil a second growth curve

Recombinant collagen-based dermal filler has high technical barriers

Recombinant collagen as a filling material has excellent market prospects and high technological barriers. The current injectable recombinant collagen market is still a blue ocean market with limited competition compared to the injectable HA market. To date, China has approved five animal collagen-based injections while Shanxi Jinbo (832982 CH) is the only company that obtained two NMPA Class III medical device certificates of recombinant collagen-based injections.

The indications of the approved injectable collagen products also differ. The animal-derived collagen-based products usually address severe wrinkles such as nasolabial folds (法令纹) which require better supporting and shaping properties. In contrast, Shanxi Jinbo's (832982 CH) approved recombinant collagen-based products target mild wrinkles on the forehead including frown lines, forehead lines and crow's feet which provides moderate supporting effect.

Figure 55: Comparison of approved collagen-based dermal fillers

	Sunmax Biotechnology (双美生物)			Changchun Botai (长春博泰)	Hafod Bioscience B.V. (荷兰汉福)	Shanxi Jinbo (锦波生物)	
Product	Sunmax Collagen Implant I (肤柔美)	Sunmax Collagen Implant I-Plus (肤丽美)	Sunmax FACIALGAIN Collagen Implant with Lidocaine (肤力原/肤莱美)	Fillderm (弗缦)	Artecoll (爱贝芙)	WyeMor (薇旎美, 注射用重组III型胶原蛋白冻干纤维)	Injectable humanized recombinant collagen III solution (注射用重组III型人源化胶原蛋白溶液)
Year of approval	2009	2017	2019	2016	2016	2021	2023
Ingredient	Type I collagen+ physiological saline	Cross-linking Type I collagen+ physiological saline	Cross-linking Type I collagen+Lidocaine	Type I+Type III collagen+ Lidocaine	Collagen+PMM A microspheres+ Lidocaine	Type III collagen	Type III collagen+ physiological saline
collagen source	Porcine			Bovine	Bovine	Recombinant	
Indication	Target wrinkles on the forehead including frown lines, forehead lines and crow's feet (水光针)	Target nasolabial folds	Target nasolabial folds	Target moderate to severe nasolabial folds	Target nasolabial folds or rhinoplasty	Target wrinkles on the forehead including frown lines, forehead lines and crow's feet (水光针)	
Retail price	~RMB4,000-5,500	~RMB7,500-10,000	~RMB15,000	~RMB7,000-12,000	~RMB 12,800-17,800	薇旎美®极纯: RMB6,800 薇旎美®至真: ~RMB8,000	N/A

Source: NMPA, 236z.com (美佳网), Rongyanshe (容研社), CMBIGM

Cross-linking technology is essential to improve the mechanical properties of recombinant collagen and prolong its degradation time so that the recombinant collagen-based products can provide better supporting effect and sustain in the human body for a longer time. However, in the case of collagen injection products, the toxic cross-linking agents (e.g., glutaraldehyde, etc.) used for cross-linking eventually stay with collagen and exist in the human body for a long time. In 2022, Giant Biogene obtained the patent about producing collagen injections without residual crosslinking agents (无交联剂残留的注射用胶原蛋白填充剂及其制备方法). According to the patent, the Company constructed a macromolecular Type I recombinant collagen with exceptionally excellent stability. EDC is used for crosslinking collagen as the concentration of this crosslinking agent is low and the crosslinking degree can be improved through secondary crosslinking. Moreover, EDC can be completely removed with a simple phosphoric acid buffer cleaning operation after the crosslinking reaction is finished. We expect Giant Biogene's injectable collagen products to show competitive efficacy and safety leveraging the proprietary technology.

Giant Biogene's pipelines of injectable recombinant collagen-based products are progressing smoothly. The pipelines include Recombinant Collagen Skin Rejuvenation Serums (重组胶原蛋白液体制剂), Recombinant Collagen Skin Rejuvenation Freeze-Dried Powder (重组胶原蛋白固体制剂), Recombinant Collagen Skin Rejuvenation Gels (重组胶原蛋白凝胶) and Cross-linking Recombinant Collagen Skin Rejuvenation Gels (交联重组胶原蛋白凝胶). The pipeline injectable products target different indications such as full-face moisturizing, forehead lines/crow's feet, necklines and nasolabial folds, etc. Giant Biogene has completed the clinical trials of the first two products, the Recombinant Collagen Skin Rejuvenation Serums (重组胶原蛋白液体制剂) and Recombinant Collagen Skin Rejuvenation Freeze-Dried Powder (重组胶原蛋白固体制剂) and aims to obtain NMPA's approvals for the two products in 2024E. Thus, we expect Giant Biogene to become the

second in China to launch recombinant collagen dermal fillers in China.

Other pipeline recombinant collagen dermal fillers developed by competing companies are still at an early stage. For example, Trautec (创健医疗) initiated the clinical trial of its Type III recombinant collagen dermal filler (重组III型胶原蛋白植入剂) in 2023 while Jiangsu Wu (江苏吴中)'s injectable recombinant product is still at pre-clinical stage. We think Giant Biogene will enjoy early mover advantages in China's recombinant collagen dermal filler market.

