



Photo by Bob Talbot

From left, Faculty of Agricultural and Food Sciences associate dean Rachel Scarth, president Emöke Szathmáry, Heather Lau and Husky Energy Inc. president and CEO John Lau chat with plant science technician Eppie Austria during a tour of the Faculty of Agricultural and Food Sciences facilities on June 9. Husky has agreed to fund two research chairs at the University of Manitoba focusing on renewable energy resources.

## Husky Energy teams with U of M

### \$1-million endowment fund will launch two research chairs

The University of Manitoba is strengthening its leadership position in alternative energy research with the June 9 announcement of a \$1-million research endowment fund from Husky Energy Inc.

The gift from the Calgary-based company lays the foundation for the creation of two research chairs in biofuels with a focus on ethanol. Husky will provide an additional \$1.625 million over five years which the university will seek to augment through government support programs. This strategy is expected to leverage a total investment of over \$5 million towards biofuel research.

"Husky is proud to make a significant contribution to the University of Manitoba's research in developing the biofuel industry. The advancement of education and research is a key objective of Husky's community investment program. Establishing the Husky Biofuel Research Fund is an example of how Husky is working with Canada's universities to build a legacy

for education and research," said John C.S. Lau, president and chief executive officer of Husky Energy Inc.

"We are pleased to partner with Husky in this critical area of research. Their support will build on existing research expertise at the University of Manitoba to develop new wheat cultivars for biofuel production and to maximize the efficiency of the methods of that production. Both advances will benefit the ethanol industry," said president Emöke Szathmáry.

"Research into biofuels complements Manitoba's leadership efforts to reduce greenhouse gases, which is the key objective of the Kyoto accord," said premier Gary Doer. "We applaud Husky and the U of M for having the vision to invest in initiatives that make both good economic and good environmental sense."

The University of Manitoba's plant science department already boasts a well-established winter wheat program that has made advances in wheat yield, quality and disease resistance

with a particular focus on Fusarium head blight, a fungal disease that has severely affected wheat production in western Canada. With the new research funding, researchers will seek to develop high-yielding Fusarium-resistant winter wheat cultivars that will meet the current and future needs of the ethanol industry.

An additional focus on bioengineering of biofuels will bring together researchers from biosystems, civil and mechanical engineering and microbiology to improve the efficiency of biofuel production. Using advanced biotechnology in combination with process engineering, this multi-disciplinary team's goal will be to design an innovative system that converts biomass, or organic matter, into energy fuels such as ethanol and hydrogen.

Husky Energy is a Canadian-based integrated energy and energy-related company headquartered in Calgary, Alberta.

## Ebola vaccine raises hopes

University of Manitoba researchers are making international headlines for a breakthrough development in the battle against Ebola and Marburg, two of the world's deadliest viruses.

Steven M. Jones and Heinz Feldmann have produced the first vaccine system that has proven 100 per cent effective in protecting monkeys against infection from the viruses.

"The vaccines are safe and effective in a relevant animal model and show potential for use in humans," Jones said at a press conference Friday, June 3. The research findings are published in this month's edition of the journal *Nature Medicine*.

Jones said producing a successful vaccination in monkeys and great apes is a critical step towards developing a vaccine for human beings because monkeys respond to Ebola and Marburg in almost an identical manner to humans.

"If we can protect monkeys then we have a great deal of confidence for achieving the same result for humans," Jones said. He predicted a vaccine product could be available within five to six years.

Jones, immunology, and Feldmann, medical microbiology, both work in National Microbiology Laboratory in Winnipeg and collaborated with Thomas Geisbert of the United States Army Medical Research Institute of Infectious Diseases, Fort Detrick, Maryland.

The vaccines were 100 per cent effective in the 12 macaques studied. Each was given one shot of vaccine followed by a high dose of virus. None the macaques even developed fever or other symptoms associated with vaccination.

Ebola comes from the Filoviridae family of viruses, of which Marburg is also a member. Named for the Ebola River in Congo where the virus was first discovered in the mid-1970s, it has caused epidemics in Congo, Uganda, Gabon and Sudan.

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# Vaccine should be ready for humans within six years

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The viruses have a high mortality rate and cause a painful death that includes massive hemorrhaging.

The study describes how the researchers developed the vaccine by replacing a surface protein in an animal pathogen, called vesicular stomatitis virus, with a surface protein from the Ebola or Marburg virus.

Field studies of the vaccine would be conducted during an actual outbreak. The potential impact of an effective human vaccine is unquestioned: A Marburg outbreak is currently ravaging Angola. Ebola has taken 10 lives in Congo in recent weeks.

Jones and Feldman have worked together for years. The actual development of the vaccines started more than three years ago at the National Microbiology Laboratory in Winnipeg. The research was supported by a Canadian Institutes of Health Research grant through the University of Manitoba.

"This is one of our biggest wins so far," said National Microbiology Laboratory director Frank Plummer, also of the University of Manitoba.

Jones said they didn't have any 'Eureka, I've found it' moments during their research – instead it involved years of intense investigation and communication between the various groups as they worked towards the vaccine. If there was a eureka moment, it was during the testing phase of the product.

"When we reached day 14 we knew the infection had killed the infected animals but it had not killed the control animals," Jones said. "We realized it was working. That was a great, great

moment."

The vaccine also has the potential to save people who have just been infected with the Ebola or Marburg viruses.

Jones said medical staff are the obvious group that would benefit from the vaccine. Currently, staff exposed to the Ebola virus through a needle prick have a 100 per cent chance of dying. However, if treated with the vaccine within half an hour of exposure their chance of surviving is estimated at 80 per cent.

Following initial trials, work was carried out in partnership with the U.S. Army Medical Research Institute of Infectious Diseases in what is being considered a landmark in international scientific collaboration.

The set of vaccines is intended to protect against outbreaks of the Ebola and Marburg virus and against terrorist use of the pathogens – an obvious reason for the U.S. military's support for the research program.

"The United States, since 2001, has put a great deal of money into dealing with these type of viruses," Jones said.



Photo by Dale Barbour

National Microbiology Laboratory director and medical microbiology professor Frank Plummer, left, and immunology professor Steven Jones announce a new vaccine system that has proven capable of protecting monkeys from the Ebola and Marburg viruses.

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## Bulletin

The University of Manitoba Bulletin is published by the Public Affairs department every second Thursday from September to May and monthly from June to August.

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Printing: Derksen Printers

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Deadline for Events for the July 14 Bulletin edition is July 6.

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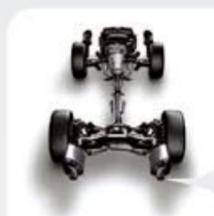
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