



Bioprocessing

BD Biosciences Opens New Miami Facility

Animal- and Antibiotic-Free Plant Will Produce Cell Culture Media and Supplements

To learn more about the AF² production facility and to take a virtual tour, please visit: www.bdbiosciences.com/cellculture/advbio/af2_facility/index.jsp.

A new cell culture media and supplement production facility will be opened by **BD Biosciences** (www.bdbiosciences.com) in Miami-Dade County this month. The building was designed to support a number of advanced technologies and operating procedures.

GEN interviewed William James, the director of operations at BD Biosciences-Advanced Bioprocessing, to learn more about the company's new AF²™ facility.

GEN What drove the need to set up this facility?

James Our customers were the driving force behind building this animal-free, antibiotic-free manufacturing site. For them, this facility is all about risk reduction throughout the supply chain, especially those associated with animal-origin materials.

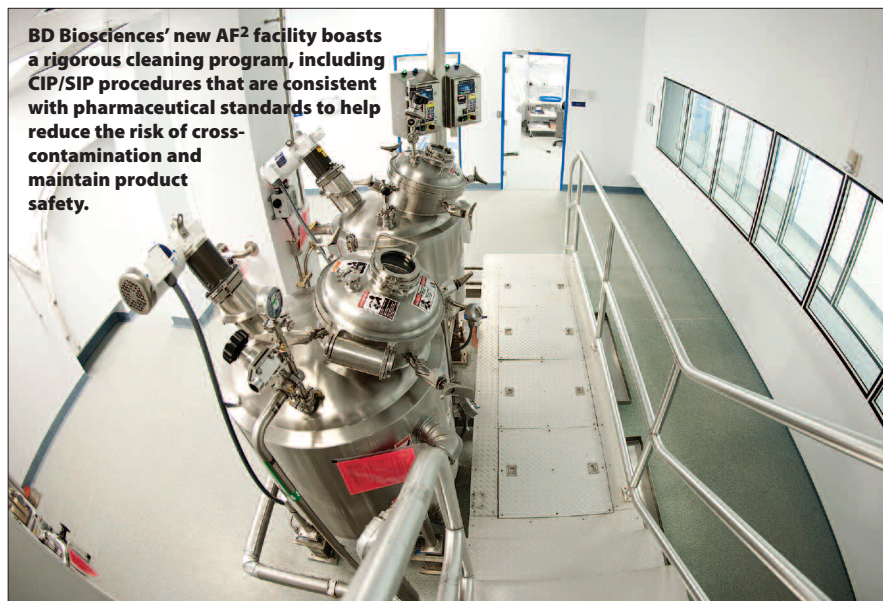
The Advanced Bioprocessing team worked with our customer advisory board representing top global biopharmaceutical companies, which provided

the input that documented the need, the concept, and, ultimately, the facility's design.

One key insight was the increasing global regulatory requirements that lead our customers toward stricter control of their raw materials in light of BSE and other biological contaminant concerns. This reinforced our belief that a significant and growing need exists today in the biopharmaceutical industry to eliminate the presence of

animal-origin raw materials completely in the facility and the supply chain. Input from our customer advisory board also steered us toward the next level of risk reduction—a new stand-alone facility—rather than segregating an area at an existing plant.

With this input from our customers as well as an assessment of our capabilities and the competitive landscape, BD decided to establish the facility in



BD Biosciences' new AF² facility boasts a rigorous cleaning program, including CIP/SIP procedures that are consistent with pharmaceutical standards to help reduce the risk of cross-contamination and maintain product safety.

Miami. The building had been constructed by a pharmaceutical company to industry standards, but it never entered operations. We, therefore, were able to take a building that met many of our needs and retrofit it for our specific customer requirements. It allowed us to bring the facility online in a shorter time frame for our customers.

GEN *What types of operations will take place in the new facility?*

James AF² offers both dry powder and liquid cell culture media and supplement manufacturing. It has the capability to produce aseptic fill solutions in customized flexible packaging. As a fully integrated production facility, it integrates cell culture media and supplement manufacturing capabilities, with the ability to produce both complete catalog and custom formulations for microbial fermentation, mammalian cell culture, and stem cell culture.

