

Peptide Synthesis - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

Peptide Synthesis Market Analysis

The peptide synthesis market size reached USD 0.95 billion in 2025 and is projected to climb to USD 1.29 billion by 2030, reflecting a 6.35% CAGR. Strong demand for peptide-based drugs, their superior target specificity, and lower systemic toxicity compared with small molecules are the principal growth engines. Microwave-assisted solid-phase peptide synthesis (SPPS) has compressed reaction times from hours to minutes while lifting crude purities above 90%, sharply improving manufacturing productivity. Contract development and manufacturing organizations (CDMOs) are investing heavily-CordenPharma alone has committed EUR900 million to expand GLP-1 production capacity-to satisfy surging orders for metabolic and oncology peptides. Regulatory agencies continue to foster innovation, evidenced by the U.S. FDA's approval of four novel peptide therapeutics in 2024 and its maintenance of fast-track pathways for complex peptides.

Global Peptide Synthesis Market Trends and Insights

Increasing Acceptance of Peptide-Based Therapeutics

Regulators have endorsed peptides with over 110 approvals globally as of 2024, validating their clinical value and propelling the peptide synthesis market. The U.S. FDA cleared four new peptide drugs in 2024-such as imetelstat and olezarsen-signaling confidence in the modality. Blockbuster GLP-1 receptor agonists, including semaglutide and tirzepatide, have sparked more than USD 1 billion in CDMO capacity additions across Europe and North America. Oncology is following suit; ¹⁷⁷Lu-DOTATATE

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exemplifies how peptide-drug conjugates deliver targeted radiotherapeutics with fewer off-target effects. Fast-track designations and the EMA's synthetic peptide guidance shorten approval cycles, stimulating R&D pipelines. Collectively, these factors add an estimated +2.1% to the forecast CAGR.

Growing Prevalence of Chronic Diseases Requiring Targeted Therapies

Metabolic disorders, cancer, and neurodegenerative diseases are climbing worldwide, raising demand for precision drugs where peptides excel. The global peptide therapeutics market climbed from USD 33.3 billion in 2021 to USD 39.3 billion in 2024 and is on track to hit USD 68.7 billion by 2030, mirroring chronic-disease incidence. More than 150 investigational peptides now address previously "undruggable" proteins, aided by chemistries such as cyclization and PEGylation that extend half-life and allow once-weekly dosing. An aging global population amplifies the need because reduced toxicity profiles suit older, polymorbid patients. Regulatory bodies are publishing peptide-specific quality frameworks, lowering barriers for chronic-disease indications. The combined effect contributes an estimated +1.8% to CAGR.

High Production Costs and Scalability Challenges

SPPS generates roughly 13,000 kg of waste per kilogram of peptide, compared with 168-308 kg for small-molecule APIs, inflating solvent disposal bills and environmental footprints. Raw materials account for 60-70% of cost of goods, as specialized amino acids and coupling reagents remain expensive and prone to supply disruptions. Purification can triple overall production time; preparative HPLC cycles consume large solvent volumes, though emerging multicolumn gradient technologies promise 50% solvent cuts. Scale-up headaches intensify beyond 30 amino acids, where incomplete couplings and deletion sequences surge. Capital expenditures for dedicated kilo labs often exceed USD 50 million, stretching break-even timelines for smaller firms. Together these issues exert a -1.2% drag on CAGR.

Other drivers and restraints analyzed in the detailed report include:

Advancements in Solid-Phase and Automated Synthesis Technologies / Expansion of Contract Development and Manufacturing Services / Stringent Regulatory and Quality Requirements /

For complete list of drivers and restraints, kindly check the Table Of Contents.

Segment Analysis

Solid-phase synthesis retained 72.34% of the peptide synthesis market share in 2024 due to mature process chemistry and broad reagent availability. The peptide synthesis market size for SPPS is projected to advance at 5.8% CAGR through 2030 as manufacturers retrofit older instruments with microwave reactors that lift coupling efficiencies and slash solvent volumes. Automated SPPS lines now achieve 95% stepwise yields for sequences up to 200 residues, enabling kilogram-scale batches under cGMP. Liquid-phase synthesis remains viable for short peptides that demand low cost of goods, yet its share is stable rather than expanding. Continuous-flow adaptations of SPPS are entering commercial trials, promising even higher volumetric productivity and solvent recovery rates approaching 80%.

