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China CDMO

Primer on peptide CDMOs Part 2-building a global supply demand model



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In Part 1 of our peptide CDMO primer series,we examined the industry's supply-side structure,competitive positioning and manufacturing economics.In this report,we turn to the demand side and future supply-demand balance. **Peptide demand growth is likely to be stronger and more sustainable than many investors appreciate,** driven not only by continued GLP-1 penetration,but also by **a shift toward higher-dosage therapies and the emergence of novel non-GLP-1 peptide drugs.** The next wave of peptide innovation is already visible in the pipeine,**where~90%of the assets are non-GLP-1, and potential multi-billion blockbusters emerge in autoimmune and oncology areas.**

Importantly,peptide demand growth is increasingly becoming a **dosage story as much as a patient-volume story.** We expect dual-and triple-agonists such as tirzepatide and retatrutide,together with oral GLP-1 products,to gain share from first-generation GLP-1 mono-agonists over the coming decade.Beyond incretins,recently approved **icotrokinra** and emerging assets such as **zolucatetide** illustrate how future peptide blockbusters may require substantially more API per patient than today's therapies,with annual dosages ranging from roughly 7**,000mg of oral GLP-1 peptides to over 70,000mg in chronic diseases such as psoriasis.** As a result,peptide manufacturing demand is likely to grow materially faster than underlying drug sales,even before considering future pipeline expansion.

Combining high-teens growth (CAGR)in treated patient numbers with low-teens increases in dosage intensity,we estimate **net GLP-1API demand in obesity expands from~18 metric tons in 2026 to~200 metric tons by 2035**,representing a**31%CAGR.** However, patent-levelAPI demand understates the true manufacturing opportunity.After adjusting for diabetes and other indications,process intermediates,biosimilars,clinical peptides and non-GLP-1 therapeutics,we estimate total global peptide manufacturing demand rises from~ **202 metric tons in 2026 to~1.4kt by 2033**,implying one of the fastest-growing manufacturing opportunities across the pharmaceutical supply chain.

The supply side is also expanding rapidly.We estimate global peptide capacity reaches approximately **500-600kL by 2026,**led by aggressive investment from WuXi AppTec, Asymchem,Corden,Bachem and PolyPeptide,alongside substantial internal manufacturing projects at Novo(covered by Justin Smith)and Lilly(covered by Courtney Breen).Our base case assumes Novo and Lilly maintain a broadly similar share of industry capacity as today, resulting in global peptide supply increasing from~**229metric tons in 2026 to~1.4kt by 2033,**largely tracking demand growth and supporting a balanced market**.The biggest risk to this outlook is more aggressive insourcing by product sponsors:** should Novo and Lilly continue expanding captive manufacturing and become larger than second-tier peptide CDMOs such as Bachem or PolyPeptide,industry utilization could come under pressure.In short,we see a broadly balanced long-term supply-demand outlook,but the degree of sponsor insourcing,rather than end-market demand growth,is likely to be the single most important determinant of whether peptide CDMOs ultimately face a period of balanced growth or moderate oversupply.

BERNSTEIN TICKER TABLE

Ticker	Rating	2 Sep 2026 Closing Price			TTM Rel. Perf.	Cur	Reported EPS			Reported P/E(x)		
		Cur	Price	Target			2025A	2026E	2027E	2025A	2026E	2027E
002821.CH(Asymchem)	O	CNY	164.60	198.00	18.3%	CNY	3.16	4.04	6.07	52.1	40.8	27.1
6821.HK(Asymchem)	O	HKD	128.10	157.00	1.3%	CNY	3.16	4.04	6.07	34.8	27.2	18.1
603259.CH(WuXiAppTec)	O	CNY	155.99	205.00	7.6%	CNY	6.72	7.88	9.57	23.2	19.8	16.3
2359.HK(WuXiAppTec)	O	HKD	193.70	247.00	33.9%	CNY	6.72	7.88	9.57	24.7	21.1	17.4
2269.HK(WuXi Biologics)	M	HKD	49.24	42.00	6.1%	CNY	1.22	1.54	1.85	40.4	32.0	26.6
ASIAX			1,978.20									

O-Outperform, M-Market-Perform, U-Underperform, NR-Not Rated, Cs-Coverage Suspended

Source:Bloomberg,Bernstein estimates and analysis.