The facility employs state-of-the-art pin milling and blending technologies to help ensure product integrity and consistent performance. It also has a rigorous cleaning program, including clean-in-place (CIP)/sterilize-in-place (SIP) procedures, that is consistent with pharmaceutical standards to help reduce the risk of cross-contamination and maintain product safety.

GEN *What are the new facility's key distinguishing features?*

James AF² is the industry's first and only fully dedicated, integrated, animal-free and antibiotic-free cell culture media and peptone/supplement production facility for liquid and powder products.

The facility's technology is comple-

mented by high levels of process and environmental controls that enable us to produce high-quality products while helping to minimize overall supply chain risk for our customers. For example, all materials and workers entering the facility follow a strict unidirectional flow to prevent contamination. Processed products leave the facility in a similar fashion. In addition, the production of liquid and powder products is segregated to help prevent cross-contamination.

When our biopharmaceutical customers visit the facility, they immediately recognize how much it resembles their own manufacturing facilities. The plant was designed with our biopharmaceutical customers in mind from the physical layout to the equipment and systems.

GEN *BD points out that with this new facility the company has instituted the industry's most stringent, tertiary-level animal-free policy. How was this accomplished and what does this mean to your customers?*

James It's remarkable that no industry standards exist regarding the definition of "animal-free." As a result, biopharmaceutical companies may have trouble determining what animal-free really means when they are dealing with their suppliers. Our policies and protocols help make this information clear and transparent for our customers, raising the bar by which raw materials are sourced and measured.

We designed the AF² facility to help significantly reduce the risks that could be associated with mixed-use plants and to help provide consistently high-performing formulations and chemically defined media. We expect that this level of safety will help speed our customers'

product development cycles by reducing risk and regulatory uncertainty.

The Advanced Bioprocessing team implemented a raw material and supplier qualification and management program to help ensure that all ingredients (primary), ingredient components (secondary), and ingredient subcomponents (tertiary) utilized in the facility are not of animal origin.

To accomplish this, all raw material suppliers are qualified through a process that involves collecting detailed information on the raw material, including manufacturing processes, and capturing this information in the quality system documentation. This means that we ensure that primary-, secondary-, and tertiary-level raw materials for our cell culture media and media supplements are animal-free. In addition, the facility has never had antibiotics in the manufacturing areas, and our procedures will help ensure that it never will.

GEN *Talk about the "pharma-like" manufacturing setup and operational aspects of the new facility. What features were incorporated into this design and what are the main benefits of taking this approach?*

James We set out to construct a facility that, in essence, would serve as an extension of our customers' own manufacturing facilities. In AF² our customers find completely segregated liquid and powder manufacturing areas with zoned air-handling systems and terminal ULPA (ultra low particulate air) filters. They also see advanced modular cleanroom systems and a continuous nonviable particle measurement system for environmental control and monitoring, as well as automated

CIP and SIP cleaning processes.

Our water system meets USP requirements, generating USP pure water for injection and pure steam. The facility design promotes unidirectional flow of raw materials, personnel, and products, including separate areas for gowning, de-gowning, and material air locks. Finally, we have full-viewing corridors throughout manufacturing areas to facilitate audits while maintaining environmental control.

Of course, having the facility is only part of the answer to customers requesting safe and effective products. We designed and implemented our quality system with biopharmaceutical requirements in mind and consistent with our customers' own systems. From equipment and process validation that is consistent with FDA and ICH guidelines to rigorously managed incoming material controls and inspections to an automat-

ed change-notification system that provides customers with advance notice of significant product changes to fully validated quality-control methods, our quality system is based on the GMPs defined in 21 CFR Part 210/211.

Supplier confidence is critically important in any industry. This is especially true in the heavily regulated world of biopharmaceuticals, where problems could have serious consequences for patients and the companies that make the therapies and vaccines.

Biopharmaceutical companies spend a considerable amount of time and resources validating that their suppliers follow established, quality-controlled processes and use advanced technologies to help mitigate risks. Biopharmaceutical companies that have seen AF² have expressed confidence in our ability to help them manage risk in this important part of the supply chain. ■