We see strong synergies for Giant Biogene to market its recombinant collagen dermal filler products and medical dressing products. Thanks to the commercial success of the Comfy medical dressing products, Giant Biogene has already built an extensive distribution network and has strong brand recognition among medical institutions. The Company's distribution channels cover approximately 1,400 public hospitals and 2,200 private hospitals and clinics. Therefore, we believe the injectable products to drive Giant Biogene's second growth curve in the long term.

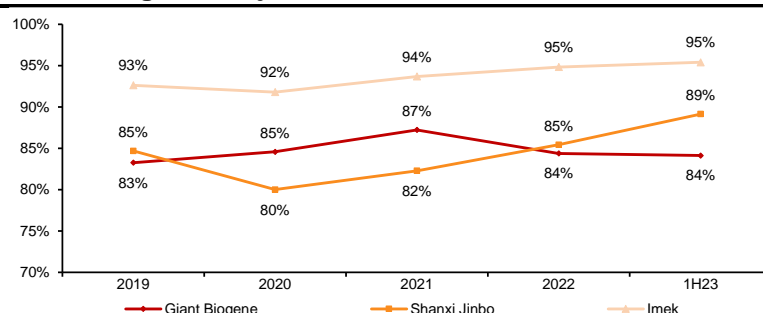
Figure 56: Giant Biogene's injectable recombinant collagen pipelines

Product	Indication	Estimated year of approval
Recombinant Collagen Skin Rejuvenation Serums	Mainly targets facial skin	2024E
Recombinant Collagen Skin Rejuvenation Freeze-Dried Powder	Mainly targets face wrinkles such as forehead lines and crow's feet	2024E
Recombinant Collagen Skin Rejuvenation Gels	Mainly targets moderate to severe neck wrinkles	2025E
Cross-linking Recombinant Collagen Skin Rejuvenation Gels	Mainly targets moderate to severe nasolabial folds	2025E

Source: Company data, CMBIGM

The gross profit margin of Giant Biogene was lower than that of two other domestic medical aesthetic manufacturers, Shanxi Jinbo (832982 CH) and Imek (300896 CH). After the launch of recombinant collagen dermal fillers in 2021, Shanxi Jinbo's GMP has improved significantly from 82% in 2021 to 89% in 1H23. Therefore, we also expect Giant Biogene's gross profit margin to improve after its injectable recombinant collagen products being approved.

Figure 57: Gross margin of major domestic medical aesthetic manufacturers



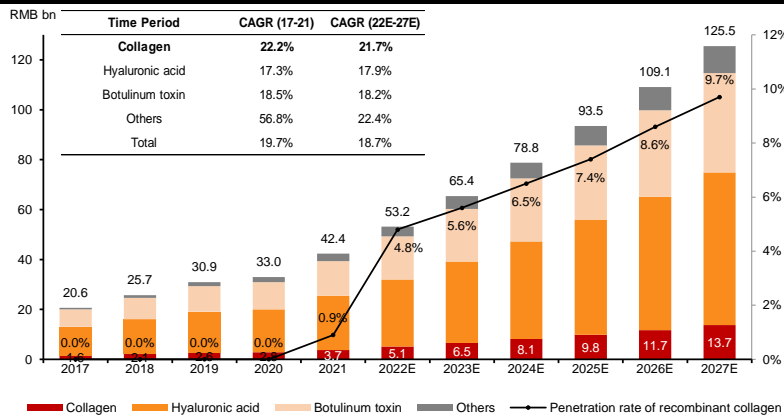
Source: Company data, Wind, CMBIGM

High growth potential in recombinant collagen-based dermal filler market

Skin rejuvenation application is a kind of non-surgical medical aesthetic procedure which is more popular among consumers than surgical medical aesthetic procedures, due to

reasons such as: 1) easier to perform with lower risk, 2) shorter downtime, and 3) good affordability. The rejuvenation application market in China increased from RMB20.6bn in 2017 to RMB42.4bn in 2021 at a CAGR of 19.7% and is projected to reach RMB125.5bn in 2027E, according to the F&S.

Figure 58: Skin rejuvenation application market size in China, in retail sales value



Source: F&S, CMBIGM. Note: Others include ingredients such as Poly-L-Lactic Acid.

Typical ingredients of injectable dermal filler products include hyaluronic acid, collagen and PLLA. HA-based injectable products occupied the largest share in the skin rejuvenation application market thanks to its good affordability, safety and durability. However, collagen-based injectable products provide a more natural look compared to HA dermal filler because of the following reasons: 1) HA is an unbranched polymer that belongs to a group of glycosaminoglycan heteropolysaccharides (CAGs) and is highly hygroscopic which leads to displaced or swollen after injection while collagen is a stable, net-like structure that are not easily displaced or swollen; 2) Collagen is non-transparent in the skin while HA dermal filler is usually translucent. Besides, recombinant humanized collagen is free from virus and has lower level of immunogenicity, suggesting a favorable safety profile. Therefore, as the first recombinant collagen-based injection product was approved by NMPA in 2021 and more products to be approved in the future, the penetration rate of recombinant collagen-based skin rejuvenation products in China may jump to 4.8% in 2022E and reach 9.7% in 2027E, according to F&S. F&S forecasts the collagen-based skin rejuvenation market to grow at a CAGR of 21.7% from 2022E to 2027E and to reach RMB13.7bn in 2027E.

