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NEWS

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MICROFLUIDICS' | MICROFLUIDIZER PROCESSOR DRIVES RESEARCH ON DYSFUNCTIONAL CELLULAR MITOCHONDRIA AT THE TECHNION - ISRAEL'S INSTITUTE OF TECHNOLOGY

Newton, Mass. – May 18, 2004 — Microfluidics^a, a division of MFIC Corporation, today announced that The Technion – Israel Institute of Technology in Haifa, Israel is deploying a Microfluidics Microfluidizer processor for researching dysfunctional mitochondria. The Microfluidizer processor is used to harvest proteins by rupturing bacteria cell membranes, enabling Technion scientists to study how these proteins are expressed in mitochondria and how their expression controls mitochondria functions. Mitochondria dysfunction has been linked to a number of diseases, including Alzheimer's.

"The Microfluidizer processor has become the equipment of choice for performing cell disruption, and there are few researchers today that do not use it for that application, as well as for efficient formulation development," said Bob Bruno, MFIC's President and Chief Operating Officer. "We believe that you cannot do modern day formulation without a Microfluidizer laboratory level processor system because of its versatility, ease of use, light weight, and efficiency."

The Microfluidizer processor represents a significant upgrade for the Technion. It is safer, easier to use, and more efficient than other cell rupturing systems. "Until recently, students in my lab used the ultrasonification liquid processors and a French pressure cell to rupture membranes," said Technion Associate Professor Gadi Schuster. "I was not comfortable with students using the French press. It is a heavy piece of equipment, and under high pressure, parts can break and pieces could injure my students. We needed a safer, more efficient and faster way to rupture cells. The Microfluidizer processor also yields higher quantities of usable cellular material," said Schuster.

Technion's scientists hope that their study of mitochondria dysfunction will give them greater insight into the causes of many different diseases. Each human cell contains between 500 and 2000 energy-producing mitochondria that supply energy to cells. Combining digested food with oxygen, mitochondria produce energy that powers cell reactions and keeps the body going. Mitochondria is also involved in cellular activities such as producing steroid hormones and assisting in the manufacture of DNA, but can become dysfunctional, impacting high energy consuming tissues such as the heart, brain, or muscles. Mitochondria dysfunction is also linked to diseases such as Alzheimer's dementia, Parkinson's, cancer, deafness, kidney, heart and liver diseases, infertility, and migraine headaches.

The Microfluidics Microfluidizer processor uses an intrinsically safe air-powered intensifier pump to drive bacteria cells through microchannels. Pumping at a constant pressure up to 23,000 psi, the product stream accelerates to velocities that induce shear forces within the product stream that gently and efficiently disrupt cells.

"The Microfluidizer processor is so well-designed that a number of student technicians can use the equipment in our lab," said Schuster. "With minimal training, students are able to set the controls and thoroughly clean the chambers between batches, saving time using more efficient, faster cell rupturing equipment, and moving scientists closer to unlocking the secrets of billions of mitochondria."

MFIC Corporation, through its Microfluidics Division (www.microfluidicscorp.com), provides patented and proprietary, high performance Microfluidizer™ high-shear fluid processing equipment to the chemical, pharmaceutical, biotechnology, cosmetic/personal care, and food additives industries.