

Local researcher to test heart tissue regeneration in Singapore

by Scott Shepard

A Memphis surgeon hopes to begin using myoblast cells within three months to regenerate heart tissue in some of his heart failure patients at Baptist Memorial Hospital-Memphis.

Meanwhile, neurobiologist Peter Law, who developed the key technology for myoblast, expects to begin human treatments within weeks at the National University Hospital of Singapore.

"Through my interest in heart transplantation, I see a lot of patients with heart failure, and though we have a wonderful program, we turn down 60%-70% of people because there's not enough donors and the criteria is strict," says cardiovascular surgeon Ed Garrett Jr., with Cardiovascular Surgery Clinic. "Here's a potential for improving muscle function that wouldn't have much in the way of restrictions, and the early results are promising."

Garrett has prepared an application for the Institutional Review Board at Baptist to inject myoblast cells into the hearts of patients. Clearance is all that's waiting.

Myoblast are immature muscle cells which fuse with sick or damaged muscle cells. First developed by Law for treating muscular dystrophy, the myoblast cells deliver the missing genes that cause that disease. Recent research in Memphis, Europe and Asia has focused on heart regeneration. When injected into pig hearts the myoblast cells take on the characteristics of the surrounding tissue and become fresh heart cells (MBJ, May 19-25, 2000).

"With the pigs we delineated all the safety parameters on the heart," Law says. "How many cells, how they should be distributed and where."

Law's early research was done at UT-Memphis but a decade ago he broke from the university and founded the Cell Therapy Research Foundation, he says, because early results were promising and UT was holding him back. He owns about 150 patents approved or pending on myoblast manufacturing, as well as a number of trade secrets. He's raised more than \$30 million in licensing and spent it all on further research.

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 Neurobiologist Peter Law is poised to begin myoblast testing on human patients.

NASD ready to hear Duncan-Williams case
 BY TERRY PERKINS
 Michael Mac McGinnis, former chairman of Duncan-Williams Inc., March 17 by holding his post as head of public finance and taking 14 investment bankers and advisors from the firm's offices with him to open branches for Houston-based Coastal Securities.

HEART
 Ed Garrett Jr., with Cardiovascular Surgery Clinic, "Here's a potential for improving muscle function that wouldn't have much in the way of restrictions, and the early results are promising."

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"We believe Dr. Law's cells are more pure than those available to any other researchers around the world," Garrett says.

Cell Therapy is completing construction of a \$2 million, 6,000-square-foot clean room in Memphis to manufacture myoblast cells. It also has manufacturing facilities in Singapore, where the Singapore Economic Development Board has awarded Cell Therapy a \$753,000 grant to advance the research.

Surgeons in Holland and France have injected myoblast into the hearts of more than 20 patients. In one case, by surgeon Philippe Menasche at the University of Paris, myoblast was given to a 72-year-old man with congestive heart failure. Before treatment his heart could squeeze out just 20% of the blood, but five months later that went up to 30%. Menasche also recorded much thicker walls of the heart

Menasche's myoblast was cultured by another provider, using cells from the patient's thigh, which is known as autologous donation. Law estimates they were 35% pure. The primary contaminant was fibroblast cells.

"Those form scar tissue, and they don't produce the protein that makes a muscle contract," Law says. "With my very pure cells the results should be twice as good."

Law also expects cells from healthy donors to be more effective than those from the recipient. They can be stored and administered within hours, instead of waiting weeks to culture.

"Our goal is to use autologous cells and donated cells and see if there's any difference," Garrett says.

Besides having to wait for a culture, using a sick patient's own cells may produce a less vigorous myoblast.

Donated cells cause an immune reaction for only a few weeks, Law says. Once they fuse with the host cells they lose their identity and the body recognizes them as its own

"Early results have shown that it's safe, and the cells live and work in concert with the normal heart muscle," Garrett says. "You can improve the pumping capacity by as much as 25%, and that can be very significant for someone with severe heart failure.

"That may not be enough to run the Boston Marathon, but it could be enough to get someone off a lot of medications and lead a fairly normal life," he says

Along with Singapore, Cell Therapy is preparing for human myoblast heart treatments at the University of Calgary, University of Hong Kong and a hospital in Guangzhou, China.

CONTACT staff writer Scott Shepard at 259-1724 or sshepard@bizjournals.com