Figure 59: Comparison of major dermal fillers ingredients

	Collagen	HA	Collagen stimulator e.g. PLLA & PCL
Mechanism	Forms a supportive network of fibers that fills and correct the wrinkles	1) Supports tissues and structures in the face that may have become less elastic or lost volume; 2) Binds water to the skin surface, helping it to look fresh and supple	Stimulates collagen production, which rebuilds collagen strands and restores the structure and volume of the skin
Maintenance	2-6 months	6-9 months	~2 years
Pros	1) Less viscous and less likely to produce irregularities when injected superficially; 2) Not easily displaced or swollen, with natural-looking	1) Wider injectable areas; 2) Mature crosslinking technology; 3) Reversible	Last for a long time
Cons	1) Animal-derived collagen may cause local hypersensitivity reactions; 2) Weaker in support and shorter maintenance time	1) Agent used for crosslinking may cause allergic reaction; 2) Unnatural outcomes	Effect develops over a prolonged period

Treatment costs
 薇旖美®极纯: RMB6,800
 薇旖美®至真: ~RMB8,000

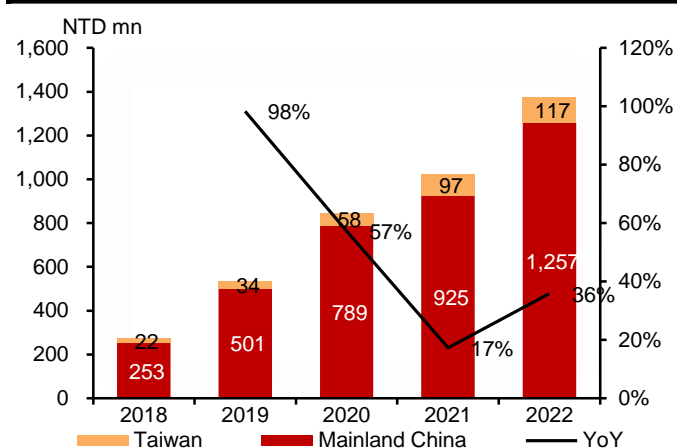
嗨体: ~ RMB2,000-3,000

伊妍仕: ~ RMB5,000
 艾维岚: ~ RMB18,700

Source: Shanxi Jinbo, News-Medical.net, SOYOUNG, 美佳网, CMBIGM

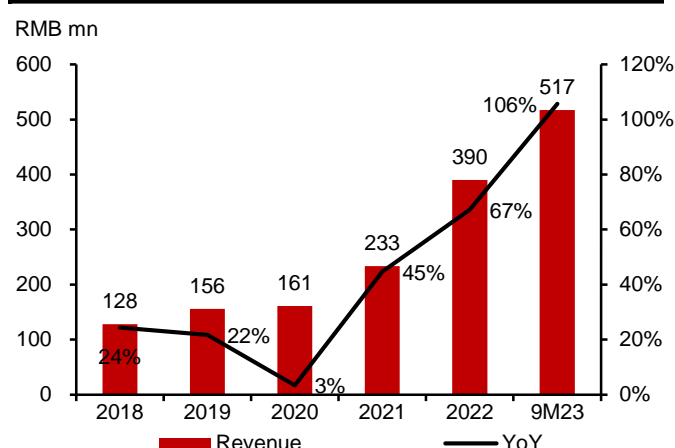
Major collagen-based injectable products in China achieve robust sales growth, indicating the growing demands. A Taiwan-based company, Sunmax Biotechnology (双美生物, 4728 TT), has three NMPA-approved animal collagen-based fillers. The sales of fillers in mainland China increased from NTD252.9mn (or c. RMB57.0mn) in 2018 to NTD1,257.3mn (or c. RMB283.5mn) in 2022, at a CAGR of 49.3%. Shanxi Jinbo (锦波生物, 832982 CH) obtained the Class III medical device registration certificate of China's first recombinant collagen-based injectable dermal filler product, WyeMor (薇旖美), in June 2021. According to the Shanxi Jinbo, sales revenue generated from WyeMor increased from RMB28.4mn in 2021 to RMB116.5mn in 2022 (+310.1% YoY) with its sale volumes increased from 25,086 to 163,774 (+552.9% YoY). In 9M23, Shanxi Jinbo's revenue further grew by 106% YoY to RMB517mn, mainly driven by strong sales growth from WyeMor. We are positive on the recombinant collagen-based market growth driven by better customer awareness and superior product efficacy. As more recombinant collagen-based injectable products may be approved in China, many new entrants will promote the consumer education on collagen-based fillers.