INVESTMENT IMPLICATIONS

We rate Wuxi AppTec and Asymchem Outperform;Wuxi Biologics Market-Perform.

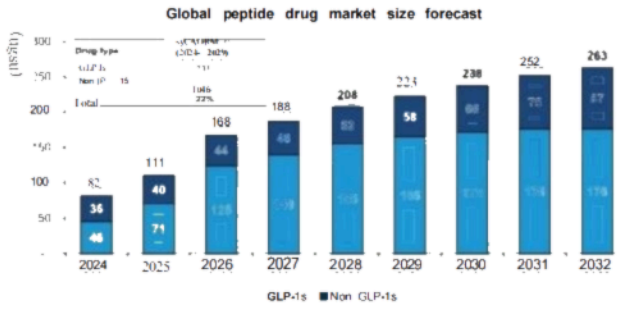
DETAILS

DEMAND GROWTH BEYOND CURRENT GLP-1 WAVE: PRODUCT DIVERSIFICATION AND DOSAGE INTENSITY
GLP-1s:the largest near-term contributor to peptide demand. We expect the GLP-1 market to grow at a **29%CAGR until** 2029,outpacing non-GLP-1 peptides at approximately 10%CAGR;it will sill be the largest source of incremental peptide manufacturing demand over the remainder of the decade(Exhibit 1).

The next wave of growth is visible in the pipeline. The broader peptide pipeline has expanded rapidly,growing from~400 programs in 2020 to~2000 in2025(Exhibit 2).Importantly,most of this expansion is occurring **outside the GLP-1 space:** while GLP-1 assets account for 58%of NDA-stage programs,they represent only 8-11%of preclinical through Phase 2 candidates,indicating that early-stage innovation is increasingly concentrated in non-metabolic disease areas(Exhibit 3).These **non-GLP-1 peptides are the next major growth opportunity beyond 2030**,as the current GLP-1 wave matures and a broader set of therapeutics enters late-stage development and commercialization.

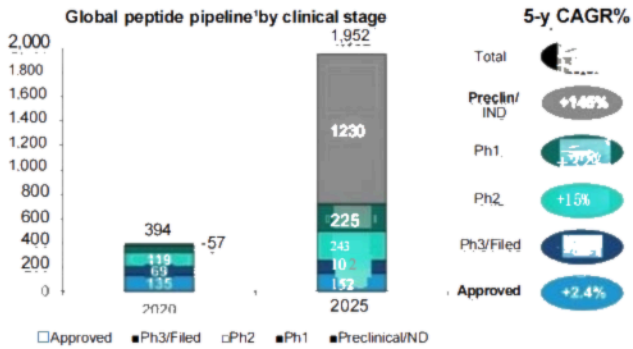
Dosage intensity will drive demand growth beyond product diversification.Beyond a growing number of peptide blockbusters,there is also an expected increase in peptide consumption per patient.Oral GLP-1 therapies require substantiall higher amounts of active peptide than injectable products,while a number of emerging non-GLP-1 peptides are being developed for chronic diseases requiring sustained,high-dose therapy(Exhibit 4).**Recently approved icotrokinra(formerly JNJ-2113)and zolucatetide,a promising Phase 1/2 candidate,are both associated with multi-billion sales expectations and annual dosages ranging from roughly 7,000mg to more than 70,000mg per patient,particularly in chronic diseases such as psoriasis(Exhibit 5-Exhibit 6).**Future peptide manufacturing demand will be driven not only by the number of patients treated,but also by a shift toward higher-dosage therapies,creating a meaningful uplit to long-term peptide API requirements beyond what drug sales growth alone would suggest.

EXHIBIT 1: **GLP-1 is projected to be the growth driver for global peptide drug market**



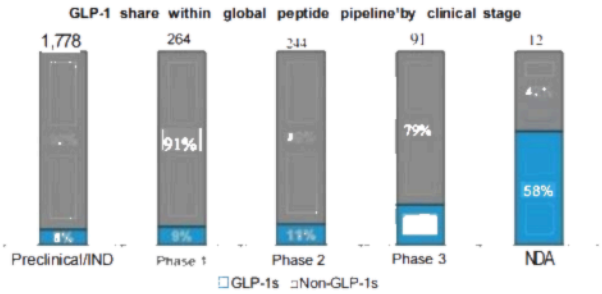
Source:Bloomberg,Bernstein estimates and analysis

