

Making muscles in mice and man

A Winnipeg researcher has created mighty mice whose regenerated muscles, deliberately crushed with a hemostat clamp, are bigger and stronger than their original muscles.

Dr. Judy Anderson's research into the role that nitric oxide plays in muscle regeneration will have many clinical applications for people who have lost muscle mass or injured a muscle because of age, disease, sports or space travel. She and her colleagues have discovered how to kickstart the satellite cells that make muscle tissue grow, a process that occurs in nature only when a muscle is injured or dystrophic.

"The secret to controlling muscle regeneration is an amino acid called levo-arginine that triggers the release of nitric oxide to stimulate satellite cells. These cells are activated and recruited to cycle as precursors for new muscle formation," says Anderson, a professor of human anatomy in the Department of Human Anatomy and Cell Science at the University of Manitoba.

Anderson says she has received numerous requests for more information about clinical applications of her discovery since her research was published in *Molecular Biology of the Cell* (2000;11:1859-74; [www.molbiolcell](http://www.molbiolcell.org/cgi/content/abstract/11/5/1859)

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"One obvious treatment is for Duchenne muscular dystrophy, the disease that the Muscular Dystrophy Association of Canada funded me to investigate that led to my discovery," says Anderson. She says astronauts who have lost muscle mass because of time spent in zero gravity might also benefit from controlled precursor cell muscle regeneration.

"When they return from space they have to be carried out of their ship and undergo months of physiotherapy to regain muscle mass. I'm not sure they ever fully recover," she said.

Other clinical uses include the treatment of elderly people whose muscles degenerate naturally with age and athletes with injured muscles that require a long time to heal. "The healing process can be speeded up by switching on the satellite cells," she says.

Anderson has applied for a patent for her research, but cautions that a lot of work still has to be done before it can be tried on humans.

"We still don't know how to target a specific muscle. Although the mice in the study increased their muscle mass by 20%, all of their muscles were affected, including the heart," she says. — *David Square, Winnipeg*



Anderson poses with a mighty mouse whose regenerated muscles are stronger than its original.

Quebec med schools up enrolment for second year in row

Quebec is setting the bar high when it comes to increasing medical school enrolment in Canada. It added 65 seats in 1999, and 30 new places are being added this year. They will be divided among the province's 4 medical schools. This brings Quebec's total number of first-year students to 531, or roughly one-third of medical school admissions across the country.

Only a handful of provinces are following Quebec's lead, said Dr. David Hawkins, executive director of the Association of Canadian Medical Colleges. Ontario is considering a 10% increase in first-year enrolment, which would add about 60 places, while Alberta is adding 20 places at both the University of Alberta and University of Calgary.

"The [Quebec government] is responding to the obvious data that there's a shortage of doctors in Canada," says Dr. Abraham Fuks, the dean of McGill's medical school. He said the rate of increase in enrolment reflects the province's progressive social policies. "They're smarter and more socially responsible [than other provinces]."

Overseas, the United Kingdom is establishing 3 new medical schools with 1000 extra places. — *Susan Pinker, Montreal*