Figure 60: Sunmax Biotechnology's sales revenue of fillers



Source: Sunmax, CMBIGM

Figure 61: Revenue growth of Shanxi Jinbo



Source: Shanxi Jinbo, CMBIGM

Financial Analysis

Expect strong growth in 2023E-2025E

We expect Comfy and Collgene to be the major drivers for Giant Biogene's revenue growth in 2023E-2025E.

For Comfy brand, with expanding product portfolio and the strong growth in sales of the blockbuster products such as Comfy Collagen Stick and Comfy Collagen Emulsion, we expect the Comfy functional skincare products sales to maintain robust growth momentum in the coming years. Meanwhile, as the penetration of medical aesthetics increasing, we expect the Comfy Human-like Collagen Dressing to deliver sustainable growth. We forecast revenue of Comfy to reach RMB2,613mn/ 3,528mn/ 4,586mn in 2023E/ 24E/ 25E, representing YoY growth of 62.0%/ 35.0%/ 30.0% YoY, respectively.

For Collgene brand, we expect the impact of the decreasing revenue from one of its distributors, Xi'an Chuangkecun, to fade in coming years. As Collgene keeps expanding its anti-aging product portfolios and enhancing its brand positioning as a "Recombinant Collagen Anti-Aging Expert", we expect Collgene's revenue to increase by 5.9%/ 5.0%/ 10.0% YoY to RMB655mn/ 688mn/ 757mn in 2023E/ 24E/ 25E, respectively.

Moreover, we expect Giant Biogene to obtain NMPA certificates for its injectable products in 2024E and 2025E. We forecast the sales of injectable products to reach RMB35mn in 2024E and RMB140mn in 2025E, accounting for 0.8% and 2.5% of the Company's total revenue during the period, respectively.

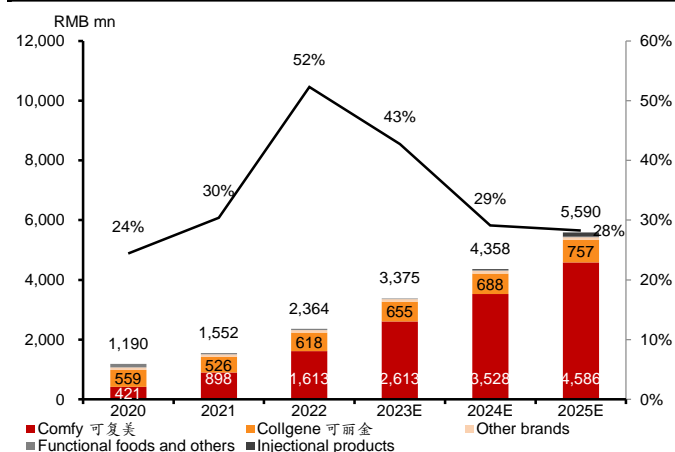
To summarize, we forecast Giant Biogene's revenue to reach revenue of RMB3,375mn/ RMB4,358mn/ RMB5,590mn in 2023E/ 24E/ 25E, representing 42.8%/ 29.1%/ 28.3% YoY growth for respective years.

Figure 62: Revenue forecasts of Giant Biogene (2022-2025E)

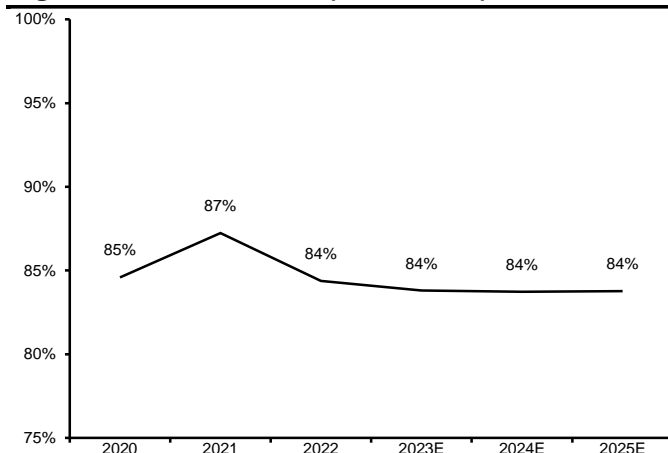
		2022	2023E	2024E	2025E
Comfy	Revenue (RMB mn)	1,613.0	2,613.1	3,527.6	4,585.9
	YoY	79.7%	62.0%	35.0%	30.0%
Collgene	Revenue (RMB mn)	618.4	655.1	687.9	756.7
	YoY	17.6%	5.9%	5.0%	10.0%
Other brands	Revenue (RMB mn)	90.3	85.8	85.8	85.8
	YoY	13.6%	-5%	0.0%	0.0%
Functional foods and others	Revenue (RMB mn)	42.7	21.4	21.4	42.7
	YoY	-13.6%	-50.0%	0.0%	0.0%
Injectable products	Revenue (RMB mn)	-	-	35.0	140.0
	YoY	-	-	-	300.0%
Total	Revenue (RMB mn)	2,364.4	3,375.3	4,357.7	5,589.7
	YoY	52.3%	42.8%	29.1%	28.3%

Source: Company data, CMBIGM estimates.