EXHIBIT 2:**Rapid innovative peptide pipeline growth across all stages drives a 38%5-year CAGR,with the largest contributor seen in early development**



Note:1. **Include active innovative pipeline only;**Pipeline by year is filtered based on the first disclosure date,using PharmCube's First Disclosure filter methodology
Source:Pharmcube,Bernstein analysis

EXHIBIT 3: **GLP-1s remain a small share of global innovative peptide pipeline in early stages while capture a higher share in late stage**



Note:1.Include active innovative pipeline only;Data cutoff date:Aug.31st,2026
Source:Pharmcube,Bernstein analysis

EXHIBIT 4: **Leading peptides:product characteristics and annual peptide consumption per patient**

Novel peptide drugs
High dose product

Peptide type	TA	Molecule name	Peptide length	Brand name	Formulation	Target & modality	Major indication	Annual dosage per patient	Cons peak sales ($Bn)
GLP-1s	Metabolism	Semaglutide	31 aa	Wegovy/ Ozempic	Injection	GLP-1R	Obesity &T2D	9.4mg/40mg	13/19
				Rybelsus	oral	GLP-1R		2,400mg	3
				Wegovy pill	oral	GLP-1R		7,310mg	12
		Tirzepatide	39 aa	Zepbound/ Mounjoro	Injection	GLP-1R/GIPR		500mg/190mg	28/52
		Retatrutide	39 aa	Not marketed (Ph3)	Injection	GLP-1R/GCGR /GIPR		468mg	16
Non-GLP-1s	Oncology	Leuprolide	9 aa	Lupron	Injection	GnRHR	Prostate cancer	90mg	2
		Goserelin	10 aa	Zoladex	Injection	GnRHR	Prostate cancer	43-47mg	
		Zolucatetide i (FOG-001).	15aa (cyclic peptide)	Not marketed (Ph1/2)	Injection	β-cat×TCF4	Solid tumor	4,000-12,000mg (exact dosing TBD)	Multi Bn blockbuster potential
	Non-oncology	Abaloparatide	34 aa	Tymlos	Injection	PTHrP analog	Osteoporosis	29mg	1
		Octreotide	8 aa	Sandostatin	Injection	SSTR agonist	GEP-NEN; acromegaly	164 mg	2
		Lanreotide	8 aa	Somatuline Depot	Injection	Somatostatin analog	GEP-NEN; acromegaly.	1,170-1,560mg	2
		Icotrokinra	13 aa	ICOTYDE	oral	IL-23R	Psoriasis	73,000mg	13

Source:Company disclosures,Bloomberg,Bernstein analysis

EXHIBIT 5: **2025 molecule of the year-Icotrokinra**



icotrokinra
(JNJ-2113,PN-235)
IL- 23R
oral,macrocyclic peptide IL-23R antagonist
Ph 3 for plaque psoriasis
discovery undisclosed
PROTAGONIST Tx,NEWARK,CA/
JOHNSON&JOHNSON,SPRING HOUSE,PA

Source:DrugHunter

EXHIBIT 6:**2025 molecule of the year-Zolucatetide**



zolucatetide
(FOG-001)
β -catenin/TCF4
IV,stapled-peptide
β-catenin/TCF4PPI inhibitor

Ph.1/2 for advanced or
metastatic solid tumors
from peptide phage display library screen

PARABILIS MEDICINES,CAMBRIDGE,MA

Source:DrugHunter

SIZING THE PEPTIDE DEMAND OPPORTUNITY

Net API demand from weight-loss therapies should grow at >30%CAGR

We expect **dual-agonists(GLP-1/GIP)**such as tirzepatide,**triple-agonists(GLP-1/GIP/GCGR)** such as retatrutide,and **oral GLP-1**s to steadily gain share from first-generation GLP-1 mono-agonists over the next decade(Exhibit 7).By 2033, we estimate mono-agonists decline from roughly **50%of the market today to below 15%,**while dual-and triple-agonists collectively account for over 60%of total GLP-1 treated obesity market,increasing overall peptide consumption per patient as more potent and higher-dose therapies become mainstream.

Combining our forecast of **high-teens growth (CAGR)in treated patient numbers globally** with a l**ow-teens increase in average peptide dosage per patient**,we estimate net API demand from the obesity market will expand from approximately **18 metric tons in 2026 to~200 metric tons by 2033,a31%CAGR(Exhibit 8).**Therefore,peptide API demand is expected to grow faster than the underlying obesity drug market itself.

