

THE CAMPUS SCHOLAR

Mount Allison's newsletter of research and creative activity

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Psychology

Well Positioned for a Canada Research Chair

Canada's aging population and the associated impact on numerous inter-related aspects of our health care systems and society have given rise to an increasing need for psychologists with multidisciplinary interests in health research.

The Department of Psychology at Mount Allison University, with its current complement of faculty, as well as recent additions, is adequately positioned to address research questions and issues associated with health research from the psychological standpoint and is preparing to secure a Canada Research Chair in Health Psychology.

Given the strong interest in health-related research today, it is perhaps not surprising that faculty members at Mount Allison are actively collaborating on interdisciplinary projects in health research. Students have also been the beneficiaries of this renewed vigor. During this past summer, there were more students working with psychology professors on research projects than at any time during the past decade.

Who are these faculty, and what are they doing?

Dr. Odette Gould's research focuses on cognitive development in adulthood and aging, particularly the functioning of memory and language with advancing age. Her research program addresses the relationship between older per-



Psychology student and research assistant Molly Whittleton transcribing data for Dr. Gould's study on collaborative memory in seniors.

sons, cognitive abilities and their use of health-care services. Much of her work has focused on how and when older adults use memory strategies to manage the task of taking medication. She has submitted a CIHR proposal, with Dr. Louise Wasylkiw as co-investigator, to extend this work. Together they plan to investigate patients' abilities to correctly monitor their medication adherence and to evaluate the success of different intervention programs to enhance medication adherence in middle-aged and older patients.

Dr. Gould has also carried out a series of studies to investigate how medical information is understood and recalled by older individuals. She has received NSERC operational and equipment grants to investigate the differences in how younger and older adults work with partners in order to understand why older adults benefit differentially from a collaborative setting.

Dr. Stephen Claxton-Oldfield is interested in the volunteer component of palliative care. Palliative care is a special kind of health care that embraces the challenge of caring for terminally ill persons and their families, when curing is no longer an option. In addition to addressing physical concerns such as pain and symptom management, palliative care is designed to meet the psychological, social, emotional, and spiritual needs of persons who are facing terminal illnesses and their families.

Volunteers play a vital role in the delivery of palliative care because they are in a better position to spend time with patients and their families. Dr. Claxton-Oldfield's research explores various aspects of palliative care voluntarism such as recruitment, motivation, satisfaction, volunteer roles, and looks at these across age, race, gender, and other personal characteristics.

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Conferences

Women in Motion A Great Success

by Karen Bamford

On May 23-25 Mount Allison hosted an interdisciplinary bilingual conference on “Women in Motion.” Although traditional gender roles, exemplified in the classical pairing of Penelope and Ulysses, have prescribed stasis as normative for women and reserved mobility for men, there have been significant exceptions to the dominant pattern. Conference organizers, Dr. Karin Schwerdtner (Modern Languages and Literatures) and Dr. Karen Bamford (English), invited participants to examine the ways in which mobile women have figured in cultures and societies, past and present. Response from the international scholarly community was overwhelming: more than 80 presenters gathered from Canada, the United States, Europe and Australia, to discuss the theme of female mobility in a wide range of contexts, from seventeenth-century French Canada to contemporary Marrakesh; from nineteenth-century literature for children to contemporary postmodern fiction; and from fine art to film.

Support from SSHRC and Mount Allison's Canadian Studies Program allowed organizers to bring three distinguished key-note speakers: Dr. Sara Mills (Sheffield Hallam University), Dr. Lori Saint-Martin (Université du Québec à Montréal), and Canadian biographer and journalist, Charlotte Gray.

Sara Mills, Research Professor of Cultural Studies and author of *Discourses of Difference: Women's Travel Writing and Colonialism* (1991), has written extensively on gender and colonial space. Her lecture, entitled “Beyond the Adventure Hero: Contemporary British Women Travel



Conference organizers Karin Schwerdtner (left) and Karen Bamford

Writers,” examined the discursive constraints and possibilities available to British women travel writers in the 20th and 21st centuries.

Lori Saint-Martin's recent book, *La voyageuse et la prisonnière* (2002), illuminates the tension between women's socially-prescribed roles and their desire for mobility in the work of the eminent French-Canadian novelist, Gabrielle Roy. In her conference presentation, “La Voyageuse and la prisonnière: Gabrielle Roy et la mobilité des femmes,” Dr. Saint-Martin analyzed the way in which Roy represents mothers, as prisoners of the home and of the family, who dream of travel and of freedom, while their daughters reject notions of traditional femininity, longing to break free from convention. Thus, she concluded, in Roy's works, the feminine condition is played out between these two fundamental figures, the female prisoner and the female traveler, who yearn for movement and freedom, above all things.

