

G

uide to writing news

1. Come up to SUB 3-04 at 3pm on Friday
2. Sit around for a minute or two
3. Take the elevator up to RATT
4. Have a libation
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## GATEWAY NEWS

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## Mice lead to heart discoveries

CAROLINE LEE  
News Staff

Staying young at heart may be possible with the discovery of a way to diminish the effects of the heart's aging process, according to a study published in the 6 November issue of *Circulation*.

According to Dr Jason Dyck, the study's supervisor and a professor in pediatrics and pharmacology at the University of Alberta, while lipid accumulation appears to be largely responsible for decreases in cardiac functioning, the effects of aging can be diminished or virtually eliminated in the heart with a decrease in fat uptake.

"What we found was that young and aged mice performed comparably on running tests. In fact, the hearts of aged knockout mice were indistinguishable from young hearts," he explained.

With typical aging, the heart is unable to function as efficiently due to a decrease in both mitochondrial functioning and fatty acid metabolism. This results in a lower availability of energy, in the form of adenosine triphosphate (ATP), to contract continuously. In an attempt to compensate for the energy deficiency, Dyck believes the heart increases lipid uptake through a transporter protein called CD36, despite the fact that the organ is unable to use this source of energy effectively.

"The fact that you're bringing in more fat into the cell, and then you can't use it, leads to a decrease in heart function," Dyck explained.

Dr Debby Koonen, the lead researcher and a postdoctoral fellow in pediatrics at the U of A, added that CD36, which is responsible for 50-60 per cent of lipid uptake in the heart, increased five-fold in aged mice. The amplified level of the transporter protein appears to be linked to a decrease in heart performance. However, by knocking out CD36 completely, she found that aged mice were able to maintain their treadmill time, performing comparably to young mice.

"CD36 knockout mice, despite the fact that [...] we had a reduction of 50 per cent in fatty acid uptake, had better function than the [normal mice]. They were almost identical to the young ones," she said.

By inhibiting production of CD36, the genetically modified mice were forced to use glucose as their main



STUART LITTLE A BIG HELP Rodent research could lead to prevention of aging hearts.

energy source, and thus were capable of producing sufficient energy to maintain normal levels of cardiac function.

"With a seven-fold increase in glucose oxidation, [the knockout mice] were able to sustain their ATP production and, therefore, be almost young at heart," Koonen expanded.

The results of the study appear to be promising with its applicability to humans. Dyck explained that his research team was able to confirm with a small sample size that CD36 levels increased in the human heart with age. However, while a drug targeting CD36 protein does exist, it's toxic to the human body.

"You can either live with having CD36, or you can die from your drug," Koonen said. "So it's going to be a long time before [a drug targeting CD36] can come out unless there is a lab somewhere that actually

is looking into this and has experiments already running."

However, because CD36 was knocked out in the whole body, Koonen was unable to completely eliminate other factors that could be responsible for the increases in heart function in the knockout mice. One such example is the lower body weight overall exhibited in genetically modified mice compared to the normal, aged mice. To eliminate this limitation, her research team is working on making a heart-specific CD36 knockout.

"It's going to be really wicked because we can turn on CD36 and turn it off whenever we want with the drug. We can let these mice age and see what actually happens to the heart. Then, we can say, 'Okay, this is what's happening in the heart, and it has nothing to do with any of these other little things.'"

## Squirrels' personalities surprise researchers

JONATHAN TAVES  
News Staff

A 20-year study on how squirrels adapt to climate change has also discovered that the animals have distinct personalities.

Dr Stan Boutin, a University of Alberta ecologist, founded the project in 1984 and started data collection during 1989 on a few square kilometres of the south western Yukon Territory.

"People have wondered whether in fact there are personalities in animals," Boutin said. "It's been well shown in a number of species, and now we've documented it in squirrels as well."

Boutin said he chose to study squirrels because they're easier to observe compared to other animals. He explained that he originally set out to determine factors that affect distribution of animal populations and credited one of the participating graduate students with the personality portion of the project.

"I build the system and supply the

basics, and then these creative students come along and they really think up the neat ideas; this personality one was an example of that," Boutin said.

While they're being observed, the critters are fitted with different-coloured ear tags and radio transmitters to follow their movements.

"We track them right from birth to death," Boutin explained. "We know where they live, who their parents are, what resources they had, how many babies they produced. So we get all the same sort of information demographers get studying humans."

Boutin said that squirrel behaviour ranges from highly aggressive and exploratory to docile and inactive.

"There are some that are pretty neurotic," he said. "We looked at whether having a personality of a certain type makes [the squirrels] more or less successful in terms of survival or raising young, and it in fact does."

Because the researchers follow their subjects so closely, on occasion they'll even see the death of a squirrel.

"The little guys coming out of the

nest and looking around for the first time get picked off much more frequently. We sometimes do see the goshawk swoop down and take the guy away."

The research team has also observed the squirrels' adaptation to cope with their changing environment.

"The Yukon is a major place for climate change, and we've been tracking how the squirrels have been responding to it," Boutin explained, adding that the animals have advanced the timing of their reproduction in response to their warming environment.

Though more than 20 years of research has explained a significant amount about squirrel adaptation and personality, Boutin said he's still sometimes taken aback with their behaviour.

"There are things we have been able to understand extremely well. So we have confidence we have accomplished something. The other part is that they are always continually surprising us," he said. "They've produced some really striking results. It's been quite neat."