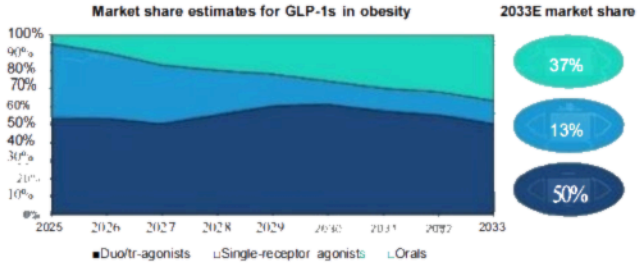
Translating patient-level demand from weight loss into total peptide manufacturing demand(~10X difference!)

The conversion from GLP-1 patient demand for the weight loss market to total peptide manufacturing demand requires several adjustments(Exhibit 9):

- **Total GLP-1 patient demand:**We apply a **1.6xmultiplier** to account for GLP-1 demand from diabetes,cardiovascular disease,MASH and other metabolic indications.
- **Manufacturing intensity:**Net APIdemand understates actual manufacturing requirements.We assume a **2xmultiplier** to account for peptide intermediates(e.g.tirzepatide's 4 fragment peptide intermediates),synthesis losses and purification yields,followed by an additional **1.5x supply-chain factor to** incorporate fill-finish loss,inventory build,and safety stock requirements.
- **Adding other market segments:** Finally,we add demand from non-GLP-1 branded peptide therapeutics,biosimilar/ generic peptides,clinical-stage peptide programs and cosmetic peptides.

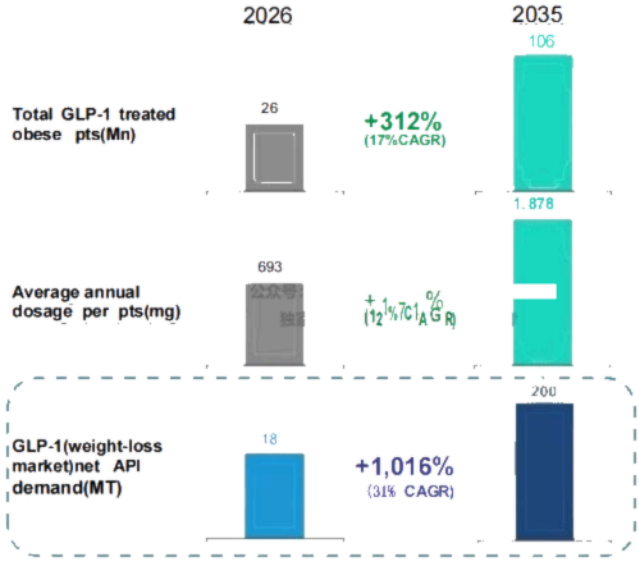
Putting these components together,our 2026 GLP-1 weight-loss API demand estimate of 18metric tons expands to approximately **202metric tons of total peptide manufacturing demand,**highlighting how patient-level API consumption materially understates the true manufacturing opportunity for peptide CDMOs.Looking ahead,we estimate total global peptide demand increase **to~1.4kt by 2033(Exhibit 10),** driven by continued GLP-1 adoption,emergence of next-generation incretins and growth in non-GLP-1 peptide therapeutics.

EXHIBIT 7:**We estimate dual/tri-agonists to remain the leading GLP-1 class in obesity,while oral therapies gain meaningful share from 2025 to 2033**



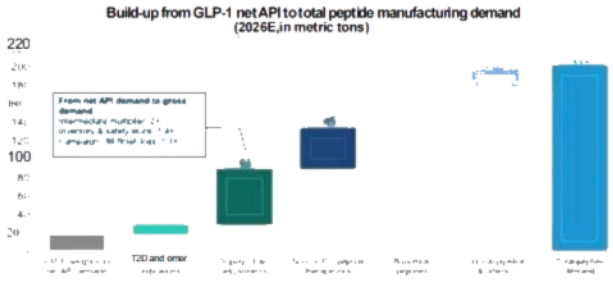
Source:Company disclosures,Bloomberg,Bernstein analysis and estimates

EXHIBIT 8: **Future net GLP-1API manufacturing demand willbe driven not only by the number of patients treated,but also by a shift toward higher-dosage therapies**