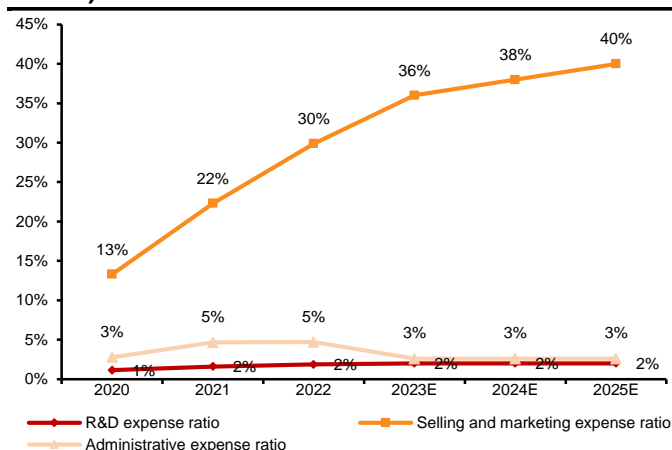
We forecast the gross profit margins of Giant Biogene's existing business to remain stable while the gross profit margins of the upcoming injectable products will average at around 90%. We believe the launch of injectable products will have positive impact on the Company's blended gross profit margins in the long term.

Figure 63: Revenue forecast (2020-2025E)

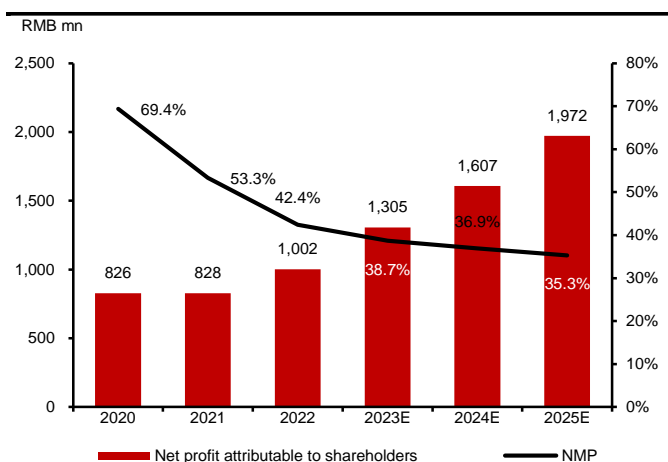
Source: Company data, CMBIGM estimates

Figure 64: GPM forecast (2020-2025E)

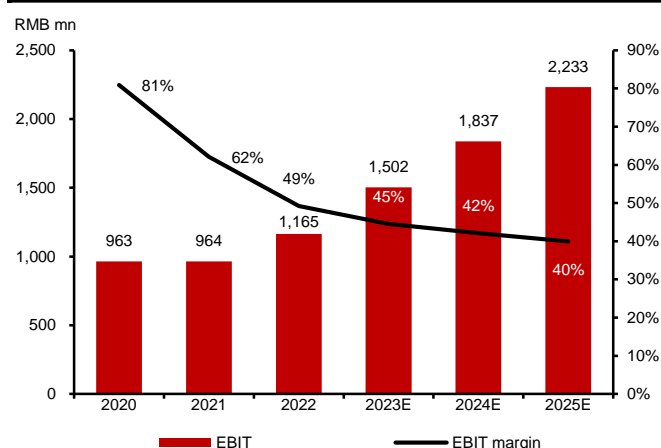
Source: Company data, CMBIGM estimates

Figure 65: Operating expense ratio forecast (2020-2025E)

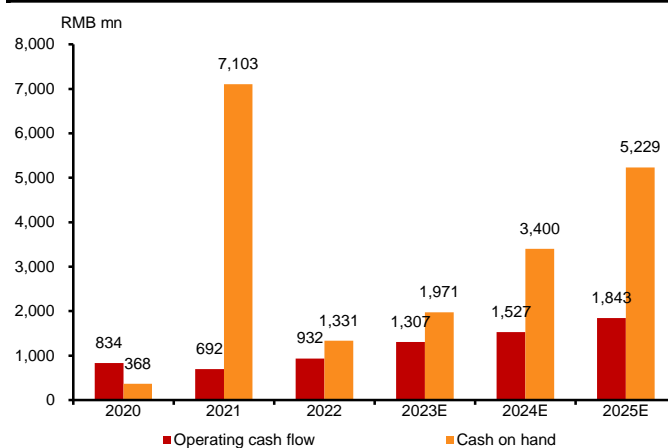
Source: Company data, CMBIGM estimates

Figure 66: Attributable net profit forecast (2020-2025E)

Source: Company data, CMBIGM estimates

Figure 67: EBIT and EBIT margin (2020-2025E)

