

Fruit flies help unlock genetic mysteries

By ANDREW THOMSON
Standard Staff

When Mark Fitzpatrick was a student at Holy Cross Secondary School, he had visions of being a rock star, not wearing a lab coat and observing the genetics of fruit flies.

But today he wouldn't have it any other way. The 28-year-old St. Catharines native, now a PhD biology student, has seen his recent study on genetics published in the June edition of *The American Naturalist*, a prestigious scientific journal.

Fitzpatrick's study was conducted at the University of Toronto's Mississauga campus. He found that genes for male sexual traits and female mating preferences aren't just located on the sex chromosomes, and they could also influence additional traits such as fertility, development, vision and life span.

It was also thought that only sex chromosomes affected an animal's mating habits, but Fitzpatrick claims such genes can be found everywhere — a sort of genetic "multitasking."

"Genes in general are far more com-



Mark Fitzpatrick's study on genetics has been published in a scientific journal.

STAFF PHOTO BY DENIS CAHILL

plex than we ever thought," he said during an interview at the Port Dalhousie home of his retired parents, Jeff and Judy. "Although we thought these mating genes affected only one thing, it turns out they affect a whole bunch of

other things."

Fitzpatrick said his findings could apply equally to humans. Genes that explain why some women look for men with a square chin or other masculine features could also, for instance, regu-

late the amount of enzymes in one's liver — a sort of tug-of-war within each gene.

"It's possible that genes for hair colour or finger length could affect our heart rate or metabolism," he said. "It's just a completely strange, weird interaction."

Geneticists have known these trends for years, Fitzpatrick said. But no one applied them to the study of mating behaviour.

But why use fruit flies?

Because, Fitzpatrick said, they're small, reproduce quickly, only have four chromosomes compared to a human's 24 and can be manipulated a lot more easily than other members of the animal kingdom.

"If you were trying to keep 10,000 elephants in one lab, it just couldn't be done."

Thomas Hunt Morgan, a Nobel Prize-winning American geneticist, pioneered the use of fruit flies in experiments during the early 1900s, according to Fitzpatrick.

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"It was sort of a spontaneous decision that turned out to be a great accomplishment. Where other people have made discoveries in the structure of DNA or evolution, I'd say one of the other big discoveries has been, 'Let's work with fruit flies.'

"We're able to study things like Alzheimer's, cystic fibrosis, schizophrenia, cancer and anxiety, all in the fruit flies," Fitzpatrick said. "The same genes, the same chemicals, the same pathways will all work in humans."

In fact, he didn't even have to touch a single fly to complete his research. He got his information from a fruit fly genome database that's available to the public.

"There's endless possibilities. In fact, you could have an entire career making major discoveries without ever having to get your hands wet because it's all out there," he said.

His interest in the subject started while studying for a master's degree at Brock University, where he focused on how crickets attract each other through song. He also attained his bachelor's degree from Brock, graduating in 1999.

Inspired by a course he had taken, Fitzpatrick began his latest mating project last winter, submitting his research to the *American Naturalist* in the summer of 2003. After a long peer review process, the article was recently published.

Now he's waiting for reaction to his findings from his academic colleagues. A Harvard University professor has already written a grant application to study genes in lizards using Fitzpatrick's research as a model. And at a February conference in California, he led an impromptu workshop for 15 academics from various fields.

Engaged to be married next summer, Fitzpatrick hopes to eventually work as a university professor in southern Ontario. He was a laboratory teaching assistant for several Brock courses ranging from animal behaviour to entomology — the study of insects. Right now, he's working on his main thesis, a study in the evolution of how fruit flies forage for food.

His day at the lab usually consists of sequencing genes, extracting DNA, and setting up genetic crosses in the fruit flies.

It's a long way from his time at Holy Cross, where he was known more for playing tuba and piano in the school band than for his scientific prowess.

"I'd always been interested in art and music but I decided as a career that was a bit more risky," he remembered.

Still, his musical interests didn't fade once at Brock. His band recorded a CD and tried touring but met with little success, which turned out to be a fateful development.

"My music is too Sarah McLachlan and the (band) wanted more Rolling Stones. Getting kicked out of the band was what basically got me a master's degree at Brock and I'm so glad it happened."

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As for local job security, Jackson said none of Niagara Credit Union's 500 employees is at risk since the two credit unions don't overlap each other's territory.

"We've announced previously that we're planning on building two new branches in the Niagara region and one in the Guelph-Wellington market, and those plans will continue," he said.

HEPCOE, which stands for Hydro Electric Power Corp. of Ontario Employees, was originally established in 1942 for provincial hydro workers. Currently the third-largest credit union in Ontario, it has nearly 80,000 members, about \$1.4 billion in assets. Its branch locations range from Mississauga and Richmond Hill to Barrie, Collingwood, Whitby and Penetanguishene.

HEPCOE also maintains branches in power plant locales such as Nanticoke, Pickering, and Kincardine.

Many HEPCOE members have recently been transferred to jobs at the Sir Adam Beck generating stations in Queenston, CEO Ian McLeod said Tuesday night.

"We see this as a great opportunity that they can remain members and be serviced by a similar credit union," he said. "Niagara fit the bill both from a cultural perspective and the recognition that they deserve to be served by outstanding employees."

McLeod said there's much work to be done in the next three to four months. The two credit unions

hope to have a binding merger agreement written by this fall. The merger is subject to the approval of both organizations' shareholders and members, which would come in February 2005 at the earliest.

The Financial Services Commission of Ontario must also approve the deal.

The future of Niagara Credit Union's corporate headquarters, located in St. Catharines, has not been decided. Nor has a potential name for the new enterprise, although members and employees will be consulted, Jackson said.

"This is just the beginning of much more discussion and investigation," he said.

HEPCOE made the first overtures about joining operations in April, said Erv Krause, Niagara Credit Union's chairman of the board.

A joint merger committee was formed as negotiations progressed.

"We believe this gives our members a greater opportunity in terms of having many more branches in which they can be served across the province," Krause said.

As an example, he pointed to younger credit union members who leave the Niagara region for school or work and don't have easy access to their accounts.

The amalgamation of the two credit unions would also allow for more large-scale opportunities and investment, Krause said.

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