

Bringing Research to LIFE

In Brief

Feather in Sealy's cap

Biological sciences professor Spencer G. Sealy has been awarded the William Brewster Memorial Award by the American Ornithologists' Union (AOU). Sealy became the first Canadian editor of *The Auk*, one of the most prestigious journals devoted to the scientific study of birds and their environments, in 2004. The journal is published quarterly by the AOU. The Brewster Medal, created to honour William Brewster, one of the founding members of the AOU, is given annually to the author or co-authors of an exceptional body of work on birds of the Western Hemisphere.

Sealy has published extensively on the marine ecology of seabirds and is internationally recognized for studies of the behavioural and evolutionary ecology of avian brood parasitism. He has received previous recognition from the Society of Canadian Ornithologists/Société des Ornithologistes du Canada in 2004 and the Lifetime Achievement Award of the Pacific Seabird Group in 2005.

Upcoming

Eating- Is there a solution to the confusion?

with Joe Schwarcz, PhD

Monday, September 22, 2008
7:00 PM

Samuel N. Cohen Auditorium
851 Tache Avenue

Seating is limited. To RSVP please contact CCARM at (204) 237-2570 or cccarm@sbr.ca

HLHP Research Seminar Series

with Micheal Campbell, PhD
Associate Professor
Faculty of Kinesiology & Recreation Management

Friday, September 19, 2008
3:00 PM

Conference Room A (Room 238),
Investor's Group Athletic Centre

For more information, please contact Janis McGonigle at (204) 474-7087 or janis_mcgonigle@umanitoba.ca

Your immune system – friend or foe?

BY ILANA SIMONS
Director of Communications & Marketing, Faculty of Medicine

As the world remains on watch for the next big flu epidemic, Aaron Marshall, associate professor, immunology and Canada Research Chair in molecular immunology, is studying immune system signaling networks in diseases such as allergies, asthma and leukemia.

"We should give thanks that we can usually count on our immune system to protect us in times of need." On the other hand, the existing "epidemic" of autoimmune and allergic diseases demonstrates that the immune system can be either friend or foe.

"Whether the goal is to know thy friend or know thy enemy, the key is knowledge," Marshall said.

The immune system serves to protect one from nasty infections and prevents a simple winter cold from turning into life-threatening pneumonia. Take it away and one would have to live in a bubble to survive.

But, Marshall notes, for patients with systemic lupus, rheumatoid arthritis or Crohn's disease, their immune system is something that needs to be suppressed at all costs. In these autoimmune diseases, the immune system attacks the body itself, causing chronic suffering to those afflicted.

Similarly, the misguided immune system of allergy sufferers and asthmatics can cause symptoms that range from annoying to life-threatening.

"What is the point of having an immune response to pollen or peanuts anyway? Why is it that the immune system sometimes doesn't do enough to keep us from getting sick, and sometimes goes too far and makes us sick needlessly?" asks Marshall, adding that these are the kinds of questions being tackled by immunologists at the University of Manitoba.

The core of our immune system is a collection of specialized cells that patrol the body via blood circulation. Experts in the Department of Immunology are studying a variety of immune cell types, including B lymphocytes, T lymphocytes, natural killer cells and



Submitted Photo

Aaron Marshall, Department of Immunology, is studying immune system signaling networks in disease.

neutrophils.

"Each of these cell types has an important part to play in keeping us healthy. On the other hand, unchecked activities of these same cells can have devastating consequences," he states, citing B lymphocytes, for example, which can produce antibodies that neutralize viruses (good), or antibodies that bind to pollen or even your own DNA (not so good).

How then, do immune cells make the right decision to respond to the virus, but not the pollen?

"Immune cells are controlled by receptor proteins present on their surface membrane. These receptors allow the cells to sense the presence of foreign invaders, tissue damage and other activated cells," Marshall explains, adding signals from these receptors on the surface of B lymphocytes determines whether they divide to produce more copies of themselves, differentiate to become antibody-secreting factories or die by cell suicide.

The goal of much immunology research is to decipher the codes of cellular communication that direct the immune response.

Knowledge of the molecular controls that direct immune cells is still far from complete. "Researchers are

piecing together the code one molecule at a time," says Marshall.

"Tantalizing evidence is emerging that the immune response can be altered by blocking or enhancing the activities of specific control proteins. Indeed, the activities of specific signal transduction enzymes can make all the difference between a healthy or unhealthy immune response."

For example, Marshall and his collaborators in the CIHR National Training Program in Allergy and Asthma have found that a specific signaling enzyme is critical for the immune system to develop allergic sensitization and then allergen-induced airway inflammation (allergic asthma). Marshall's work indicates that this enzyme is a new therapeutic target for allergic asthma and other atopic diseases.

Understanding the molecular controls and how they sometimes go wrong will allow development of better medicines to treat these patients.

Researchers believe that by having a more refined understanding, medicines can be targeted more effectively, and with fewer side-effects.

Indeed, a new generation of more finely targeted immunosuppressive medicines is already progressing through clinical trials and into the clinic.

Jayas sharing knowledge with China

Distinguished professor Digvir Jayas, associate vice-president (research), Canada Research Chair in stored-grain ecosystems, has been conferred with a fellowship, Regular High-Level Visiting Scientist at Beijing University of Posts and Telecommunications (BUPT) until 2012.

Jayas travelled to Beijing in early September to accept the appointment and begin the collaboration with BUPT in the area of stored-grain ecosystems. The appointment was given to Jayas for his outstanding achievements in his field of research. He is part of the



Submitted Photo

Digvir Jayas, right, accepts post from Ren Xiaomin.

International Guest Academic Talent (IGAT) Base on Advanced Intelligence

and Network Service.

This program is part of the IGAT program for the development of university disciplines in China (nicknamed the '111' program).

The Chinese Ministry of Education launched the '111' program in September, 2006, aiming to invite 1,000 world class academics from the world's top 100 universities to establish 100 innovative research bases in China.

Jayas is one of the many University of Manitoba researchers collaborating with Chinese scientists and scholars on various projects.