

Volume 10 / Issue 2 • ISSN 1538-8786

# BioProcessing

## JOURNAL

*Trends & Developments in BioProcess Technology*

*A Production of ISBioTech*



# Strategies for Outsourcing Peptide Contract Manufacturing

By GARY HU

**M**ore and more companies are encountering added pressures to reduce costs, risks, and time-to-market while maximizing efficiencies. They have converged on a common strategy of outsourcing non-core functions.

A trend is developing where companies as small as start-up biotechs to the major pharmaceutical and biopharmaceutical producers are outsourcing their peptide production needs. Whether a company needs research or GMP-grade materials, they are realizing enhanced cost-effectiveness and efficiency by doing so.

## Why Outsource?

Outsourcing makes sense because it allows companies to benefit from a service provider's experience and avoid making costly investments in equipment and training. Peptide manufacturing can be complicated as tiny variations in processes, reagents, and reaction conditions can produce large changes in the end-product's quality, stability, and consistency—compromising the ability to meet regulatory standards. Maintaining consistent production protocols requires a level of expertise and equipment which in-house manufacturers may lack.

Peptide engineering requires extremely specialized equipment and components with highly skilled and knowledgeable personnel. Organizations with limited in-house capacities, proficiency, or necessary equipment should consider outsourcing their peptide manufacturing needs to a specialized contract manufacturing organization (CMO). Many offer a range of services from process development all the way through commercial scale-up.

## Reduce Costs and Risks

Outsourcing is an attractive alternative to in-house peptide production by eliminating the need for expensive investments in equipment thus shifting “fixed costs” to “variable costs” while reducing investor risks. This holds true particularly for companies with early-stage projects that face an uncertain outcome. Further evidencing the financial benefits associated with outsourcing, CMOs purchase materials and consumables in bulk so customers benefit from the economics of scale.

Additionally, outsourcing saves companies time and money they would otherwise spend tracking down needed materials and then authenticating, analyzing, and validating them. These latter functions have become particularly burdensome since the requirements for supplier audits and regulatory documentation have increased with more supply chain scrutiny. Companies can improve the security of their existing supply chains by turning to CMOs who often have strong relationships with reliable and qualified suppliers.

## Benefit From Expertise

Peptide production is complex. CMOs that specialize in this must have personnel qualified in all approaches including solid- and solution-phase peptide synthesis, purification, and lyophilization so they can choose the best methodology for the customer's specific product. In addition, an experienced CMO staff can offer custom modifications such as organic conjugations and peptide PEGylation if the customer desires them.

The CMO's expertise translates into higher efficiency and lower production times. It also allows companies to focus on their own core competencies—bringing innovative drugs to market faster.

---

## ABOUT THE AUTHOR

**Gary Hu** is vice president of sales and marketing for American Peptide Company, Sunnyvale, California USA.  
Email: [gary@americanpeptide.com](mailto:gary@americanpeptide.com); Web: [www.americanpeptide.com](http://www.americanpeptide.com); Phone: 408-733-7604; Fax: 408-733-7603.

## Regulatory Support

Stringent regulatory demands are increasing for pharmaceutical manufacturers. Expert peptide CMOs have the workforce specifically dedicated to keeping up-to-date on regulatory changes that pertain to peptide manufacturing, both domestically and internationally. Such personnel ensure that manufacturing facilities remain compliant with current GMP (cGMP) guidelines. CMOs also often maintain proactive relationships with regulators and can better guide customers through the complex and often-changing landscape.

## Project Management

Because peptide CMOs focus solely on one thing, they assign project management liaisons who support customers from product development through the final implementation of full commercial production.

Project managers also work with the CMO's internal teams to provide customer guidance and support on a full range of services including:

- 1) process development;
- 2) scale-up production;
- 3) analytical and process validation;
- 4) stability studies;
- 5) chemistry manufacturing and controls (CMC);
- 6) drug master files (DMF); and
- 7) regulatory support.

## How to Choose a CMO

While there are several benefits to the outsourcing of peptide production, these benefits are contingent upon finding the right outsourcing partner. Companies are potentially at-risk in handing off important manufacturing projects since they are largely at the mercy of an outside contractor. Therefore, it is necessary for companies to perform in-depth research to reassure themselves of the suitability and reliability of a CMO partner before committing to a business agreement.

## Quality of Equipment, Facility, and Production Capabilities

In partnering with a CMO, companies should ensure that the vendor has the appropriate manufacturing and analytical equipment for their project and that the equipment is well-maintained.

The chosen CMO must have adequate capacity to handle the project with enough capacity for downstream projections. The customer must ensure that the CMO's production process will produce high-quality products

with good yields. Inadequacies in the facility will create inevitable delays and may compromise the product's integrity. CMOs should be able to provide a client with good analytical methods for the product. Each product should come with a certificate of analysis (COA) with required QC results.