Charlotte Gray, author of *Flint and Feather: The Life and Times of E. Pauline Johnson, Tekahionwake* (2002), *Sisters in the Wilderness: The Lives of Susanna Moodie and Catharine Parr*

Trill (1999), drew on her extensive knowledge of Canadian archives in her talk “Women Bring our History to Life.” For years, she declared, Canadian history was dominated by accounts of wars and laws. A national narrative which put the emphasis on the conquering of a continent and constitution-building meant that the role of women in our shared past was marginalised. However, a close attention to women's lives, and the stamina with which many of them forged literary careers despite poverty, gives texture and colour to our neglected social history.

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Psychology

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Dr. Jennifer Tomes's primary research focus is human memory, specifically differences between real and illusory memories. Despite the commonly held belief that memory is an accurate recording of experienced events, much research indicates that our memory is in fact error prone and inaccurate. Research in Dr. Tomes's lab has suggested that there may be different "types" of false memories, which are created by different memory mechanisms.

Current projects focus on phenomenological differences between different types of memories, as well as how individuals make confidence judgments for both real and illusory memories. Dr. Tomes is also active in exploring individual differences in false memory creation. Recently, she has been collaborating with researchers at the University of Western Ontario, examining metacognition in Parkinson's patients. Her research is currently funded by NSERC.

Dr. Chris Storm's research is concerned with semantic structure, primarily the semantic structure of the words used to describe feelings and emotions. Semantic structure is concerned with the relations among the words in a particular field – words that refer to color, to animals, to personality traits, and to feelings. Examples of semantic relations among words are similarity of meaning, contrasts in meaning, superordination, and subordination. For instance, happiness is similar to joy and contentment, opposite to sadness, subordinate to feeling or emotion, a superordinate of elation (defined as an intense kind of happiness).

This research also concerns the relation of the words to the phenomena – to the variety of feelings we experience – and their relation to each other. Does the semantic structure of the words



Amanda Nolan, Honours student in Psychology, testing categorization of facial expressions of emotion in children.

reflect the relations among the actual feelings? Different languages deal with emotions often very differently. Dr. Storm's studies ask people to use their knowledge of English to answer questions about the semantic relations among words, to give definitions, to name the feelings expressed in photographs of faces, in dramatic films, or in stories. She asks people to give all the words for feelings they can think of and sort them into groups that belong together. She has done many of these studies with colour, personality, and animal words for comparative purposes. Feelings and colour perception are private experiences. This makes the study of the language we use to communicate about them particularly interesting and necessary to understanding the phenomena themselves. Dr. Storm's research is funded by a SSHRC grant.

Dr. Louise Wasylkiw has two primary research interests: the relationship of the self to personality traits, and to health. In the domain of health, she has previously examined the utility of self-reports of health relevant behaviours (e.g., whether impression management and self-deception contaminate self-reports of health behaviours). Specifically, she has focused on the measurement of personality traits and

health behaviours and whether these constructs need to be matched in level of specificity (e.g., should researchers focus on individual health behaviours or broader categories of health behaviours when considering their relations to traits?).

Additionally, she and her colleague, Dr. Odette Gould, have applied for provincial funding to examine the changing roles of health professionals. Critical for the acceptance of the expanding roles of allied health care professionals (e.g., pharmacists, nurses) is an understanding of the expectations and educational needs of health care users. Thus, this line of research focuses on public perceptions of allied health care professionals and their implications for health care utilization.

Dr. Karen Nicholson, has joined the department as the resident human neuropsychologist. According to her, humans have a remarkable ability to glean a message from other people's speech. In fact, we spend much of our day in face-to-face communication, in which visible movements of the face, hands, and body accompany speech. Also, the audible and visible responses of the listener can modify the quality and content of the talker's speech, which in turn could affect the listener's



Rebecca Burke, *Giraffe Landscape #1*

ability to perceive a message. Thus, face-to-face communication is a reciprocal interaction between a talker and a listener with much information being conveyed by visible gestures.

Dr. Nicholson's research focuses on the basic mechanisms underlying the perception and production of visible speech gestures during face-to-face communication. In addition, she is interested in how the perception and production of such gestures may be impaired in both developmental (e.g., autism) and acquired disorders of communication and whether such gestures could compensate under conditions where it is difficult to use the auditory speech signal as the basis for comprehension (i.e., hearing impairment). Dr. Nicholson's research is currently funded by NSERC.

Dr. Terry Belke has been investigating motivation to run in rats for the past eight years. Learning more about what motivates rats to run may tell us more about the conditions that would influence motivation to exercise in humans.