Source:Bernstein analysis and estimates

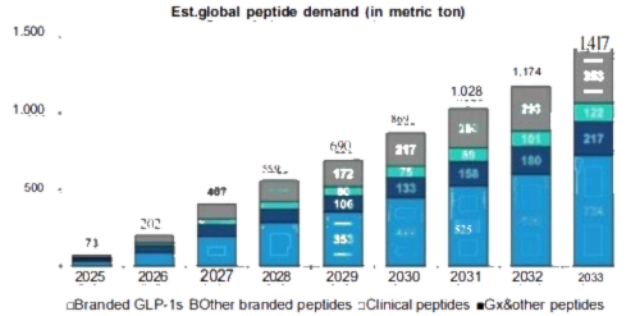
EXHIBIT 9: **Supply chain adjustments(61 MT)and non-GLP-1/biosimilars expand total peptide demand to 202 MT in 2026 from 18 MT(net GLP-1API demand)**



Note:*Other includes non therapeutic peptides such as cosmetic &medical aesthetic peptides

Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 10: **Rising GLP-1 adoption is expected to fuel unprecedented growth in global peptide demand through 2033**



Note:*Other peptides represent non-therapeutic peptides including cosmetic and medica aesthetic peptides

Source:Company disclosures,Bernstein analysis and estimates

SUPPLY EXPANSION BEYOND CURRENT PEPTIDE **CAPACITY:CDMO SCALE-UP AND CAPTIVE MANUFACTRUING**

The global peptide manufacturing landscape is entering a phase of rapid capacity expansion,with major Chinese and global CDMOs,as well as pharma companies'captive manufacturing network,allinvesting ahead of growing peptide demand. Chinese players are leading the build-out,with **Wuxi AppTec the capacity leader at>100kLof SPPS capacity and planned to>130kLby 2026** through new TIDES production sites.Asymchem is also expanding aggressively,targeting 69kLof SPPS by 2026 from 45kL with CapEx expecting to surge 2×in 2026.Global CDMOs are also steeping up investment,with Corden investing EURO1 Bn in its main peptide production sites and targeting>42kLby 2028,while Bachem and Polypeptide also **announced heavy** expansion plans across their US and Europe peptide production sites.Meanwhile,Indian player Divis Lab is also making strides in peptide capacity in SPPS and LPPS,positioning India as an increasingly important source of global peptide supply.Beyond CDMOs,**pharma companies are also committing to captive capacity**.EliLilly has declared its in-house peptide manufacturing expansion plan,including a$9 **Bn Indiana site for API production of tirzepatide and a$6 Bn Alamaba facility focused on small molecule and peptide synthetics** Novo is similarly scaling its internal API network,

stating it is investing**>$12 Bn in API production capacity**.(Exhibit 11).

Aggregating disclosed and inferred capacities across CDMOs and captive manufacturers,we estimate global peptide synthesis capacity could reach approximately **500-600kLby 2026,**materially higher than only a few years ago.Based on disclosed production data from leading manufacturers,we estimate annual productivity ranges from roughly **0.3metric tons to 0.9 metric tons of peptide output per 1kL of installed capacity(Exhibit 12)**,depending on peptide complexity,batch size, process efficiency and facility maturity.Larger-scale manufacturers supplying commercial GLP-1 products generally achieve significantly higher throughput than facilities focused on clinical-stage projects or more complex peptide modalities.Using company-specific productivity assumptions,we estimate global installed peptide manufacturing capacity of approximately **383 metric tons in 2026** on a nameplate basis.To convert nameplate capacity to effective capacity,the biggest factor is utilization rate (assumed at70%on average)followed by operationalefficiency (cleaning,batch failure)and GMP availability time lag.We estimate effective peptide manufacturing capacity at approximately **229 metric tons in 2026**(Exhibit 13).

