CRAIN'S CLEVELAND BUSINESS

HEALTH CARE: MEDICAL MARVELS

# Recession doesn't stop research work

*Artificial heart, drug to battle MS advancement among glut of projects in works at area companies*

**By CHUCK SODER**

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As politicians in Washington, D.C., work to reform the health care industry, Northeast Ohio researchers are studying ways to change it the old-fashioned way: by creating new methods to help people live longer and better.

Area researchers are working on all sorts of products that could one day have an impact on the way health care is delivered. Among them are a smaller artificial heart, a drug to fight multiple sclerosis, a tool for developing other drugs and a way to make insulin easier to use in Third World countries.

And other innovations are on the way, according to Chris Coburn, executive director of Cleveland Clinic Innovations, the product commercialization arm of the Cleveland Clinic. The recession has done little to slow down inventors, at least at the Clinic, Mr. Coburn said.

“There's a stunning amount of innovation coming through,” he said.

For instance, Cleveland Heart Inc., a Clinic spinoff formed in 2008, is developing a smaller, simpler alternative to the artificial hearts that now are on the market.

Smaller is better because artificial hearts are too big for many people, especially women, said Dr. Leonard Golding, a former Clinic heart surgeon who now focuses on cardiovascular research.

Dr. Golding's artificial heart also contains just one moving part in its pump, which pushes blood through the body, and it doesn't need sensors to balance blood flow.

Fewer parts mean fewer possibilities for malfunctioning, Dr. Golding said. Overall, it's a “radically different approach” to the artificial heart, he said.

“It's like going from propeller engines to jet engines,” he said.

The company has tested a prototype in a laboratory setting but won't be ready to put it in humans for at least five years, Dr. Golding said. In the meantime, it is testing in humans a device that assists the heart's left ventricle, and it is working on a variant for the right ventricle.

**What the doctor ordered**

Renovo Neural Inc., another Clinic spinoff that formed last year, is developing drugs aimed at protecting nerve cells from multiple sclerosis. The company is testing in animals compounds that help the body create more myelin, a protective casing on the nerves that is destroyed by multiple sclerosis.

Some of Renovo Neural's compounds are aimed at increasing the number of cells that form myelin, and others are meant to help myelin-forming cells mature faster, said Bruce Trapp, lead inventor and chairman of the department of neurosciences at the Clinic.

The goal is to stop the progression of the disease as opposed to just slowing it down like existing therapies do, said Dr. Trapp, who also is chairman of the company's scientific advisory board.

“This therapy, if it works, will give a lot of hope to people at later stages of the disease,” he said.

Dr. David Kaplan — who is a professor of pathology at Case Western Reserve University and the director of immunology, virology and serology at University Hospitals — has developed a technique that might one day help drug companies make better medicines.

The technique is aimed at adding clarity to flow cytometry tests, which use a laser to detect the presence of certain cells or molecules. Dr. Kaplan's method involves adding particular enzymes to samples to identify individual molecules that the test normally misses.

“The Achilles' heel of flow cytometry is poor sensitivity,” he said.

Drug companies have shown interest in the technology, which could help them test potential treatments for conditions such as leukemia, lymphoma and transplant rejection, he said.

Dr. Michael Weiss, chairman of CWRU's department of biochemistry and professor of medicine with the UH Endocrine Division, is developing an analog to insulin that retains its structure at higher temperatures.

The product, called Thermalin, should prove particularly useful in Third World countries, where people bury insulin to protect it from the heat, which causes proteins in insulin to form clumps, Dr. Weiss said. He expects it to be ready for testing in humans after about two years of trials in animals.

“Diabetes is becoming an epidemic all over the globe,” he said.

## Future prognosis

There are a host of other innovations in progress that local officials describe as potentially groundbreaking. Some are:

· Three Cleveland companies, Athersys Inc., Arteriocyte Inc. and AcelleRX Therapeutics Inc., are developing different therapies that use adult stem cells to heal the heart and, in Athersys' case, other organs.

· The Clinic's Dr. Ali Rezai is working on a way to use deep brain stimulation to treat migraine headaches and aims to begin clinical trials of the technology sometime during the next 18 months.

· Dr. Reuben Gobezie, of both University Hospitals and CWRU, has developed a test that looks for particular proteins in joint fluid to help diagnose osteoarthritis and choose a treatment.

· Dr. Elma Baron, also of UH and CWRU, is developing a way to treat skin disorders with light-activated compounds. The approach would help doctors apply the treatment only where it is needed, because other spots can simply be shielded from the light.