

Research Reporter

Scholarly, research and creative activity

Published by the Office of Research Services, Brock University
St. Catharines, Ontario, Canada L2S 3A1



Brock University

Your career begins here!

Issue 8 - December 2002 Recognizing Research



Dr. Michael Owen

In this issue of *Research Reporter*, we welcome our new student writers, Julie Elliott and Kimberley Lee, and express our appreciation to Erin Kaipainen who wrote the articles for the first seven issues of *Research Reporter*. We are very pleased that Julie and Kim have joined with Research Services and External Relations to interview faculty, develop articles and prepare news releases on their scholarship.

I take this opportunity to report on initiatives that have an impact on research and scholarships at Brock. As many may be aware, the delegates at the recent Federal Innovation Summit, held November 19th - 20th, endorsed recommendations that the Federal Government double research funds available to the three national granting councils and to make permanent the provision of indirect costs to universities on grants received from these agencies. Linked to these recommendations were commitments of the university system to enhance the knowledge mobilization capacity, including the commercialization of the results of university research.

Brock's Senate Research Committee will undertake a review of policies and procedures that support the transfer of the results of research from the university to receptors in the community. Over the next term, the Senate Research Committee will consider how the University might support faculty "seed" or "spin-out" companies to commercialize the results of research to the benefit of the Niagara community. The Senate Research Committee will be seeking the advice and input of the university community on the best means to support the many ways through which research results are disseminated – through research centres and institutes such as Brock Wellness Institute, university-community collaborations such as YLC-CURA, student internships, university-industry collaborations, and the creation of spin-out companies.

Dr. Michael Owen

Director, Office of Research Services
Brock University
St. Catharines, ON
Tel: 905-688-5550 ext. 3127
Fax: 905-688-0748

The Offices of Research Services and Media Relations seek research stories that are of interest to other scholars and to the community.
Contact: mowen@brocku.ca or cwiley@brocku.ca.



Dr. David Schimmelpenninck

Professor David Schimmelpenninck van der Oye hopes that his latest research will contribute to a better understanding of Russian national identity. He is one of only a few North American scholars specializing in Russian intellectual history. Schimmelpenninck examines eastern influences on Russian identities and explains that "many other scholars have looked at Russia's relationship with the West, but because Russia straddles both Europe and Asia, Russians have also often thought about their ties to the East." Despite this, Schimmelpenninck explains that there is a huge gap in the scholarship of Russian history, particularly in the area of Russian Orientalism.

Schimmelpenninck is a Yale scholar and is fluent in five languages. Already, at this early stage of his career, he has published a monograph, an impressive number of articles and book chapters, as well as a forthcoming co-edited book of essays. He also holds a contract with Yale University Press for a book he is writing entitled, *Russian Orientalism: Asia in the Russian Mind from Catherine the Great to the Emigration*. In recognition of his exceptional contributions to Russian history, Schimmelpenninck was recently awarded a Brock University Chancellor's Chair for Research Excellence. In acknowledging his achievements to date and his impressive publication history, Schimmelpenninck has been described as being "a model for every young faculty member beginning his/her career."

Under the Chancellor's Chair program, Schimmelpenninck will continue to investigate the history of Pre-Revolutionary Russian perceptions of Asia. His current research program builds on the work of his first book, *Toward the Rising Sun: Russian Ideologies of Empire on the Path to War with Japan* which examines the ideas that drove tsarist expansion into Manchuria on the eve of the war with Japan. Schimmelpenninck suggests that Russia's "ambivalent geography" of

Imagining Identities: An Interdisciplinary Approach to Understanding Russian Identities

being neither East nor West, "has often inspired a similar ambiguity about the country's national identity."

Schimmelpenninck's project draws on several disciplines, incorporating analyses of a wide range of genres such as travel literature, diaries, imaginative literature, visual arts, folklore and music – areas that touch all sectors of Russian society. By expanding the traditional scope of historical research, Schimmelpenninck explains that he is able to "examine various expressions of Russian attitudes about the East."

The interdisciplinary approach of his research is essential, he says, because "at the turn of the century, literacy was not universal and only one out of every four males could read in Russian." With this in mind, Schimmelpenninck suggests that "Russia may have become more familiar with the East through art, literature and folklore." Even Russian advertising, he says, can tell us something about the East.

Schimmelpenninck's second project as a Chancellor's Chair involves the production of a two-volume edited collection of essays on the Russo-Japanese War by several international specialists. *The Russo-Japanese War: A Centennial Reappraisal*, co-edited by Schimmelpenninck and two American colleagues, will, according to Schimmelpenninck, "significantly deepen our understanding of one of the most important conflicts of the modern age. The volumes will also provide the only study to date that includes the perspectives of both combatant powers. At the same time, as a broad interdisciplinary survey that studies not only the fighting, but related social, cultural, political, diplomatic and economic aspects, it will place the war in its proper, wider context." Schimmelpenninck and his colleagues are also planning workshops and two international conferences on the Russo-Japanese War for 2005.

Dr. David Schimmelpenninck's research is supported by SSHRC.

• Article by Erin Kaipainen

Chancellor's Chairs Recipients - 2001

Dr. Sandra Beckett

Dr. Sandra Beckett, a Professor in the Department of Modern Languages, Literatures and Cultures, is recognized around the world as an expert on 20th century French novelist, Henri Bosco. She has published more books on Bosco than any other scholar in her field. Last year she was awarded a Chancellor's Chair for Research Excellence for her work in the study of the way authors use fairy tale motifs, characters and structures to write modern tales with 20th century messages, a method known as intertextuality. She is also recognized for her study of cross-audience phenomena, a growing trend in which authors write texts that appeal to both children and adults. Beckett has published extensively, and under the Chancellor's Chair program, she will complete three books that will "contribute significantly not only to the field of children's literature, but also to literary theory and criticism in general."

