Front

Raising the bar on DNA coding

U of G's Biodiversity Institute will perform high-volume 'bar-coding'

BEN GELINAS

GUELPH (May 10, 2007)

BEN GELINAS, GUELPH MERCURY
Lab technician Christy Carr works at the Biodiversity Institute of Ontario yesterday.

With tweezers and steady hands, lab technician Christy Carr drops bits of moth legs into a clear liquid that will break them down so research robots at the University of Guelph's new Biodiversity Institute of Ontario can extract the DNA.

Carr, a 23-year-old master's student, has quite the summer job, working on tiny pieces of species in shiny corners of a one-of-a-kind, brand new, $4.2- million facility with a lofty purpose -- mapping the DNA of every animal on Earth, from plankton to blue whales.

On two floors, 35 men and women in white coats are building a catalogue of green, yellow, blue and red bars, each unique, that will tell biologists where a species comes from and how it lives.

Down the hall, Carr's boss, Paul Hebert, is juggling phone calls. He spent the morning explaining his science to CTV's Canada AM and the CBC. He followed that with a few words to dignitaries at an official opening ceremony in front of the new building built around his idea.

Hebert was the first scientist to propose species identification of this sort. He calls the coloured bars of DNA read from the insect legs and tissue samples "bar codes."

His institute receives pieces of animals from Canadian scientists working from Victoria to Halifax and around the globe.

Hebert calls the institute the "world's first bar-code factory." Grey-haired and bespectacled, the institute's director speaks with an intensity that alludes to the frantic pace research seems to be moving around him recently.

He says his staff will build bar codes for more than 10,000 different Canadian species by 2009.

And as the institute warms up to full capacity, he says they hope to do half a million species from around the world by 2014.

Of the estimated 10 million species on the planet, 1.2 million have been identified so far. The institute's technology reduces identification time from days to minutes.

"Most biodiversity institutes are focused on building big collections of life," he says. "We have a different focus."

They are building a library of bar codes that will eventually help biologists identify any living thing in moments.

The research can be applied to food safety and pest control.

"We are creating pools of data that are going to advance the conservation of life on our planet at a time when life is under

threat," Hebert says.

When a foreign species enters a new climate, it can cause problems for the native ecosystem.

"If someone finds a beetle and it's just invaded from Europe, we can put a name to it," he says. The landed beetle can then be eradicated before it finds something it likes to eat, then eats too much of it.

Its DNA will be the ID card.

"Biological invaders are like chemical pollutants that self-replicate," Hebert says.

bgelinas@guelphmercury.com

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