News stories abound that tell us that obesity in our population is becoming a major health concern. Indeed, obesity

is a risk factor for the development of a number of health disorders. Part of the problem is our sedentary lifestyle. There is a need to learn more about the conditions that not only get people to initiate exercise programs, but also those that help them to maintain a healthy level of exercise.

Dr. Belke's contribution to basic science is positioned in the context of the physiological and non-physiological conditions that influence motivation to run in rats. Ironically, one of the factors that influences motivation to run is body weight. As body weight decreases, motivation to run in rats increases. As body weight increases, motivation to run decreases. This relationship between body weight and running is theorized to be part of an adaptive mechanism that enhances the survival of individuals under conditions where food availability markedly declines (e.g., a prolonged drought).

In today's environment with foods high in calories so readily available and obesity becoming so prevalent, it is not difficult to understand the lack of a physiological basis to initiate and maintain activity. Dr. Belke was recent-

ly awarded a five-year NSERC grant to continue his studies.

Dr. Alexander Wilson's primary research interests lie in the study of neurological disorders and, more specifically, learning disabilities across the lifespan. Within this group of disorders, reading disabilities (often referred to as 'dyslexia') have been studied most often. Although the condition persists across the lifespan, the adult learning disabilities field remains largely underdeveloped.

Dr. Wilson's research program focuses on the phonological processing skills of dyslexic adults, the role that context plays in aiding reading comprehension, and the compensatory mechanisms that are used to optimize learning. As Director of the Meighen Centre, a university support program for students with learning disabilities, Dr. Wilson along with staff engage in applied research (e.g., resources for services providers, students and their families), advocacy, teacher training, and consultation with schools and government. Dr. Wilson serves on the National Thinktank on Learning Disabilities of the Learning Disabilities Association of Canada, and the Advisory Committee on Disabilities, GED Testing Services, Washington, D.C.

As illustrated by these descriptions of the research interests of the faculty in the Department, there is, for the most part, a shared interest among the faculty in health issues. The department looks forward to welcoming a Canada Research Chair to help move research efforts forward in Health Psychology. This addition to the current faculty complement will serve to further define this emerging focus on health-related research, as the Department of Psychology carves out a new identity in a new millennium.



Individuals who worked in Dr. Baerlocher's lab this past summer. From left to right they include: Professor Heinz Brendelberger (Germany), Dr. Beryl Laitung (France), Claudia Pascoal (PhD student, Portugal), Liliya Nikolcheva (MSc student, Bulgaria) – "Knorri" separates the group – Professor Fernanda Cassio (Portugal), Michel Belliveau (Moncton), and Samuel Manser (Switzerland). Dr. N.S. Raviraja (India, not in picture) left earlier this summer to take up an appointment at the Albert Einstein College of Medicine in New York.

Biology

Aspects of Biodiversity in Relation to Ecological Functions

by Felix Baerlocher

Two recent developments have had a tremendous impact on the practice and priorities of ecological research, particularly as they affect microorganisms. The first is a renewed interest in biodiversity, stimulated by the threat of accelerating extinction and the fear that this may result in the irrevocable loss of ecosystem function and services. The second is the introduction of highly sophisticated molecular techniques. Because of limited morphological variability, description of microbial diversity in most ecosystems has been difficult. The use of molecular characteristics has greatly advanced the field.

The work in my lab has revolved around aquatic hyphomycetes, a group of fungi decomposing autumn-shed leaves in streams. Specific questions addressed by my collaborators and visitors include estimates of fungal diversity (using classical morphology-based and molecular techniques) and factors controlling it in pristine streams, and in streams affected by pollution (heavy metals, organics), replacement of native forests by tree plantations (conifers in Canada, eucalypt in Portugal or India), or excessive influx of nutrient (e.g., nitrogen deposits). Overall, aquatic hyphomycetes are amazingly resilient: some species occur in a stream in Germany with a 2.9 g Zinc, and substantial amounts of Cadmium and Copper per litre.

What happens to ecological functions when biodiversity declines?

Much work has been done on terrestrial

plant diversity and its connection with production or biomass accumulation. It generally demonstrates an asymptotic relationship between diversity and function. A decline in function becomes noticeable when species numbers drop below 10. In streams, as few as 3–5 species appear to be sufficient to affect decomposition rates of leaves, one of the standard fungal roles. This implies considerable functional redundancies among the usual 35–50 species found in a pristine stream. Our long-term field studies and microcosm experiments support the interpretation of fungal communities as structured by non-equilibria. Diversity is due to the presence of a huge number of loosely connected populations, which prevents global dominance by a few top competitors.

