

HepaLife™ Surpasses Significant Milestones in Development of Artificial Liver Device

Major improvements in liver stem cell line performance and bioartificial liver system moves HepaLife closer to initial in-vivo trials.

Boston, MA – December 17, 2007 - HepaLife Technologies, Inc. (OTCBB: HPLF) (FWB: HL1) (WKN: 500625) is pleased to announce details of a series of significant achievements in the development of the first-of-its-kind bioartificial liver device, allowing the Company to move closer to initial in-vivo trials.

Key to the success of the Company's artificial liver device are HepaLife's patented PICM-19 embryonic liver stem cells, which scientists have demonstrated possess a number of unique characteristics, making their liver-specific metabolic functionality superior to other cells, including the world's most widely used human liver cell line.

The unique functionality of the PICM-19 cells allow them to successfully mimic the human liver's response in several important ways, including their ability to express high levels of cytochrome P-450 enzymes, a key liver-related function in the detoxification of drugs and xenobiotics, and to favorably produce urea and successfully remove ammonia, a highly toxic by-product which causes brain damage, coma, and even death.

"Not only is HepaLife's PICM-19 cell line the only known embryonic liver stem cell line of its kind with the ability to produce substantial amount of urea, but it also uniquely differentiates into hepatocytes (liver cells) or bile duct epithelium," states Mr. Frank Menzler, President and CEO of HepaLife Technologies, Inc.

"Now, with the integration of the PICM-19 cell into our proprietary bioreactor and perfusion system, the concept of the HepaLife bioartificial liver is nearly complete. This year has been remarkable and we continue to overachieve on our goals, both from a corporate and scientific perspective, moving us closer to initial in-vivo trials."

HepaLife's BioArtificial Liver

One of the main functions of the human liver is the detoxification of ammonia, which is primarily done through the synthesis of urea. Patients with acute liver failure or genetic liver diseases are often unable to remove ammonia from the bloodstream, leading to brain damage, coma, and death.

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In previous tests, HepaLife's PICM-19 cells were able to successfully synthesize 100% of the ammonia present, almost four times more than HepG2-C3A, currently the world's most widely-used human liver cell line. Most significantly, a large proportion of the ammonia was specifically synthesized into urea by the PICM-19 cells. In comparison, HepG2-C3A synthesized none of the ammonia into urea. Notably, HepaLife's PICM-19 cell line is the only known embryonic liver stem cell line of its kind with the ability to produce substantial amounts of urea in an in-vitro system.

Results also demonstrated that the PICM-19 cells are able to express high levels of cytochrome P-450 enzymes, a key liver related function in the detoxification of drugs and xenobiotics. In contrast, HepG2-C3A showed very low, or no detectable P-450 activity at all.

Incorporating the PICM-19 cell line, HepaLife is developing the first-of-its-kind bioartificial liver. HepaLife's bioartificial liver, currently under development, is designed to operate outside the patient's body. The bioartificial liver is envisioned to mimic important functions of the human liver by circulating the patient's blood inside the device, where it is exposed to HepaLife's patented PICM-19 liver stem cells, thus processing the patient's blood-plasma by removing toxins, enhancing metabolic function, and ultimately imitating the liver's natural function.

Intended for the treatment of liver failure, the HepaLife bioartificial liver device consists of three basic components: (1) a plasma filter, separating the patients blood into blood plasma and blood cells; (2) the bioreactor, a unit filled with PICM-19 cells which biologically mimic the liver's function; and (3), the HepaDrive™, a perfusion system for pumping the patient's plasma through the bioreactor while controlling gas supply and temperature for best possible performance of the cells.

Long running in-vitro tests of the HepaLife bioartificial liver showed that the system removed toxic ammonia, and successfully produced significant amounts urea and liver specific protein, such as albumin, over the entire duration of the study. Most importantly, the production of urea and albumin increased over time, reaching peak levels at termination of the two week study.

In observations of cell replication and growth, researchers confirmed earlier findings where PICM-19 liver cells remained contact-inhibited, an important indicator of normal cell growth, since cells which lack contact-inhibition tend to become cancerous. In contrast to cells which are not contact-inhibited, HepaLife's PICM-19 cells did not develop tumors nor become cancerous inside the liver device system, instead remaining non-tumorigenic.

In the same tests, HepaLife's PICM-19 liver stem cells successfully differentiated into hepatocytes (liver cells) displaying normal morphology, an indication of the cells' natural physical form and structure.

In evaluating the chemical function and overall health of the PICM-19 liver cells inside HepaLife's bioartificial liver, researchers analyzed levels of lactate and glucose -- indicators of metabolic function -- alongside oxygen and carbon dioxide. In all cases, these monitored levels remained favorably within targeted parameters throughout the duration of the studies.

"The combination of the superior metabolic performance of our PICM-19 cell line along with our new bioreactor and perfusion system truly sets us apart from anyone else. Each new step we take along the development pathway brings us that much closer to creating the world's first-of-its-kind bioartificial liver device," concludes Mr. Menzler.

ABOUT HEPALIFE TECHNOLOGIES, INC.

HepaLife Technologies, Inc. (OTCBB: HPLF - News; FWB: HL1) (WKN: 500625) is a developer of cell-based medical technologies addressing prevalent human health concerns.

Current cell-based technologies under development by HepaLife include 1) the first-of-its-kind artificial liver device, 2) proprietary in-vitro toxicology and pre-clinical drug testing platforms, and 3) novel cell-culture based vaccine production methods for the manufacture of vaccines against H5N1 avian influenza and other viruses.

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