(Note:EliLill is covered by Courtney Breen,Novo Nordisk is covered by Justin Smith,Sinopep,Space Peptides,Corden,Bachem, Polypeptide,and Divi's Lab are not covered)

EXHIBIT 11: **Leading peptide participants:capacity and expansion overview**

Chinese players

Global players

Company	Company type	Major peptide manufacturing sites	(SPPS)	Announced expansion	&timing	(FY*26 guidance)
Wuxi AppTec	Diversified CDMO	CN Taixing,Changzhou,Wuxi, CH Conver	>100 kL (>58 MT/year)	New peptide manufacturing sites under construction(USA&Ir); Conver site expansion ongoing (double the capacity)	>130kL(2026)	$859 Mn (S1,125 Mn-1,255 Mn)
ASYMCHEM	Diversified CDMO	CN Tianjin,Dunhua	8kL (22.5 MT/year)	Continued expansion on SPPS manufacturing capacity	69kL(2026)	$198 Mn (S260 Mn-320 Mn)
SINOPEP 诺泰生物	Peptide CDMO	CN Lianyungang	>5kL (>30 MT/year)	Workshop #01 now Large-scale peptide manufacturing workshop planned	75kL(unspecified)	$205 Mn
Space Peptides	Peptide CDMO	CN Taizhou	1.5 MT/year	Investing hundreds of millions S in production building #2, #3, and #4	5MT/year (2028), 30 kL SPPS w/>30 MT/ year (within 5 years)	N/A(private)
Corden Pharma	Peptide CDMO	us Colorado,DE Frankfurt, CH Wuttenz,Liestal	c.17 kL	EUR1 Bn(S09 Mn to Colorado and 500 Mn to Switzerland)peptide expansion	>12kL(2028)	Na(private)
BACHEM	Peptide CDMO	Us Vista(CA),Torrance(CA), CH Bubendorf,Vionaz,Sissiertold	Bubendorf:>15kg/batch, Vista:hundreds kg/year, Torrance:tens kg/year	Expand Large-scale production/ building 8 in Bubendorf,new Large-scale facilities in Sissiertold	Bubendorf:several tons/ year,Vista:>1MT (2026e)	$398 Mn (vsA1 Mn-490 Mn)
PolyPeptide	Peptide CDMO	US Torrance(CA),San Diego(CA), DE Braine-l'Alleud, FR Strasbourg,SE Malmo	Malmo:6kL SPPS, Strasbourg:7 SPPS units	Malmo:modular expansion on SPPS;Ambermath:transform into multi-purpose facility	Malmo:SPPS capacity x2, Ambermath:production capacity x3	$123Mn (c.S140 Mn)
Divi's Laboratories Limited	Diversified CDMO	IN Telangana, Andhra Pradesh[4]	Not disclosed	Several additional 5,000 L SPPS reactors planned	Not disclosed	$298 Mn (More than $210 Mn)
	Pharma MNC	US Lebanon (IN),Huntsville (AL), Kinsale(IE)	Not disclosed	>S1 Bn Lebanon expansion,>$800 Mn Kinsale expansion,>$56 Bn Huntsville expansion[5]	Not disclosed	$7.81Mn
Novo Nordisk	Pharma MNC	DK Kalundborg,Hillerod,Bagsvaerd	Not disclosed	30KBBD Bn($12.1 Bn)Global expansion,Kalundborg new 170k m²facility[6]	Not disclosed	$9,622 Mn

Note:1.The company does not publicly identify a separate "peptide site".Instead,peptide manufacturing is supported through its overall manufacturing network of three cGMPproduction facilities in India;2.General capacity expansions,e.g.,across intermediates/API/fill-finish etc;3.FY'25 CapEx includes only purchase of PPE,except for Asymchem and Sinopep;4.FY'26 guided CapExincludes purchase of intangibles and others

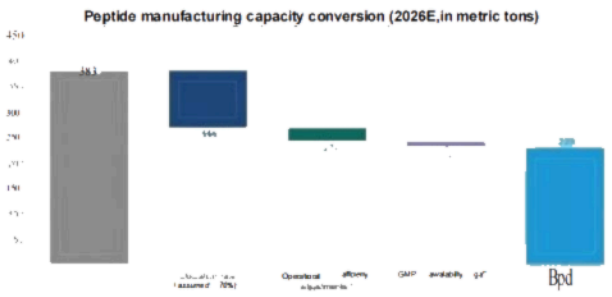
Source:Company disclosures,Bernstein analysis

EXHIBIT 12: **Global peptide capacity conversion:from kL to MT**

Company type	Example companies	Est. maximum tons per 1kL capacity%	Est. global SPPS (kL, 2026)	Est global max peptide capacity (MT, 2026)
Large scale, mature	Wuxi Apptec	80-90%1	~600	~380
Mature	Asymchem, Gyrden, Bachem, Polypeptide, Eli Lily, Novo Nordisk	60-70%2		
Pre-mature	snBiopharma, Sinopep	40-50%		

