May 8, 2017

PharmaCyte Biotech Updates IND Submission Process in Interview with Facet Life Sciences

LAGUNA HILLS, Calif., May 08, 2017 (GLOBE NEWSWIRE) -- PharmaCyte Biotech, Inc. (OTCQB:PMCB), a clinical stage biotechnology company focused on developing targeted therapies for cancer and diabetes using its signature live-cell encapsulation technology, Cell-in-a-Box®, today released an educational, interview-style Q&A article with Sarah DeMare, the Product Development Champion with Facet Life Sciences and U.S. Agent for PharmaCyte, who discusses the IND submission process for PharmaCyte's upcoming clinical trial in locally advanced pancreatic cancer (LAPC).

Since coming to an understanding with the FDA on a path forward after PharmaCyte's pre-IND meeting in January, is there a list of items that you can share with us that when completed will allow PharmaCyte to file its Investigational New Drug application (IND)?

Sarah DeMare: "The single most important item PharmaCyte needed to learn from the FDA at the pre-IND meeting was the acceptability of PharmaCyte's proposed cell line. Without that understanding, PharmaCyte was unable to move forward with the manufacture of its product candidate for the LAPC clinical trial."

"An IND encompasses many things, dealing with the manufacture and characterization of the product candidate, the clinical study design and nonclinical studies. PharmaCyte's therapy for pancreas cancer has undergone or been part of several studies, so incorporation of that information into the IND is not 'rate limiting' or 'slowing down the progress towards submitting an IND.' The clinical study design that PharmaCyte agreed to undertake after meeting with the FDA is currently being drafted. This is also not rate limiting. To conduct the clinical trial, PharmaCyte will need to manufacture, test and release a Master Cell Bank, a Working Cell Bank and the encapsulated live cells. This information is also required to be described and documented in detail in the IND. The manufacture of these items is the rate limiting factor involved in submitting the IND."

"Before the IND is filed, the following items must be available for inclusion:

(a) Documentation of preclinical work done on the cells.
(b) Toxicology studies.
(c) Documentation of preclinical work done on the capsules themselves.
(d) A wide array of CMC (Chemistry, Manufacturing and Controls) documentation that verifies that the final biologic product (the encapsulated cells) has been produced under current Good Manufacturing Practices (cGMP)-compliant conditions.
(e) Labeling for the final investigational biologic product.
(f) Previous evidence of human experience with the pancreas cancer therapy (low-dose

ifosfamide plus Cell-in-a-Box® encapsulated genetically modified human cells).
(h) The Investigator's Brochure.
(i) The Informed Consent Form
(j) The Case Report Form"

***Can you talk about the items on the list in relation to PharmaCyte's progress and what further rate limiting steps are on the path to filing the IND*?**

Sarah DeMare: "Documentation of work done on items (a), (b) and (c) and a significant amount of material concerning item (d) have been accumulated to date. As for item (f), publications of Phase 1/2 and Phase 2 trials that were published in scientific journals are "in-house," as are original clinical reports of those clinical trials. The clinical trial protocol is nearing the "final" stage. Items (h), (i) and (j) will be written by Translational Drug Development (TD2), the Contract Research Organization (CRO) PharmaCyte has retained to conduct the clinical trial in the U.S. and oversee its conduct in Europe by Clinical Network Services (CNS)."

"The rate limiting step to being able to file the IND and, ultimately, begin the clinical trial is the manufacture of the combination drug product. For live cell-based products, a Master Cell Bank or 'MCB' first needs to be manufactured, characterized, tested and released. The speed at which the MCB can be produced is dependent on several different things. First, is the availability of starting materials. Some starting materials can have a significant lead-time when ordering, and you cannot begin manufacture until you have all your starting materials. Second, is the growth rate of the live cells. Cells grow at different rates. There isn't much that can be done to speed up that process. Unfortunately, it is not a 1 to 2-day event. "

"Also, when working with a Contract Manufacturer Organization (CMO) to make your cell bank, some things are out of your control. For example, scheduling. CMOs typically schedule their manufacturing rooms out months in advance for their clients, so sometimes you need to wait in the queue for your turn. In addition, and perhaps most importantly, the MCB needs to be tested to ensure its quality, which is of utmost importance. These tests are also not tests that can always be done quickly. Sterility is a good example. This test is mandatory to ensure the sterility of your MCB and takes approximately 6 weeks to obtain results."