A major challenge in ecological research is extrapolating from short-term studies to patterns emerging at larger spatial and temporal scales. A promising approach is based on cellular automata, or individual-based modeling, or dispersed intelligence. Individual spores or fungal colonies can be represented as independent 'agents,' and provided with simple sets of rules. By increasing their numbers, defining certain parameters of their environment and how they respond to them, we may at least be able to define boundary conditions for likely outcomes. The same approach has proven that simple rules applied to large numbers of individual agents result in amazingly complex and realistic societal phenomena.

Research on aquatic hyphomycetes has experienced considerable growth in recent years; over the last 6 months, I have been external examiner for one M.Sc. thesis (Dalhousie) and 3 PhD theses (Toulouse, Berlin, and Halle).

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Team Wins Competition for Public Art Project



Maquette of “waveflow” designed by Jennifer Macklem and Kip Jones, to be installed at Moncton City Hall, spring 2004

Jennifer Macklem and Kip Jones Team Up in Fine Arts

Sackville sculptors **Jennifer Macklem** and **Kip Jones** met with representatives of Moncton City Council in July to sign a contract awarding them the design and fabrication of a major sculpture-fountain. The sculpture fountain, titled “waveflow”, will be installed in the spring of 2004 in Moncton’s City Hall Plaza. Created by Sackville artists Jennifer Macklem, Professor of Sculpture at Mount Allison University, and Kip Jones, technician in the sculpture department, the piece was the unanimous choice of a five-person jury.

A two-stage competition was held, and promoted throughout the province of New Brunswick to various professional artists and designers. Twenty-two submissions were received by the city, from which four finalists were selected and invited to develop small-scale

models and additional details with respect to their proposals.

“The selection committee was looking for a captivating piece of public art that incorporated a water theme, one that would be complementary to City Hall and reflect the contemporary city we have become,” says Councillor Kathryn Barnes, council’s representative on the committee. “I am sure that citizens will agree that the selected works represent a modern vision of Moncton.”

In their submission, the artists Macklem and Jones describe their proposal: “Our project is inspired by the idea of a wave: a wave of water and wind. It is inspired by natural forms and energy and serves as a reminder of our surrounding environment within an urban context.”

The selection committee was made up of various experts in the fields of art, architecture and engineering, and included representatives from the municipality. These included Ed Koch, Win Pearce, Rod Higgins, Councillor Kathryn Barnes, and John Greer. City

staff members Christine Picard (Community Services) and Ron LeBlanc (Engineering) provided assistance to the committee.

Moncton City Council approved \$125,000 in their 2003 capital works budget. The project is expected to be built, installed, and operational in early spring 2004.

Since 1995, Jennifer Macklem and Kip Jones have worked together on a range of public art projects, as well as actively pursuing independent studio work for gallery exhibitions. Working with bronze, stainless steel, aluminum, and copper, they have created several large-scale projects at public sites, most notably Moncton’s City Hall Plaza already described, and the Fossil Floor at the Calgary International Airport in 2002. Their last project was the fabrication and design of a nickel plated award, entitled “Resolution,” commissioned by the provincial government of New Brunswick.

Other major public art projects completed by Jennifer Macklem and Kip

Jones have been commissioned by several municipalities of British Columbia: Kelowna, Surrey, and Whistler. They were short listed for public art competitions by the City of Vancouver, and three other projects in Whistler.

In 2002, Jennifer Macklem and Kip Jones joined the Faculty and Support Staff at Mount Allison University's Department of Fine Arts as a professor of sculpture and sculpture technician, respectively. Ms. Macklem and Mr. Jones continue to maintain an active profile within both the Canadian and international art scene.

Jennifer Macklem

Originally from Montréal, Jennifer Macklem studied at the École de Beaux Arts and the Parsons School of Design in Paris, before completing her Master of Fine Arts degree in 1991 at the Université de Québec à Montréal. Ms. Macklem's studio work has been shown in solo and group exhibitions in Europe, Canada, and the United States. In addition to designing and building commissioned sculptures for public sites, Ms. Macklem has taught visual art in France, Montréal, British Columbia, the Northwest Territories, and New Brunswick.

Kip Jones

Born in Victoria, Kip Jones studied fine arts and architecture, and later developed his expertise in the field of bronze casting for artists while operating Pyramid Bronze Works, a commercial fine arts bronze casting foundry in Kelowna, British Columbia. Mr. Jones has held numerous group and solo exhibitions, and his work can be found in private collections in Canada and Portugal.