Source: Company data, CMBIGM estimates

Figure 68: Cash on hand and operating cash flows (2020-2025E)

Source: Company data, CMBIGM estimates

Figure 69: P&L forecasts (2020-2025E)

(RMB mn)	2020	2021	2022	2023E	2024E	2025E
Revenue	1,190	1,552	2,364	3,375	4,358	5,590
YoY	24.4%	30.4%	52.3%	42.8%	29.1%	28.3%
Cost of sales	-183	-198	-369	-547	-709	-908
% of revenue	-15.4%	-12.8%	-15.6%	-16.2%	-16.3%	-16.2%
Gross profit	1,007	1,354	1,995	2,829	3,649	4,682
GPM	84.6%	87.2%	84.4%	83.8%	83.7%	83.8%
Selling & distribution expenses	-158	-346	-706	-1,215	-1,656	-2,236
% of revenue	-13.3%	-22.3%	-29.9%	-36.0%	-38.0%	-40.0%
Administrative expenses	-33	-72	-111	-88	-113	-145
% of revenue	-2.8%	-4.7%	-4.7%	-2.6%	-2.6%	-2.6%
Research and development expenses	-13	-25	-44	-68	-87	-112
% of revenue	-1%	-2%	-2%	-2%	-2%	-2%
Other expenses	-2	-3	-1	-1	-1	-1
% of revenue	7.1%	4.1%	0.6%	0.8%	0.6%	0.5%
Other Income	21	33	69	78	99	131
% of revenue	1.8%	2.1%	2.9%	2.3%	2.3%	2.3%
Other gains and losses, net	149	32	-23	0	0	0
% of revenue	-81.5%	-16.2%	6.3%	0.0%	0.0%	0.0%
(Provision for)/reversal of impairment losses on financial assets, net	2	-0	-1	0	0	0
% of revenue	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Finance cost	0	0	-0	-0	-0	-0
% of revenue	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Profit before tax	973	973	1,178	1,535	1,890	2,319
PBT margin	81.8%	62.7%	49.8%	45.5%	43.4%	41.5%
Income tax expense	-147	-145	-176	-230	-284	-348
% tax rate	-15.1%	-14.9%	-15.0%	-15.0%	-15.0%	-15.0%
Total net profit	826	828	1,002	1,305	1,607	1,972
Minority Interests	0	0	-0	-0	-0	-0
Net profit attributable to shareholders	826	828	1,002	1,305	1,607	1,972
NPM	69.4%	53.3%	42.4%	38.9%	37.2%	35.5%

Source: Company data, CMBIGM estimates

Valuation

Initiate at BUY with TP of HK\$48.87

We derive our target price of HK\$48.87 based on a 10-year DCF valuation (WACC: 11.1%, terminal growth rate: 3.0%).

Figure 70: DCF valuation

DCF Valuation (in RMB mn)	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EBIT	1,502	1,837	2,233	2,743	3,424	4,109	4,848	5,624	6,411	7,181
Tax rate	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
EBIT*(1-tax rate)	1,277	1,561	1,898	2,331	2,910	3,492	4,121	4,780	5,450	6,104
+ D&A	32	39	43	45	45	54	64	74	84	94
- Change in working capital	-17	-86	-106	-126	-152	-182	-215	-250	-285	-319
- Capx	-200	-150	-100	-50	-50	-60	-71	-82	-94	-105
FCFF	1,091	1,364	1,735	2,200	2,753	3,304	3,899	4,522	5,156	5,774
Terminal value										73,652

Terminal growth rate	3.0%
WACC	11.1%
Cost of Equity	14.0%
Cost of Debt	5.0%
Equity Beta	1.1
Risk Free Rate	3.0%
Market Risk Premium	10.0%
Target Debt to Asset ratio	30.0%
Effective Corporate Tax Rate	15.0%

Terminal value (RMB mn)	25,764
Total PV (RMB mn)	41,796
Net debt (RMB mn)	-1,968
Minority interest (RMB mn)	3
Equity value (RMB mn)	43,761
Equity value (HK\$ mn)	48,623
# of shares (mn)	995
Price per share (HK\$)	48.87

Source: CMBIGM estimates

Figure 71: Sensitivity analysis of DCF model

Terminal growth rate	WACC				
	10.1%	10.6%	11.1%	11.6%	12.1%
4.0%	63.39	57.92	53.25	49.22	45.70
3.5%	59.99	55.12	50.92	47.25	44.03
3.0%	57.07	52.69	48.87	45.51	42.55
2.5%	54.53	50.55	47.06	43.97	41.22
2.0%	52.31	48.67	45.45	42.58	40.02