Note:1.Calculated based on 100kL SPPS capacity and 58 MT actual peptide output in 2025,assuming a 70%utiization rate;2.Calculated based on 45kL SPPS capacity and **22.5 MT** max.peptide output in 2025
Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 13: **Effective peptide manufacturing capacity is reduced by~40%from nameplate capacity due to real-world operating constraints.**



Note:*Operational efficiency including batch failure,cleaning,changeover,and etc.;GMP=Good Manufacturing Practice.Approval timeline assumed at 12-18 months following facility qualification and regulatory submission.
Source:Company disclosures,Bernstein analysis and estimates

PROJECTING SUPPLY SCENARIOSAND SUPPLY/DEMAND BALANCE-INSOURCING RATE IS THE BIG SWING FACTOR

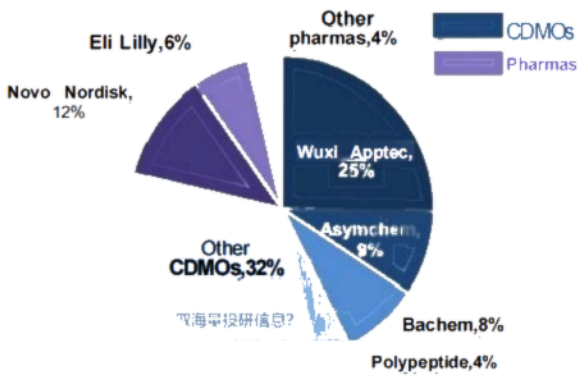
The most important swing factor for future peptide CDMO utilization is not demand growth,but the degree of manufacturing insourcing by Novo and Lilly. While both companies are investing aggressively in peptide production,the ultimate allocation of future volume between captive faciities and external CDMOs will determine whether the industry remains balanced or moves into oversupply.

- **Our base case assumes Novo and Lilly maintain a broadly similar share of global peptide capacity as today**,with incremental demand continuing to be shared between captive manufacturing and external CDMOs.Under this scenario, globaleffective peptide supply increases from~**229 metric tons in 2026 to~1.4kt by 2033,**roughly tracking our demand forecast of~**1.4kt by 2033,**resulting in a largely balanced market with healthy utilization levels across leading suppliers (Exhibit 14-Exhibit 15)

- **Our oversupply scenario assumes significantly more aggressive captive expansion by Novo and Lilly,** with both companies continuing to build internal capabilities beyond currently disclosed projects.In this scenario,captive capacity grows to a scale exceeding that of second-tier peptide specialists such as **Bachem and PolyPeptide,**reducing the amount of commercial volume available to outsourced manufacturers and pressuring industry utilization(Exhibit 16-Exhibit 17).

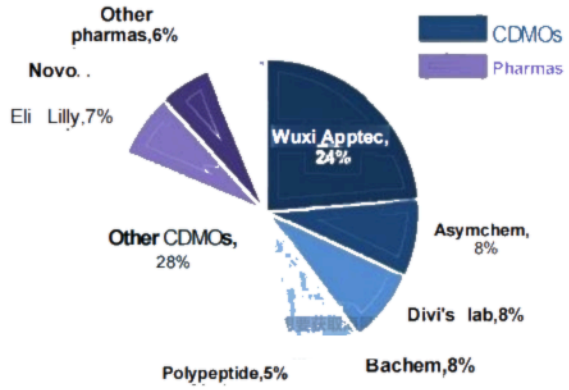
The peptide industry is increasingly bifurcated between a handful of large product sponsors and a limited group of scaled manufacturers;therefore,decisions by Novo and Lilly on what to produce internally versus externally are likely to be the primary determinant of whether peptide CDMOs face a period of balanced growth or moderate oversupply in the next decade.