For more information, please visit <http://www.macklemjones.com>



Visiting professor Dr. Vitaly Roginsky of the Semenov Institute of Chemical Physics

Russian Scientist visits Mount Allison

Dr. Vitaly Roginsky of the Semenov Institute of Chemical Physics, Russian Academy of Sciences, Moscow, recently visited Mount Allison University. Dr. Ross Barclay of the Chemistry Department, along with Dr. James Wright of Charleton University, helped to finance the visit with an International Opportunities Fund (IOF) grant from NSERC, which supports Canadian participation in research collaborations of an international nature that have the potential to be of significant benefit to Canada.

In this context, these three scientists have formed such a collaboration to determine the efficiency of unique synthetic antioxidants, and predict their

ability to protect biological systems. The three collaborators all have different roles to play in the research: Dr. Wright provides theoretical input by calculating bond dissociation enthalpies and ionization potentials of reduced nitroxides to predict their potential as antioxidants; Dr. Roginsky determines the activity of nitroxides in chemical systems; and Dr. Barclay determines the role of nitroxides in protecting lipid bilayers against attack by other oxygen-centered radicals such as peroxy radicals.

The efficiency of antioxidants is an area of continuing research in various fields of science such as chemistry, biochemistry and biology, and especially medicine because of their potential to provide protection against degenerative diseases related to aging.

Students & Research

As a primarily undergraduate university, Mount Allison has identified undergraduate student research assistantships and direct contact with our faculty as a primary focus of our educational mission and strategic plan. At Mount Allison most of our honours degree programs require a thesis involving original research.

Our program of student summer research fellowships permits many honours and other highly motivated students to pursue their own research project over the summer under direct faculty supervision. This past year, we received two applications for every available research assistant position and we added a further \$17,000 to the summer student research fellowships program due to this demand to bring our total budget for student research assistantships up to \$295,017 for 2002-2003 (see below). Over the past several years, a growing number of students have received these assistantships; an equal number are employed as research assistants on faculty research projects, or gain applied research experiences through the Dobson Micro-Enterprise Centre, the Rural and Small Town Programme, and the Purdy Crawford Teaching Centre.

Our increasing investment in undergraduate research assistantships works very well for our students. On a per capita basis, Mount Allison regularly stands at the top of Canadian universities in its receipt of NSERC Undergraduate Summer Research Awards (USRAs, see below) and Post-Graduate Scholarships (PGSs). Over the last several years, several of our students have been awarded one of the prestigious Julie Payette postgraduate scholarships for women in science. In the current year, Mount Allison is moving to add three new student assistantships for each faculty research area (Science, Social Science and the Arts), for an additional investment of \$17,400. In the current budget year alone, Mount Allison will be adding close to \$35,000 in operating funds to the already impressive Student Research Assistantships Program.

On the strength of our commitment to student research, we were awarded several grants from the New Brunswick Innovation Foundation and the Department of Training and Employment Development. These included five undergraduate Research Assistantships (\$25,000), and three graduate assistantships (\$50,000).

Students Support Research Faculty

Ralf Brüning of Physics recently received a \$4,220 award from the New Brunswick Department of Intergovernmental and Internal Relations under a grant provided by the New Brunswick/Québec Cooperation Agreement, which supports joint research between Universities in New Brunswick and Québec, and recognizes the importance of students in supporting research activities.

The project entitled, "Dependence of the Thermal Properties of Vitreous Silica on Hydroxyl Concentration," focuses on calorimetric measurements of the glass transition in vitreous silica (above 1300 Kelvin). The research extends prior work by Dr. Brüning and David Cottrell, a former Mount A student, which found an unusual exothermic reaction just below the glass transition. This effect was attributed to relaxation of the random network glass structure enabled by the diffusion of hydroxyl groups. This hypothesis will now be tested.

This project is carried out in cooperation with Dr. Mark Sutton at the Centre for the Physics of Materials at McGill University. In June, Ralf Brüning and a Mount A summer research student,

Mount Allison University Commitment to Student Undergraduate Research Assistantships

Category	Assistantships (2001- 02)	Assistantships (2002-03)	% increase
Student Assistantships Awarded (Sciences, Hum., & Soc. Sci.)	46	56	22%
NSERC undergraduate awards	14	16	14%
	2001 – 2002	2002 – 2003	% Increase
Assistantships Support (\$)			
(Sciences, Hum., & Soc. Sci.)	\$244,768	\$295,017	21%
NSERC undergraduate awards	\$80,500	\$92,000	9%

ATLIS to be Launched *An Undergraduate Electronic Journal*

Reflecting the growing interest in disciplines that fall under the rubric of International Studies, a group of students at Mount Allison University has taken the initiative to launch a new electronic journal called *ATLIS* – the *ATLantic International Studies Journal*. Knowledge in International Studies is becoming increasingly valuable for business development and governmental and non-governmental policy initiatives. Project *ATLIS* will be located at Mount Allison University and will serve as a vehicle for student participation and education in the field of International Studies.