Source: CMBIGM estimates

Figure 72: CMBIGM estimates vs consensus

RMB mn	CMBIGM			Consensus			Diff (%)		
	FY23E	FY24E	FY25E	FY23E	FY24E	FY25E	FY23E	FY24E	FY25E
Revenue	3,375	4,358	5,590	3,392	4,546	5,913	-0.5%	-4.1%	-5.5%
Gross Profit	2,829	3,649	4,682	2,863	3,843	5,010	-1.2%	-5.1%	-6.6%
Net profit	1,305	1,607	1,972	1,347	1,746	2,219	-3.1%	-7.9%	-11.1%
EPS (RMB)	1.31	1.62	1.98	1.35	1.76	2.23	-3.0%	-8.1%	-11.1%
Gross Margin	83.80%	83.73%	83.76%	84.39%	84.54%	84.74%	-0.59 ppt	-0.80 ppt	-0.98 ppt
Net Margin	38.68%	36.88%	35.28%	39.71%	38.41%	37.53%	-1.03 ppt	-1.52 ppt	-2.25 ppt

Source: Company data, Bloomberg, CMBIGM estimates

Figure 73: Peer comparison

			Price	Mkt cap	PE		PB		ROE	
Company	Ticker	Rating	(LC)	(LC \$mn)	FY23E	FY24E	FY23E	FY24E	FY23E	FY24E
H share										
GIANT BIOGENE HOLDING CO LTD	2367 HK	BUY	35.5	35,323	23.9	18.4	8.0	5.6	36.1	33.4
A share										
IMEIK TECHNOLOGY DEVELOPME-A (爱美客)	300896 CH	NA	326.0	70,533	37.2	26.9	9.9	7.8	27.4	29.8
PROYA COSMETICS CO LTD-A (珀莱雅)	603605 CH	BUY	101.5	40,278	35.5	28.0	9.1	7.1	26.3	26.3
BLOOMAGE BIOTECHNOLOGY COR-A (华熙生物)	688363 CH	NA	75.7	36,439	41.9	33.6	5.0	4.5	12.1	13.5
YUNNAN BOTANEE BIO-TECHNOL-A (贝泰妮)	300957 CH	HOLD	72.9	30,889	24.4	19.6	4.7	3.9	19.9	20.6
SHANXI JINBO BIO- PHARMACEU-A (锦波生物)	832982 CH	NA	270.0	18,383	69.1	43.4	20.8	14.4	31.1	33.7
HARBIN FUERJIA TECHNOLOGY -A (敷尔佳)	301371 CH	NA	42.5	17,003	20.2	18.4	3.0	2.6	15.0	14.1
Average					38.1	28.3	8.7	6.7	22.0	23.0

Source: Bloomberg, CMBIGM estimates, as of 24 Nov, 2023.

Investment Risks

- 1) Intense competition in the skin care market which may lead to price erosion or increase in selling expense ratio;
- 2) Failure of development of injectable products or other new blockbuster products.

Appendix: Company Profile

Figure 74: Major shareholders (as of 30 June 2023)

Shareholder	% of stake
Juzi Holding Co., Ltd	58.4
GBEBT Holding Limited	1.91
Healing Holding	0.09

Source: Company data, HKEx, CMBIGM

Figure 75: Management profile

Name	Age	Position
Yan Jianya	57	Chairman of the Board, CEO
Fan Daidi	57	CSO
Ye Juan	52	Executive Director, Senior vice president
Fang Juan	50	Executive Director, Senior vice president
Zhang Huijuan	37	Executive Director, CFO
Yan Yubo	28	Executive Director, Joint company secretary and the board secretary, Chief product officer
Duan Zhiguang	42	Senior vice president
Yan Yajuan	54	Senior vice president

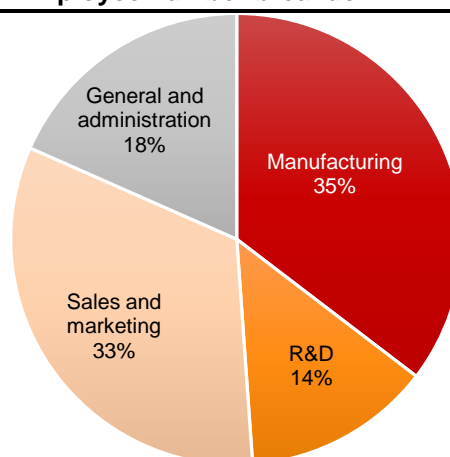
Source: Company data, CMBIGM

Figure 76: Employee structure

Function	# of staff	% of Total
Manufacturing	362	36.7
R&D	138	13.0
Sales and marketing	335	33.0
General and administration	188	17.3
Total	1,023	100.0