EXHIBIT 14: **Est.global peptide manufacturing capacity distribution in 2026**



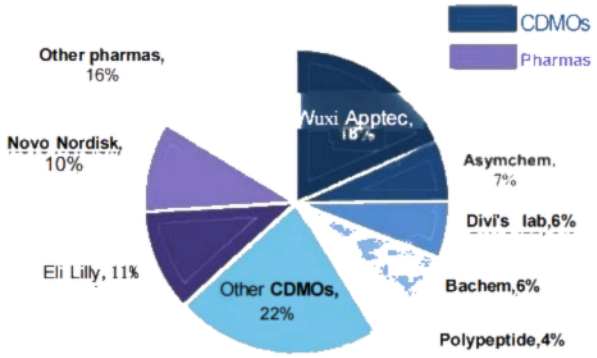
Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 15: **Est.global peptide manufacturing capacity distribution in 2033(planned captive expansion case)**



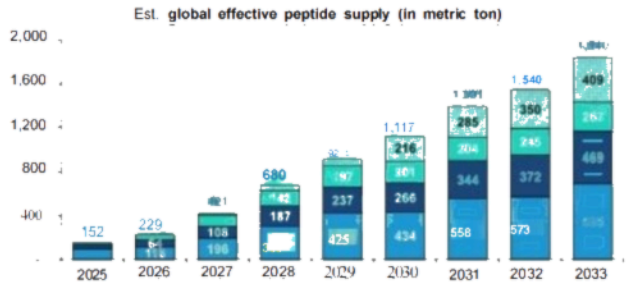
Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 16:**Est.global peptide manufacturing capacity distribution in 2033(aggressive captive expansion case)**



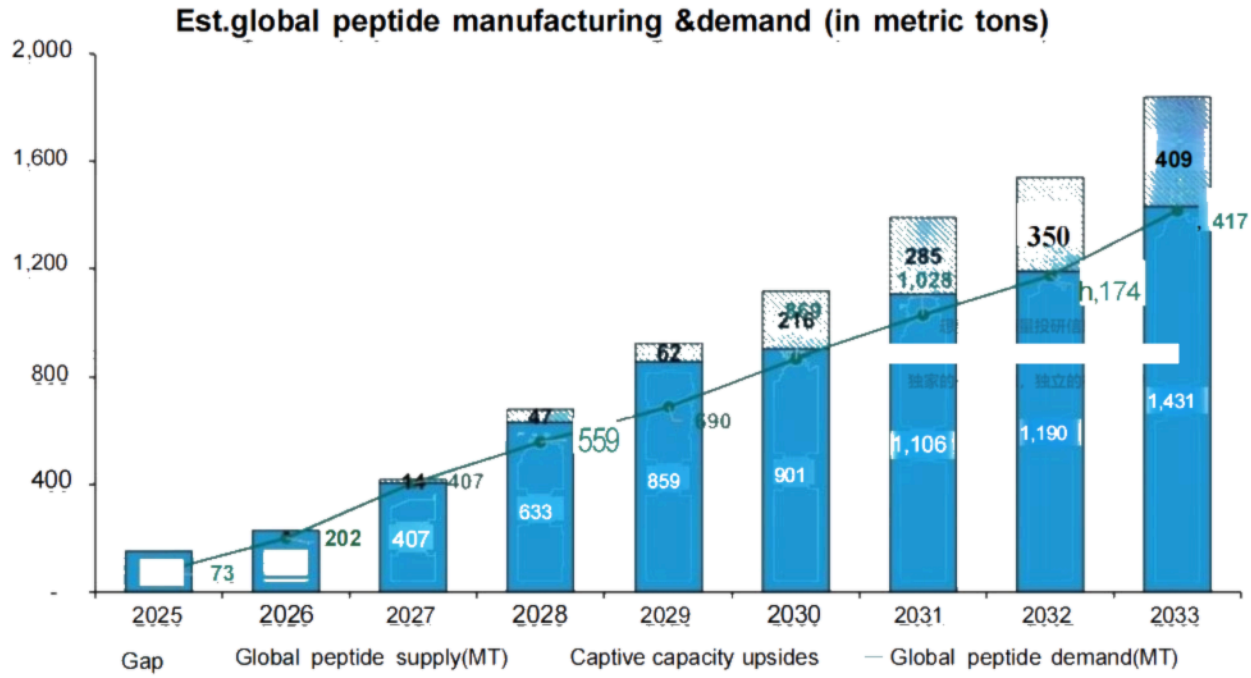
Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 17:**Global effective peptide supply is projected to increase 9-fold by 2033,led by significant investments across China and global CDMOs.**



Source:Company disclosures,Bernstein analysis and estimates

EXHIBIT 18:**The peptide market is expected to remain relatively balanced in supply and demand,with the biggest upside in captive capacity from pharmas**



Source:Company disclosures,Bernstein analysis and estimates