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PharmaCyte Biotech Addresses Submission of IND and Recent FDA-Required Testing

LAGUNA HILLS, Calif.--(BUSINESS WIRE)-- PharmaCyte Biotech, Inc. (OTCQB: PMCB), a biotechnology company focused on developing cellular therapies for cancer and diabetes using its signature live-cell encapsulation technology, Cell-in-a-Box®, announced today the latest in its series of Q&A articles that are conducted with some of the key management members of PharmaCyte's research and development team related to its upcoming clinical trial in locally advanced, inoperable pancreatic cancer (LAPC).

This interview-style Q&A article with Dr. Gerald W. Crabtree, PharmaCyte's Chief Operating Officer, aims to address the company's recent FDA-required tests and the submission process of its Investigational New Drug application (IND) to the U.S. Food and Drug Administration (FDA). Dr. Crabtree has spent almost 50 years working in academia and biotech and pharmaceutical companies, with the majority of that experience being in the development of drugs and treatments for cancer. He has supervised and coordinated the development of multiple drug candidates, prepared clinical protocols, investigator brochures, monographs and research and review articles.

A highlight of Dr. Crabtree's professional career was his tenure as Director of Project Planning and Management (Oncology and Immunology) at Bristol-Myers Squibb (BMS) from 1990 to 1997. While at BMS, Dr. Crabtree established and directed a department that monitored and coordinated the development of all oncologic and immunologic drugs from initial discovery through regulatory approval within BMS and served as Project Manager for the development of the major anticancer agent, Taxol®, the leading product candidate under development at BMS at that time. Taxol® ultimately became a multi-billion-dollar drug for BMS and is still widely used in combination with other drugs to treat a variety of cancers.

Currently PharmaCyte is awaiting the testing results from its pyrogenicity test, an FDA-required test, that has been discussed in the past but that wasn't part of the release testing. Can you tell us what this test is and why this test is important?

Dr. Crabtree: "In short, the U.S. FDA wants to know if the Cell-in-a-Box® capsules that we use in our treatment for LAPC have any fever-inducing properties, and a pyrogenicity test is how we provide this necessary data to the FDA.

"The pyrogenicity test is important to the FDA because, to my knowledge, no other treatment for a particular tumor combines both a cancer prodrug and a biologic where that biologic consists of live, genetically engineered human cells that have been encapsulated using a unique cellulose-based technology. Because of this, the FDA wants to know whether the capsules made using the cellulose-based Cell-in-a-Box® technology have any fever-inducing properties.

“In order for PharmaCyte to conduct this test, hundreds of empty Cell-in-a-Box® capsules had to be produced by our partner Austrianova at its manufacturing facility in Thailand. During this time consuming and expensive process, Austrianova filled a number of syringes (identical to the syringes it used for our clinical trial product) with the empty Cell-in-a-Box® capsules and then froze those syringes using the same freezing medium that we used for our clinical trial product as though the capsules were full of live cells. Following the production of the empty capsules, the resultant material was shipped to the U.S. where the pyrogenicity test is being conducted.

“To conduct the test, a protocol had to be developed, and PharmaCyte had to wait its turn in the queue to get underway. The actual test, which uses three rabbits that are injected with a matrix made up of crushed Cell-in-a-Box® capsules and saline, only takes a few days to complete; however, the overall timeline to prepare for and complete the tests, and then prepare an audited report of the results that will be submitted to the FDA as part of PharmaCyte’s IND package, takes over a month in total after the frozen empty capsules arrived at the laboratory in the U.S.”

Given your experience in bringing drugs to market through FDA clinical trials, can you explain what goes into an IND submission?

Dr. Crabtree: “The complexity and size of an IND most often depends upon the stage of development of a particular product. For example, if an IND is filed requesting permission to conduct an initial Phase 1 clinical trial and the product in question is a new drug, the IND contains information on how the drug was made, preclinical and animal testing data that may give some initial information on the type of tumor to attack and perhaps some idea of the dose range of the new drug that might be effective, as well as some idea of the type and severity of side effects caused by the drug. That’s pretty much it.