"The purpose of creating a MCB is to provide a repository of live cells that are essentially identical to the material tested in clinical trials and throughout the development process. After creating a MCB, a Working Cell Bank or 'WCB' must be manufactured. Creation of a WCB is an important step, as it allows your Master Cell Bank to have a longer useful life."

"This is an important point, and it's worth illustrating. Let's say you can make 300 vials in your MCB. Let's also say that each vial of cells can produce enough drug product to treat 100 patients. That would mean you could potentially treat 30,000 patients with the entire MCB. Sounds like a lot, right? Maybe, but this MCB will need to provide cells to patients for years to come. At some point in the future, the MCB will be depleted. This would require another MCB to be produced, and in such a complex system there would be no guarantee that the original cells could be duplicated exactly. In the best case, this means extensive testing would be needed to prove that the new MCB is equivalent to the old MCB."

"If those tests reveal differences that could affect efficacy, a new clinical study may be

needed to demonstrate that the new MCB is equivalent to the old MCB. There is always the potential that it will not be equivalent. That is the situation the FDA would like to avoid, which is why a Working Cell Bank is needed. To make a WCB, you take one vial of your Master Cell Bank and grow it into more vials to become your Working Cell Bank. So, theoretically, you could get 200 vials of your Working Cell Bank from 1 vial of your Master Cell Bank. Assuming one vial of your WCB still treats 100 patients, you could treat 20,000 patients from only 1 vial of Master Cell Bank. Using this example, a 200-vial Master Cell Bank could treat up to 4 million patients. Compare that to the 30,000 patients you could treat with the entire Master Cell Bank, and you can see that having a WCB allows your MCB to go much further and last much longer."

"Producing a Working Cell Bank is similar to the Master Cell Bank in that it takes time for the live cells to grow, and you need to test and release the live cells. Sterility testing is still required, and it still takes 6 weeks to perform."

"Finally, with the Working Cell Bank ready, the drug product can be manufactured, tested and released. The FDA will want to see the test results that demonstrate the quality of the drug product in the IND. So, the IND cannot be filed until the testing of the drug product is completed."

***In your experience with the FDA, discuss the importance of following the FDA's guidance to the letter*?**

Sarah DeMare: "The FDA is most concerned with patient safety. So, while there may be opportunity to state that certain pieces of information will be available at a later date, those issues that directly impact patient safety are important to include in your IND. From a manufacturing perspective, for a product that is being injected into the body, sterility is of utmost importance to the FDA. Not only sterility of the live cells in the vials, but understanding the manufacturing process, the environment in which the cells were manufactured and where the starting materials came from are critically important. There is a lot of information about this to be described in detail in the IND."

"Following the guidance that the FDA has provided at the pre-IND meeting gives the company the best chance of success at having the IND accepted after the 30-day period."

What are the potential downsides to submitting an IND that doesn't follow the FDA's guidance to the letter?

Sarah DeMare: "The obvious answer is that if the FDA feels like there are concerns with patient safety, the FDA will place PharmaCyte on clinical hold until those concerns can be resolved. Depending on what the issues are, they may be resolved with some additional testing or characterization, perhaps describing something with a bit more clarity or providing site processes and procedures. The worst-case scenario would be if the FDA found an issue with the Master Cell Bank that could not be resolved and resulted in needing to manufacture the Master Cell Bank, Working Cell Bank and drug product again to the FDA's satisfaction. This is why it is so important to make sure it is done right the first time."

"Another less obvious answer is the impression it would leave on the FDA. A sponsor of an IND, like PharmaCyte, is going to have many opportunities to interact with the FDA on its path to a Biologics License Application (BLA) approval. An initial IND is that 'first impression'

so to speak. Having a well thought out, well put together and well written IND with all of the required information can demonstrate to the FDA that the sponsor understands what needs to be done and is serious about the intent to bring an important and novel therapy to patients."