To inaugurate the e-journal and furnish it with manuscripts, students will organize an annual undergraduate conference to be held at Mount Allison University, the first of which will take place on the weekend of January 23-25, 2004. For more information go to <http://www.mta.ca/clubs/atlis/home.html>

The e-journal and the conference will be permanently located at Mount Allison University. The conference will bring together students from across Atlantic Canadian Universities. These two structures will provide a much-needed forum for discussion and debate about the impact and implications of International Studies in the contemporary world. The website, also based at Mount Allison, was designed as a valuable resource and research tool through which primarily undergraduate scholarship on International Studies can be accessed, updated, and disseminated to a broader audience in the Atlantic Canadian university community and beyond. These projects will put Mount Allison University at the centre of undergraduate International Studies in the Atlantic region.

The value of this project lies in its originality and its potential to establish New Brunswick and Atlantic Canadian universities as leaders in the development of International Studies. This project is the first of its kind in Atlantic Canada and, therefore, can make Mount Allison and New Brunswick leaders in international education. As an ongoing endeavour, this project will also provide an innovative training ground for students in managing a peer-reviewed scholarly journal, a venue for presenting and publishing quality undergraduate course papers, and a forum to develop their knowledge and understanding of global issues. By encouraging student participation in the public debates surrounding these issues, this project will, therefore, contribute to a more educated youth who can then offer their experience to prospective employers in industry, government service, and education. As such, this project complements the Province of New Brunswick's commitment to internationalization and greater participation in the global economy, as outlined in its "Prosperity Plan, 2002-2012."

Moreover, the establishment of Mount Allison as a leader in International Studies, through Project *ATLIS*, will help to attract students from other parts of Canada and the world, thus increasing the exposure of both the university and the province to an increasingly interconnected global world.

Overall, this project promises to enhance the educational value of a liberal arts education in New Brunswick, attract a diverse group of motivated and dynamic students, provide the public and private sectors with a pool of well-educated, creative works, and build linkages between New Brunswick, Canada, and the world. The *ATLIS* effort, although principally run by students, has been undertaken with the assistance and supervision of

Professors Owen Griffiths (History) and Tom Legler (International Relations). Funding is being provided by the Office of the President, Leadership Mount Allison, the Centre for Canadian Studies, and the International Relations Program.

Students and High Energy Physics

by Mohammad Ahmady

In the past couple of years, the so-called B-factories in the US and Japan have made a great number of observations and discoveries. These are machines which are specifically designed to produce B-mesons, that are bound states of b-quark or b-antiquark and another quark or antiquark, in large numbers. Because of the more precise experimental measurements coming out of these facilities, we have a better chance to examine the theoretical models which are widely accepted to govern the realm of the elementary particles.

To improve the accuracy of our theoretical predictions, last year, I involved one of my summer research students, **Amgad Squires**, who had won an NSERC summer research award, and worked on improving the perturbative calculation of certain B-decay modes by using a renormalization group technique. He made significant progress and is the coauthor of two papers on this subject, which are published in prestigious journals.

These are:

M.R. Ahmady, V. Elias, D.G.C. McKeon, A. Squires and T.G. Steele, "Renormalization group improvement of effective actions beyond summation of leading logarithms," *Nuclear Physics B* 655, 221 (2003).

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M.R. Ahmady, F.A. Chishtie, V. Elias, A.H. Fariborz, D.G.C. McKeon, T.N. Sherry, A. Squires and T.G. Steele, "Optimal renormalization group improvement of the perturbative series for the $e^+ e^-$ annihilation cross-section," *Physical Review D* 67, 034017 (2003).

Amgad's conference papers include:

"No-Cost Error Reduction in High-Energy Physics," The Canadian Undergraduate Physics Conference (CUPC 2002), Halifax, 23-26 October 2002.

"Renormalized," Atlantic Undergraduate Physics and Astronomy Conference (AUPAC 2003), Antigonish, 7-9 February 2003.

"Optimal Renormalization-Group Improvement of the Perturbative Series for e^+e^- Annihilation Cross-Section," Western Regional Nuclear and Particle Physics Conference, Lake Louise, 14-16 February 2003.

"Renormalization-Group Improvement of Effective Action Beyond Summation of Leading Logarithms," Lake Louise Winter Institute 2003 'Particles and the Universe', Lake Louise, 16- 22 February 2003.

Amgad did his honours thesis on this same topic under my supervision and graduated in May 2003. He is now a PhD. student at Cornell University, one of many places from which he received admission with full scholarship.