“Meanwhile, those requirements are in stark contrast to the IND that we will be submitting to the FDA. We are seeking FDA approval to conduct a ‘late-phase’ Phase 2 clinical trial that combines a well-known, established cancer prodrug (ifosfamide) and a biologic component that consists of genetically engineered human cells that have been encapsulated using a very unique cellulose-based, cell encapsulation technology (Cell-in-a-Box®). Much of the IND that we will submit will be concerned with the latter. For example, how were the genetically engineered human cells made, where in the genome of those cells was the genetic alteration placed, etc.

“Also, we must completely address the Cell-in-a Box® technology. How was the technology developed? Each step of the technology’s development must be explained in detail and with verified and validated reports. What is the history of this technology? Signed and verified reports of everything must be included in PharmaCyte’s IND package.

“Then, we must fully document the manufacturing of the final product. Each and every change made along the way to the final successful manufacturing ‘runs’ of the product must be documented in detail. All of the tests on the final product must also be fully documented.

“But, even with all of this information, the IND is not finished yet because we still have to supply the FDA with major medical documents, such as (i) the clinical trial protocol, (ii) the Investigator’s Brochure, (iii) the Informed Consent Form that each patient will review with

their oncologist and sign before he or she can participate in the trial, (iv) the Angiography Guidelines to instruct interventional radiologists on how to place the Cell-in-a-Box® capsules with the live human cells inside them as close to the pancreas tumor as possible; (v) a Pharmacy manual and (vi) at least three months of stability study data to show the frozen clinical trial product will work as it was designed to work months after it was manufactured."

Who is assisting PharmaCyte in the IND submission process and has the process to prepare the IND already begun?

Dr. Crabtree: "From the above, I hope our shareholders can better understand that our IND submission will be broad in scope and massive in size and that PharmaCyte could not do this alone. We are most grateful for the efforts put into assembling the IND by our consultants at Austrianova, Facet Life Sciences, cGMP Validation, Medpace, Practical Clinical and Dr. Manual Hidalgo and Dr. Matthias Löhr.

"Preparations for the IND began quite some time ago and are still on-going. We are going as fast as responsibly possible. Facet Life Sciences, our regulatory affairs consultant, will be submitting the completed IND application to the FDA on PharmaCyte's behalf."

Does PharmaCyte pay a fee to submit the IND?

Dr. Crabtree: "The FDA does not require a fee for the filing of an IND. This has been verified by Facet Life Sciences, our regulatory affairs consultant."

To learn more about PharmaCyte's pancreatic cancer treatment and how it works inside the body to treat locally advanced inoperable pancreatic cancer, we encourage you to watch the company's documentary video complete with medical animations at: https://www.PharmaCyte.com/Cancer

About PharmaCyte Biotech

PharmaCyte Biotech, Inc. (PharmaCyte) is a biotechnology company developing cellular 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. For pancreatic cancer, these encapsulated cells are implanted in the blood supply to the patient's tumor as close as possible to the site of the tumor. 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 pores in the capsules, the live cells inside 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 little to no treatment related side effects.

PharmaCyte's therapy for Type 1 diabetes and insulin-dependent Type 2 diabetes involves encapsulating a human cell line that has been genetically engineered to produce and release insulin in response to the levels of blood sugar in the human body. PharmaCyte is

developing the use of genetically modified liver cells and stem cells, as well as beta islet cells, to treat diabetes. 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 may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that express the current beliefs and expectations of the management of PharmaCyte, including statements regarding the timing and commencement of our first Phase 2b clinical trial. Any statements contained herein that do not describe historical facts are forward-looking statements that are subject to risks and uncertainties that could cause actual results, performance and achievements to differ materially from those discussed in such forward-looking statements. Factors that could affect our actual results are included in the periodic reports on Form 10-K and Form 10-Q that we file with the U.S. Securities and Exchange Commission. These forward-looking statements are made only as of the date hereof, and we undertake no obligation to update or revise the forward-looking statements, except as otherwise required by law, whether as a result of new information, future events or otherwise

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

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