Cell-free and enzymatic synthesis, though starting from a smaller base, is the fastest-growing technique at an 8.54% CAGR as green-chemistry mandates gain traction. Protein-engineering firms have scaled cell-free platforms that bypass fermentation, trimming lead times by 30% and shrinking water consumption by 70%. Enzymatic ligation offers near-perfect stereoselectivity under ambient conditions, yielding fewer byproducts and easing downstream purification. Hybrid chemo-enzymatic routes have produced stable lasso peptides with improved oral bioavailability, stimulating pharma interest in novel scaffolds. ISO 14001 credentials are becoming contract prerequisites, positioning eco-friendly methods to capture new outsourcing contracts. The

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convergence of digital design, flow technology, and biocatalysis is expected to erode SPPS dominance beyond 2030.

The Peptide Synthesis Market Report is Segmented by Technique (Solid-Phase, Liquid-Phase, and More), Product Type (Equipment, Reagents & Consumables, and Services), End User (Pharmaceutical & Biotechnology Companies, Peptide CDMOs & CROs, Academic & Research Institutes, and More), and Geography (North America, Europe, Asia-Pacific, Middle East & Africa, South America). The Market Forecasts are Provided in Terms of Value (USD).

Geography Analysis

North America accounted for 40.56% of the peptide synthesis market in 2024, anchored by the United States' deep pharmaceutical ecosystem and a regulatory stance that favors expedited review of complex biologics. More than USD 200 billion in drug R&D spending flowed through the region in 2025, with a growing share earmarked for peptide modalities. The FDA's guidance on synthetic peptides has shortened review queues, encouraging small innovators to file first-in-class applications. Capacity expansions such as CordenPharma's Colorado upgrade and Merck's USD 493 million oral-peptide licensing deal with Cyprumed spotlight strategic bets on formulation innovation. Federal tax credits for advanced manufacturing further bolster domestic capital spending.

Asia-Pacific is the fastest-growing geography, charting a 7.65% CAGR through 2030 on the back of cost-competitive CDMOs, expanding talent pools, and supportive industrial policies. China's peptide CDMO share is projected to rise from 5% in 2020 to 9% by 2025 as firms such as BioDuro and Asymchem scale kilogram capacities and file increasing numbers of FDA drug master files. South Korea is deploying USD 260 million for a new SK pharmteco facility slated to open in 2026, underpinning regional surge in GLP-1 and oncology capacity. Japan maintains a leadership position in discovery platforms, exemplified by PeptiDream's expanded Novartis pact. Rising domestic incidence of obesity and cancer also fuels regional demand for metabolic and radiolabeled peptides.

Europe maintains robust volume behind Switzerland, Germany, and the United Kingdom, benefiting from the EMA's detailed peptide guidance that harmonizes quality expectations. Switzerland alone attracted CHF 2.7 billion of biotech investment in 2024, with Bachem and CordenPharma both announcing large-scale greenfield projects near Basel. The region relies on strong university-industry linkages that feed early-stage innovation into CDMO pipelines. EU Green Deal policies accelerate adoption of enzymatic synthesis and solvent-recovery technologies, providing grants for low-emission equipment upgrades. Supply-chain resilience initiatives encourage dual sourcing across EU and North American plants, smoothing cross-border peptide flows despite variant GMP codes.

List of Companies Covered in this Report:

AAPPTec / AnaSpec / Bachem Holding / CEM / CSBio / Biosynth (Vivitide) / Thermo Fisher Scientific / Genscript / JPT Peptide Technologies / ProteoGenix / Novozymes A/S (Novonosis) / Polypeptide Group / Merck / AmbioPharm / Peptide 2.0 / Lonza Group / Almac Sciences / Pepsan / Bionova Scientific / IRIS Biotech / Senn Chemicals /

Additional Benefits:

 The market estimate (ME) sheet in Excel format /
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