## Quality Procedures

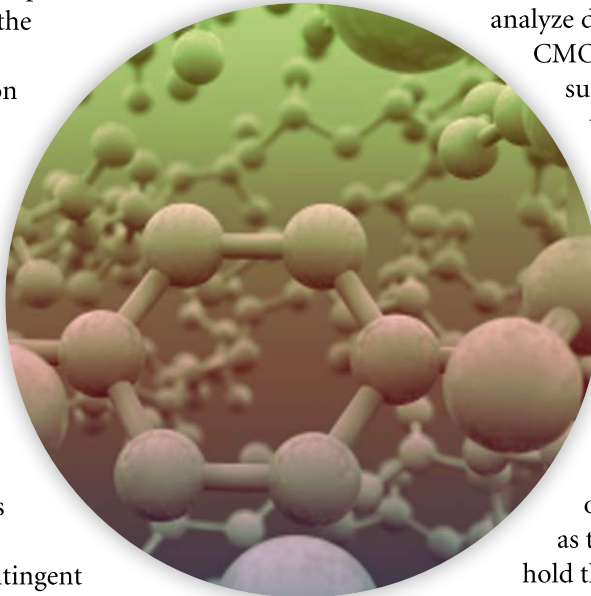
Companies must also consider a CMO's quality assurance system. This includes process analytical technologies (PATs) that monitor the disposition of materials as they move through the manufacturing process, and systems that implement corrective actions and preventive actions (CAPA). Organizations should also inquire about the CMO's validation procedures and protocols, as well as the mechanism for recording changes in standard operating procedures (SOPs) and systems to capture and

analyze data. They must know how the CMO chooses, audits, and validates its suppliers, and must inquire about the CMO's contingency plans for alternate suppliers in the event that a primary supplier faces shortages or has difficulty in providing ingredients and/or consumables.

## Regulatory History

Another critical point for consideration is whether or not a particular CMO outsources their peptide synthesis as the US FDA will ultimately hold them responsible for regulatory compliance—whether they produced the material or not. A CMO's ability to comply with FDA regulations is crucial to their client's ability to operate within the market. CMOs that fail to fully comply with regulatory mandates risk compromising their reputations and those of their customers. Therefore, it's imperative to be fully informed regarding the CMO's regulatory history.

Fortunately, much of this information is in the public domain. For example, a company needs to know whether the CMO being considered has received any FDA-483 Observation and Warning Letter citations in the recent past. Letters are issued by the FDA if it comes to light that inadequacies exist in the quality of equipment, supplies or procedures. Citations may also be issued if a CMO is not following approved procedures or is not sufficiently documenting its activity for the FDA to determine its levels of compliance. Organizations must make sure that CMOs in consideration are conforming to



domestic and international regulatory standards such as US Pharmacopeial convention (USP) and International Conference on Harmonisation (ICH), among others.

### Financial Stability/Resources

Potential customers must scrutinize the fiscal record of any potential outsourcing partner. A fiscally-imperiled CMO may be slow in paying suppliers or could be understaffed, creating unacceptable delays in production. A financially-insecure CMO may be tempted to cut corners on quality and services. In that same vein, groups seeking a new source for their peptide production must also look into a CMO's own suppliers— are they equally capable of meeting their own financial obligations?

### Communication

Prompt and articulate communication is without a doubt, the key to a successful relationship between a customer and CMO. The CMO must be readily available to apprise the client of progress made in single or multiple orders. A clear, agreed-upon line of communication should be established and included in the outsourcing agreement. A primary contact person with the CMO should be assigned to provide regular updates on developments and quickly respond to any potential questions.

There is no room for ambiguity in the drafting of the supply agreement. The language of the contract should deal explicitly with issues of intellectual property (IP) and proprietary information, and also establish ownership of any IP that may be jointly developed.

### Transparency

Companies and CMOs should be prepared for the fact that not all production and orders will proceed smoothly. It is essential to recognize this and have acceptable safeguards in place contractually to provide assurance that the CMO will proactively inform the customer of any difficulties.


### Customer Service

All things being equal, organizations should contract with CMOs that provide the best service. This customer/ CMO relationship is truly a partnership, and the company should feel that their service provider is as concerned and attentive to their project as they themselves would be. Superior customer service is paramount to making any collaboration work.

### CMO References

Some aspects of the CMO's performance can be ascertained by the potential client through validation logs, site inspections, audits, and searching the public record. However, some aspects of the relationship may be more difficult to ascertain and can be assessed only by talking to the CMO's customers, both current and past, about the intangibles such as qualities of customer service, communication, and transparency.

Customers stand to realize significant cost and time savings by outsourcing peptide production to experts who can deliver a high-quality product. Those who choose their partners methodically and wisely are in the best position to realize these benefits.



**Total Peptide Management**  
Research grade and cGMP APIs  
Regulatory Support and Analytical Validation  
Process Development and Stability Studies  
**AMERICAN PEPTIDE**     [Sales@americanpeptide.com](mailto:Sales@americanpeptide.com)