Dr. Beckett's research program has been supported through SSHRC Standard Research grants and grants from the Brock University Advancement Fund.

Dr. Elizabeth Sauer

After joining Brock University as an Assistant Professor in the Department of English Language and Literature in 1991, Dr. Elizabeth Sauer rose quickly to the rank of full Professor. Sauer has been described as "one of the most influential scholars in Brock's Faculty of the Humanities." In 1999, she was awarded the Irene Samuel Memorial Award from the Milton Society of America for the most distinguished book of essays entitled *Milton and the Imperial Vision*.

Under the Chancellor's Chair program, Sauer is continuing her work on three volumes, *Print, Performance and the Public Sphere in Early Modern England*; *Reading Early Women: Texts in Manuscript and Print, 1500-1700*, edited with Helen Ostovich and *Comparing Imperialisms: Early Modern to Late Romantic*, with Balachandra Rajan. — Dr. Sauer's research is supported by SSHRC.

Dr. Maureen Reedyk

In 1995, Dr. Maureen Reedyk was awarded the John Charles Polanyi Prize in Physics. Reedyk, an Associate Professor in the Department of Physics, investigates "exotic" superconductors with extremely low transition temperatures. Superconductors are able to carry an electrical current without any

resistance and therefore, no energy loss. They are used in applications ranging from electronics to high field magnets such as those used in medical Magnetic Resonance Imaging (MRI) scanners. Reedyk's work has attracted attention from collaborators around the world. Reedyk's work in a challenging and previously overlooked area, demonstrates her success at this early stage of a very promising scientific career. — Dr. Reedyk's research is supported by NSERC.

Dr. Douglas Bruce

Douglas Bruce, a Professor with the Department of Biological Sciences was awarded a Chancellor's Chair for Research Excellence in recognition of his scholarly achievements in the field of Biophysics of Photosynthesis systems and for the impressive contributions he has made to "building strong research infrastructure for spectroscopy at Brock, his mentoring of junior and post-doctoral colleagues, and undergraduate and graduate students, as well as for conducting original research in photosynthesis on his own and in collaboration with international colleagues.

Bruce's research focuses on the primary events involved in light capture and energy conversion by plant cells; the process that plants use to convert sunlight, air and water into sugars. — Dr. Bruce's research is supported by NSERC. •



Tiptoe to Discovery: Professor Discovers Plants React to Insect Footprints

Dr. Alan Bown

Innovative research by Brock University's Biological Sciences Professor, Dr. Alan Bown, has found that plants react to an insect's presence much faster than previously thought, producing defensive chemicals within seconds. Bown has demonstrated that plant leaves are reacting to insect footsteps by producing one of two defence chemicals: 1. superoxide and 2. GABA (gamma aminobutyric acid). GABA acts very much like a nerve poison, and tends to paralyse the insects. Fifteen years ago, Bown first discovered GABA when doing experiments on isolated plant cells. This discovery led Bown to ask two pertinent questions: First, "What is the mechanism increasing GABA? And second, "What is GABA's role once it is there and once it has been produced?" Professor Bown's research over the last five years shows that GABA levels increase up to ten times within minutes of insect crawling.

This large amount of GABA production, according to Bown, "meant the signal had to go through the feet." At the time, Bown thought, "if we can do the right test, we'll be able to see the footsteps." With the help of two Brock students, Dawn Hall and Kennaway MacGregor, Bown was able to successfully see plant reactions to insect footprints.

Dawn Hall joined Bown in her third year at Brock as a NSERC (National Science and Engineering Research Council) summer student. Bown fondly remembers Hall's first day in the lab where she had success while testing for superoxide on plant leaves, which according to Bown, "is unusual in science." Hall is currently working on her MSc in biology at Brock. Kennaway MacGregor also worked closely with Bown during his research on plant chemical defences and is currently working towards a PhD in Biotechnology at Brock University. Hall and Kennaway's involvement was imperative to his discovery. As Bown explains, "I had the ideas, they did the experiments."

Professor Bown was able to answer his first question of what was behind the production of GABA in plant leaves when he discovered that the synthesis of GABA was stimulated by increasing calcium or decreasing pH inside the plant cell. He then found that after an insect walked on a plant leaf, high levels of GABA were produced; thus, making the insect footsteps the initial

step in the stimulating mechanism. As Bown explains, "Plants are rooted to the spot, they can't run away like animals; therefore, they defend themselves chemically by attacking the nervous systems of insects."

His second question about the role GABA plays once it has been produced, is currently in the process of being answered. In recent tests, a genetically modified leaf, which has been modified to produce more GABA, is placed beside a normal leaf. Bown discovered the insect avoids eating the genetically modified leaf. These genetically modified plants could result in elimination of unnecessary insecticides. As Bown suggests, "instead of spraying insecticides, which kill the good and bad insects," plants that are modified to produce higher levels of GABA "only eliminate those that bite into the leaf." This second part of Bown's research currently has a patent pending.

Dr. Bown's research has been supported by the NSERC Research Grants Program.

• Article by Julie Elliott



**Published by the Office of Research
Services, Brock University,
St. Catharines, Ontario**