Source: Company Interim report (as of 30 June 2023), CMBIGM

Figure 77: Employee number breakdown



Source: Company Interim report (as of 30 June 2023), CMBIGM

Financial Summary

INCOME STATEMENT	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Revenue	1,190	1,552	2,364	3,375	4,358	5,590
Cost of goods sold	(183)	(198)	(369)	(547)	(709)	(908)
Gross profit	1,007	1,354	1,995	2,829	3,649	4,682
Selling expense	(158)	(346)	(706)	(1,215)	(1,656)	(2,236)
Admin expense	(33)	(72)	(111)	(88)	(113)	(145)
R&D expense	(13)	(25)	(44)	(68)	(87)	(112)
Other income	21	33	69	78	99	131
Other expense	(2)	(3)	(1)	(1)	(1)	(1)
Other gains/(losses)	149	32	(23)	0	0	0
Interest expense	0	0	(0)	(0)	(0)	(0)
Others	2	(0)	(1)	0	0	0
Pre-tax profit	973	973	1,178	1,535	1,890	2,319
Income tax	(147)	(145)	(176)	(230)	(284)	(348)
After tax profit	826	828	1,002	1,305	1,607	1,972
Minority interest	0	0	(0)	(0)	(0)	(0)
Net profit	826	828	1,002	1,305	1,607	1,972

BALANCE SHEET	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Current assets	2,284	7,441	2,538	3,699	5,235	7,196
Cash & equivalents	368	7,103	1,331	1,971	3,400	5,229
Account receivables	55	66	69	92	119	153
Inventories	65	89	184	195	252	323
Financial assets at FVTPL	1,588	156	866	1,366	1,366	1,366
Other current assets	209	28	87	75	97	124
Non-current assets	367	437	600	766	875	930
PP&E	240	274	491	660	771	828
Right-of-use assets	40	59	60	59	57	55
Deferred income tax	1	1	1	1	1	1
Intangibles	9	8	7	6	5	4
Other non-current assets	76	94	41	41	41	41
Total assets	2,651	7,878	3,138	4,465	6,110	8,126
Current liabilities	2,174	6,843	281	285	306	331
Account payables	32	24	55	52	68	87
Tax payable	144	71	75	75	75	75
Other current liabilities	1,997	6,732	138	138	138	138
Lease liabilities	0	0	1	1	1	1
Contract liabilities	1	16	12	18	24	31
Non-current liabilities	19	18	20	20	20	20
Deferred income	18	18	18	18	18	18
Other non-current liabilities	1	1	2	2	2	2
Total liabilities	2,193	6,861	301	305	326	352
Ordinary share capital	0	0	0	0	0	0
Preferred share capital	0	0	0	0	0	0
Treasury shares	0	(0)	(0)	(0)	(0)	(0)
reserves	458	1,017	2,833	4,157	5,782	7,771
Minority interest	0	0	4	3	3	2
Total shareholders equity	458	1,017	2,837	4,160	5,784	7,774
Total equity and liabilities	2,651	7,878	3,138	4,465	6,110	8,126

CASH FLOW	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec (RMB mn)						
Operating						
Profit before taxation	973	973	1,178	1,535	1,890	2,319
Depreciation & amortization	22	24	28	32	39	43
Tax paid	(121)	(218)	(173)	(230)	(284)	(348)
Change in working capital	125	(58)	(132)	(17)	(86)	(106)
Others	(166)	(29)	31	(12)	(33)	(66)
Net cash from operations	834	692	932	1,307	1,527	1,843
Investing						
Capital expenditure	(76)	(75)	(153)	(200)	(150)	(100)
Others	(446)	1,638	(706)	(468)	53	86
Net cash from investing	(521)	1,563	(859)	(668)	(97)	(14)
Financing						
Dividend paid	(2)	0	0	0	0	0
Proceeds from share issues	0	0	508	0	0	0
Others	(16)	4,475	(6,298)	0	0	0
Net cash from financing	(18)	4,476	(5,790)	0	0	0
Net change in cash						
Cash at the beginning of the year	72	368	7,103	1,331	1,971	3,400
Exchange difference	0	4	(55)	0	0	0
Cash at the end of the year	368	7,103	1,331	1,971	3,400	5,229
GROWTH	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Revenue	24.4%	30.4%	52.3%	42.8%	29.1%	28.3%
Gross profit	26.4%	34.5%	47.3%	41.8%	29.0%	28.3%
Net profit	49.6%	0.2%	21.0%	30.3%	23.1%	22.7%
PROFITABILITY	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Gross profit margin	84.6%	87.2%	84.4%	83.8%	83.7%	83.8%
Return on equity (ROE)	102.7%	112.3%	52.0%	37.3%	32.3%	29.1%
GEARING/LIQUIDITY/ACTIVITIES	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
Net debt to equity (x)	(0.8)	(7.0)	(0.5)	(0.5)	(0.6)	(0.7)
Current ratio (x)	1.1	1.1	9.0	13.0	17.1	21.7
VALUATION	2020A	2021A	2022A	2023E	2024E	2025E
YE 31 Dec						
P/E	39.0	37.9	22.6	24.6	19.9	16.3
P/B	70.3	30.9	8.0	7.7	5.5	4.1
EV/sales	26.6	16.1	13.0	8.9	6.6	4.8
EV/EBITDA	32.2	25.3	25.8	19.6	15.3	11.8
EV/EBIT	32.9	25.9	26.4	20.0	15.6	12.0
Dividend yield (%)	0.0	0.0	0.0	0.0	0.0	0.0

Source: Company data, CMBIGM estimates. Note: The calculation of net cash includes financial assets.

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