In Brief

ResearchLIFE

The new magazine published by the Research Communications and Marketing Unit in the Office of the Vice-President (Research), has hit shelves.

Published bi-annually, the magazine highlights research at the University of Manitoba.

The first issue reports on the CRYPt Project headed by the Faculties of Science and Education, how two kidney specialists have changed the way the world looks at biopsies, and what a story can tell us.

The issue also features an article written by filmmaker Guy Maddin, and insights from our new president.

The magazine is free and distributed around our campuses and beyond our provincial borders. Pick up a copy and discover the research impacting your life.

Cool millions

Nine researchers received $2.1 million in new funding from the Canada Foundation for Innovation on Jan. 6.

And the winners are: Mark Fry and Dirk Wehrbraucht from biological sciences; John Sorenson and Torsten Hegmann from chemistry; Arkady Major from computer engineering; Nicola Koper, Natural Resource Institute; Kiera from chemistry; and David Barber, to conduct controlled experiments on sea-ice processes. It will help us understand the interactions of trace element contaminants across environmental and bio interfaces.

On Jan 6, Wang received funding from the Canada Foundation for Innovation. Wang’s award will lead to the continuation of the Sea-ice Environmental Research Facility (SERF), which will allow Wang and his colleagues, Tim Papakyriakou and David Barber, to conduct controlled experiments on sea-ice processes. It will be the only facility of its kind in Canada.

Wang will continue investigating the tale of mercury contamination in the Arctic.

Speaker Series

War in outer space, coming soon

BY SEAN MOORE

Wars happen. According to the Heidelberg Institute for International Conflict Research, a think-tank, 2008 saw nine wars and almost 130 violent conflicts across the world. Peace on Earth is not likely in 2009, nor in the decade following, but what about peace in orbit?

For the past decade political studies professor James Ferguson has intensely watched what many others have neglected: how militaries are operating outside outer space.

The god’s-eye-view of battlefields entices militaries to take up an orbiting perch. And in turn they become targets to ground-based weapons. What scenarios unfold from the resulting posturing has many implications for how future wars are fought, and for the globalized economy that depends on satellites.

On January 21, as part of the Bringing Research to Life speaker series, Ferguson will give a free public lecture titled War and Outer Space (details below in Upcoming), in which he will discuss the prospects for, and implications of, war in outer space.

International law treats space as it does the high seas, as a global common. Countries can use it for “peaceful” purposes. But peaceful does not mean non-military, and as Ferguson notes, history suggests that military demands of fighting and winning will trump the demands of laws.

Satellites offer military, to use the jargon, force enhancement, which allows war to be fought with more precision – guided missiles, guided troops.

“Her research has to be driven by curiosity, but in the environmental field, it is driven by real world problems as well. And it’s surprising plot twists."

Inorganic mercury has a residency within China hit one of that country’s ageing weather satellites, effectively demonstrating the country’s space capabilities. The impact resulted in a vast field of debris, and each tiny scrap of metal, now whizzing randomly about orbit, is capable of crippling any satellite it hits. So a question percolates: what is a weapon in space?

“Reminds me of a weapon in space and what wasn’t. A weapon in space and what wasn’t. A weapon in space and what wasn’t. A weapon in space and what wasn’t.”

The Canadian government’s policy is that weapons are not to be put into space. But it’s safe to say lunched is littered with potential destructive agents.

If we don’t start paying attention, this issue will be driven by a military agenda rather than a broader political and strategic context. And that’s important for Canada. We’re not going to get anywhere saying ‘let’s not weaponize because it’s a bad thing.’ It’s going to happen and the question is what can Canada do and what should Canada do?”

To learn more, come to Ferguson’s free lecture on Jan. 21, at 7 p.m. in the Robert B. Schultz Lecture Theatre, St. John’s College. For more information, call 474-9020.

In April 2008, he and his colleagues published a paper in Environmental Chemistry that said levels of organic mercury (the bad kind that can cross the blood-brain barrier) were increasing in marine mammals despite a letup in the amount of inorganic mercury being expelled, by industry, into northern systems.

What’s the impetus?

The paper said it was likely the effects of climate change on a suspected group of sulphate-reducing bacteria capable of converting inorganic mercury into organic mercury by attaching a methyl group to it.

And as warmer temperatures reduce sea-ice coverage, the water will warm and coaxes these microbes into greater activity, further increasing the amount of methyl-mercury in the food chain.

This matters because normally, when you hear about contamination, you simply shut off the source and things dramatically change. But mercury contamination has inertia.

“The whole thing seems process driven, not source driven, and that surprised us,” Wang said.

A depressing story it is, we now think, that internal processes in the Arctic Ocean are driving the increases in mercury accumulation in mammals. But the question is, how?

Inorganic mercury has a residency time of at least 30 years in the Arctic aquatic environment. Even if mercury emission ceased completely, there is still a large reservoir of the stuff that can, and will, be converted to methyl-mercury. So the next 30 years are already written.

Sound familiar?

That’s almost the same story as climate change. So we were the first to demonstrate that for this group of contaminants, the mercury story is behaving similarly to the CO2 story.

“So our message is that global contamination and climate change needs further attention and investigation. You cannot separate them anymore.”

To better understand the fundamentals of these biogeochemical processes, Wang will use SERF to conduct controlled experiments using various combinations of sea water.

“Research is to be driven by curiosity, but in the environmental field, it is driven by real world problems as well. And it’s depressing to say that I see the horizon, but there is always hope.”

Coming soon: War in outer space, bringing research to life

James Ferguson, political studies, seen here at a research seminar at the University of Manitoba.