Also, this past summer, Jean-Marc Samson (another recipient of an NSERC summer research award) worked on the properties of a peculiar meson called eta-prime. The experimental data from B factories show an unexpectedly large production of these mesons in B decays. Jean-Marc's research is based on the idea that this anomaly could be due

to the unknown constituents of the eta-prime meson. In October he presented his work at the Canadian Undergraduate Physics Conference in Montreal. Also, just recently, B-factories made another discovery that may lead us to new models for interactions among the elementary particles. It seems that tiny violations of an important symmetry in fundamental interactions, namely the combined parity and charge conjugation (CP), in two different decay modes of B are not consistent. Ari Gross, who is a physics honours student is now working on this problem. He is looking at a model with an extra number of quarks to see if this inconsistency can be explained.

Students organize Mount Allison's First Science Undergraduate Research Fair

On Wednesday, Sept. 10, the Mount Allison University community had the opportunity to view the results of original student research that was undertaken over the summer months. Students, under the direction of Kyle Hill (2nd year, Honours Physics) organized Mount Allison's first ever "Science Undergraduate Research Fair," or SURF. Kyle, who is Chair of the

SURF Student Organizing Committee, organized this event to attract not only upper-year science students, but also first and second year students, as well as faculty and staff. "SURF will benefit these incoming students by helping them identify subjects of interest. This may ultimately help them make decisions regarding courses and future careers," said Kyle, adding, "We believe that through creating and exhibiting their innovative research, students will enhance their leadership skills and provide an informative view of Mount Allison science research to their peers and professors."

The idea for the Fair came about a few months ago when Dr. Stacey Wetmore and Kyle came up with the idea of initiating an end-of-summer poster session, where science research students could present their research in a poster form. They brought the idea to Dean of Science, Dr. Margaret Beattie, who suggested they take the idea even further and have oral presentations as well. Dr. Wetmore received funding for the project from Leadership Mount Allison, and these ideas culminated in SURF. Funding for the project was also received from the Natural Sciences and Engineering Research Council (NSERC).

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Alma Bardon, 2nd year Honours Physics student, and runner up for best poster presentation.

The research fair included nine oral presentations and 10 poster presentations by students on their research, with topics ranging from the psychology of human memory to computational chemistry. The oral presentations were delivered in the Wu Centre and the posters were displayed on the first floor in the Dunn Building. Five judges (one from each science discipline) evaluated the oral and poster presentations. First place and runner-up prizes were awarded in each of the two categories as follows:

1st place – oral talk

Ari Gross: 4th year Physics honours with minors in Math and Philosophy (supervisor: Mohammad Ahmady)

Runner up – oral talk

Kathleen (Casey) Clarkson: 4th year, Biology honours (supervisor: Suzie Currie)

1st place – poster talk

Christa Carroll: 4th year Psychology honours with minor in Chemistry (supervisors: Odette Gould and Karen Nicholson)

Runner up – poster talk

Alma Bardon: 2nd year Physics honours with minors in Math and Chemistry (supervisor: Stacey Wetmore)

A booklet containing administrative welcome messages, the event schedule, and abstracts for oral and poster presentations was published and distributed to participants and spectators. Organizers of this event would like to acknowledge the members of the organizing committee, Dr. Stacey Wetmore, Dr. Margaret Beattie, Dr. Robert Ireland, Dr. Robert Hawkes and many other science faculty members, Leslie Rogers from the University of Ottawa, the SURF judges, and Leadership Mount Allison and NSERC.

For further information, please contact Kyle Hill at kahll@mta.ca

Graduate Student Research at Mount A

by Glen G. Briand and Suzie Currie

The steady increase in undergraduate research activities and external funding at Mount Allison has had a positive influence on the level of graduate research on campus. A total of twelve graduate students, four of whom are working toward PhD degrees, are completing their degree research requirements on campus or under the direct supervision of a Mount Allison faculty member. Much of this activity is made possible by the Mount Allison Masters of Science program, which currently has an enrollment of seven students. The 2002/03 academic year saw the graduation of Liliya Nikolcheva (Biology) and Josette Maillet (Biology) from the program, bringing the total to twelve Mount Allison MSc graduates since April 1998. The program is overseen by the Senate Committee on Graduate Studies and is offered in conjunction with the Departments of Biology and Chemistry. The establishment of the Office of the Director of Research, as well as the success of external funding applications from several departments, suggests that the Mount Allison Masters program will become an important complement to the very strong undergraduate research base on campus.