If PharmaCyte, or any company for that matter, follows the FDA's guidance step by step on the path to filing an IND and the final submission is closely married to that which was discussed in the pre-IND meeting, is it your experience that the company can get through the 30-day period without comment from the FDA?

Sarah DeMare: "In my personal experience, there are always comments from the FDA during the 30-day wait. However, under the scenario you have described, the comments should be minor and the sponsor should be able to quickly respond to them without issue. For example, the FDA may ask for slight changes in wording to the protocol. However, those issues will be communicated and will need to be responded to within 30 days. The issues that arise during the 30-day window are almost always related to patient safety. It is very common for the FDA to send the 'safe to proceed' letter to the sponsor with a list of items for the sponsor to consider or complete over the course of development, but that doesn't impede the sponsor from beginning its clinical trial."

PharmaCyte will follow up this interview-style Q&A article with an additional interview with TD2 that will be more focused on the clinical trial, clinical sites, training, etc. and will discuss what work is being done in parallel with the work that is ongoing to complete the IND discussed by Ms. DeMare. It is this clinical-focused work that will allow PharmaCyte to begin its clinical trial almost immediately upon receiving the "safe to proceed" letter from the FDA—30 days after filing the company's IND.

About PharmaCyte Biotech

PharmaCyte Biotech is a clinical stage biotechnology company developing therapies for cancer and diabetes based upon a proprietary cellulose-based live cell encapsulation technology known as "Cell-in-a-Box®." This technology will be used as a platform upon which therapies for several types of cancer and diabetes are being developed. PharmaCyte's therapy for cancer involves encapsulating genetically engineered human cells that convert an inactive chemotherapy drug into its active or "cancer-killing" form. These encapsulated cells are implanted as close to the patient's cancerous tumor as possible. Once implanted, a chemotherapy drug that is normally activated in the liver (ifosfamide) is given intravenously at one-third the normal dose. The ifosfamide is carried by the circulatory system to where the encapsulated cells have been implanted. When the ifosfamide flows through the encapsulated cells, they act as a "bio-artificial liver" and activate the chemotherapy drug at the site of the cancer. This "targeted chemotherapy" has proven effective and safe to use in past clinical trials and results in no treatment related side effects.

In addition to developing a novel therapy for cancer, PharmaCyte is developing a therapy for Type 1 diabetes and insulin-dependent Type 2 diabetes. PharmaCyte plans to encapsulate a human cell line that has been genetically engineered to produce, store and release insulin in response to the levels of blood sugar in the human body. The encapsulation will be done using the Cell-in-a-Box® technology. Once the encapsulated cells are implanted in a diabetic patient they will function as a "bio-artificial pancreas" for purposes of insulin production.

Safe Harbor

This press release contains forward-looking statements, which are generally statements that are not historical facts. Forward-looking statements can be identified by the words "expects," "anticipates," "believes," "intends," "estimates," "plans," "will," "outlook" and similar expressions. Forward-looking statements are based on management's current plans, estimates, assumptions and projections, and speak only as of the date they are made. We undertake no obligation to update any forward-looking statement because of new information or future events, except as otherwise required by law. Forward-looking statements involve inherent risks and uncertainties, most of which are difficult to predict and are generally beyond our control. Actual results or outcomes may differ materially from those implied by the forward-looking statements due to the impact of numerous risk factors, many of which are discussed in more detail in our Annual Report on Form 10-K and our other reports filed with the Securities and Exchange Commission.

More information about PharmaCyte Biotech can be found atwww.PharmaCyte.com. Information may also be obtained by contacting PharmaCyte's Investor Relations Department.

Contact:

Investor Relations:
PharmaCyte Biotech, Inc.
Investor Relations Department
Telephone: 917.595.2856
Email: Info@PharmaCyte.com

PHARMACYTE BIOTECH

Source: PharmaCyte Biotech, Inc.