

# Giving lab rats room to roam

RatPaak product among many in development at Cleve. Medical Devices

By **JEFF STACKLIN**

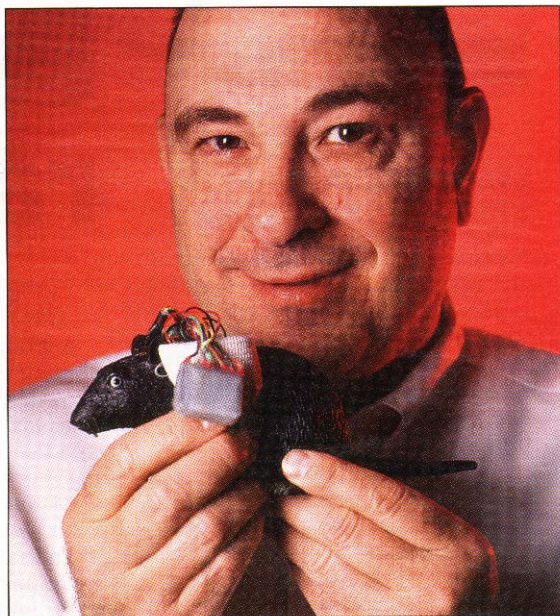
Bob Schmidt probably won't win any awards from animal rights activists for his latest medical devices, but he sees the devices as a step in the right direction toward more natural treatment of lab animals.

Mr. Schmidt said he finds comfort knowing lab rats — and eventually lab mice will be studied more naturally with a device being developed by researchers at Johns Hopkins University School of Medicine in Baltimore and at Mr. Schmidt's company, Cleveland Medical Devices Inc. of Cleveland. The research is backed by a \$990,000 Small Business Inno-

vation Research grant from the National Institutes of Health.

The grant is one of five totaling \$4.18 million that Cleveland Medical Devices has received since September to develop wireless medical devices and sensors.

The device, called the RatPaak, is a set of tiny saddlebags that are harnessed to laboratory animals that weigh 100 grams or more. The RatPaak contains a miniature computer and a two-way transmitter that wirelessly sends brain, heart and muscle activity data to a nearby receiver attached to a larger computer that collects the information.



RUGGERO FATICA

**Bob Schmidt of Cleveland Medical Devices says the RatPaak device his company is developing lets lab rats move around more freely.**

vices' Crystal Monitor, a wireless device that can be attached to emergency room patients and transmit electroencephalogram (EEG) data to nearby receivers to monitor brain activity. The company received an \$878,000 SBIR grant last September to develop the Crystal Monitor further.

The Crystal Monitor likely will be tested in emergency departments at the University of Illinois

"What our device does is allow the animals to move around and behave a lot more naturally," Mr. Schmidt said.

The device was developed as a means to better monitor lab animals recovering from brain injuries that resulted from cardiac arrest. Dr. Daniel Hanley, professor of neurology and critical care medicine at Johns Hopkins, worked with Mr. Schmidt to develop the device, which collects data formerly gathered by gluing wires to the tops of the animals' heads and connecting the wires to the tops of the cages. The wires, heavy and cumbersome, impeded the animals' movements and behavior.

By contrast, the RatPaak, which Dr. Hanley has used on a couple of tests with lab rats, enables the animals to move freely.

"The rats were able to tolerate the backpack and didn't chew it off," Dr. Hanley said. The data collected from the RatPaak "is just as valuable as with a direct (wired) connection."

Cleveland Medical Devices began developing the device in 1998 when the company received an initial \$100,000 grant from the NIH, Mr. Schmidt said. The most recent NIH grant will be used to develop the device further and to shrink it, he said. The next generation of the RatPaak will be about one-third of its current size and will fit on the back of a lab mouse. It will be known as the "MousePaak."

Dr. Hanley said researchers, especially those involved with genomics, prefer to use mice in their laboratories. At present, Cleveland Medical Devices' RatPaak is too big to use on a mouse.

Although Dr. Hanley knows of competitors with similar devices used on cats and dogs, he does not know of any such products for rodents. "It's definitely an innovative idea," Dr. Hanley said.

The technology used in the RatPaak is similar to technology used in Cleveland Medical De-

Medical Center at Chicago and Vanderbilt University Medical Center, Mr. Schmidt said.

Although Vanderbilt has not made a formal commitment to test the product, Dr. Sally Santen, assistant professor in Vanderbilt's Emergency Department, said the Crystal Monitor holds promise for emergency departments that typically do not have 24-hour access to EEG monitors. Severe and permanent injuries can result if patients suffering from brain injuries are not attended to on a timely basis, she said.

"The concept is a great idea," Dr. Santen said. "I look forward to getting a demonstration when it becomes available."

Mr. Schmidt said typical EEG monitors are large and can cost hundreds of thousands of dollars. His device will be available for about \$8,000 and won't be much bigger than a pocket calculator. The device provides the same information that a larger EEG monitor offers, he said.

Other devices for which Cleveland Medical Devices recently received NIH grants include :

- The Untethered Home Sleep Monitor, a variation on the Crystal Monitor and an unobtrusive tool to measure sleep patterns. The device received a \$923,000 grant in September for further development.

- The Miniature Cardiac Monitor and Cardiac Patch, which will enable doctors to monitor remotely and wirelessly the heart rhythms of their patients who might be in a hospital, extended care center or at home. The company received a \$1.29 million grant to continue developing the device.

Cleveland Medical Devices in 2002 had revenues of \$2.5 million, which includes some of the money from the NIH grants, Mr. Schmidt said. He would not provide a detailed breakdown of the source of revenues.

The company employs 25.