The following is a list of current graduate students enrolled in the MSc program at Mount Allison, or completing graduate research on campus, and their current areas of study:

MSc Students

Louise Adongo (Biology) – Supervisor: R. Ireland

Research Area: Louise is studying the enzymes of asparagine metabolism in the saltmarsh cordgrass, *Spartina alterniflora*. Specifically, she is interested in the purification and characteriza-

tion of multiple isoforms of the enzyme aspartate aminotransferase in the leaves of this grass.

Robert Burns (Biology, UNB) – Supervisor: D. Campbell

Research Area: Robert is assessing the relative importance of nutrient availability in mediating long term physiological changes associated with the photosynthetic system in the cyanobacterium *Synechococcus PCC7942*. The goal of his research is to define the relative importance of nutrient availability, in the form of inorganic carbon, in determining the physiological state of the organism.

Judah Goldstein (Biology) – Supervisor: S. Currie

Research Area: Judah is using the heart cells of rainbow trout as model cells to study the physiological significance of the stress or heat shock proteins. Fish are susceptible to a range of aquatic stressors including temperature, oxygen, and pH changes and Judah is interested in the mechanisms by which these ubiquitous proteins protect fish cells during such environmental perturbations.

Nolan Osborne (Biology) – Supervisor: S. Currie

Research Area: Nolan is investigating



Suzie Currie, Assistant Professor, Biology, and Supervisor to Nolan Osborne and Judah Goldstein



Judah Goldstein, MSc, expected 2004
Thesis Title: Functional significance of stress proteins in cardiomyocytes of salmonid fish.



Nolan Osborne, MSc, expected 2005
Thesis Title: The mechanism of action of the estrogen mimic, 4-nonylphenol in Atlantic salmon smolts.

the effects of temperature on the susceptibility of Atlantic salmon to environmental estrogen mimics. He is studying the physiological response of salmon to these environmental contaminants as well as searching for the cellular mechanism of their action. Nolan is supported by a DFO Science Subvention Research Grant.

Christine Saben (Biology) – Supervisor: R. Aiken
Research Area: Christine is studying the life history and reproductive biology of the toad crab. Toad crabs are being assessed as a possible commercial species to relieve some of the harvesting pressure on the more familiar (and

closely related) snow crab. Her research is conducted through Fisheries and Oceans Canada (Gulf Region) in Moncton.

Reagan Davidson (Chemistry) – Supervisor: G. Briand
Research Area: Reagan's research involves the synthesis and characterization of group 13-15 Lewis acid-base adducts of indium and thallium. These will allow her to study the fundamental bonding characteristics of these heavy elements, as well as the potentially useful physical properties of these compounds. Reagan is partially funded by a grant from the New Brunswick Innovation Foundation Research Assistants Initiative program.

Nga Chiu (Doris) Tam (Chemistry) – Supervisor: R. Langler/ S. Westcott
Research Area: Doris' research involves the synthesis of a series of allylic sulfones through simple oxidation of allylic sulfides, sulfonyl esters or sulfone ketones, followed by reaction with phenyl acetaldehyde (Knoevenagel reaction). She is also performing a theoretical study on the aromaticity of even, alternant hydrocarbons using Huckel and PM3 calculations. Doris is partially supported through a Rice Memorial Graduate Fellowship.

Susan Wheaton (Chemistry) – Supervisor: S. Westcott
Research Area: Susan is preparing and studying novel complexes of ascorbic acid with various main group and transition metal centres. These compounds will subsequently be screened to determine their relative bioactivities, with a specific emphasis on potential antibacterial and antifungal properties.

PhD Students

Josee Bouchard (Biology, U of Quebec, Rimouski) – Supervisor: D. Campbell
Research Area: Josee is studying how different communities of phytoplank-

ton respond to UVB radiation. In particular, Josee studies how protein turnover and replacement mediate community level resistance to UVB along a latitude gradient from the equator to the arctic. Josee is co-supervised by Dr. S. Roy, a biological oceanographer at Rimouski.

Chris Brown (Biology, UNB) – Supervisor: D. Campbell
Research Area: As part of an industrial-university joint development project, Chris is generating models and tools for the detection and quantitation of key protein pools in photoautotrophs. The goal is to be able to use these tools with heterogeneous field samples. Chris is funded by an NSERC Industrial Postgraduate Scholarship.

Tyler MacKenzie (Biology, UNB) – Supervisor: D. Campbell
Research Area: Tyler is using a cyanobacterium as a model species to investigate how acclimation to variable light interacts with other environmental constraints such as carbon and nitrogen supply. He is a graduate of the Mount Allison MSc program, in which he completed his thesis "Photosynthesis, Lichens and Time: Photosynthetic Acclimation in *Lobaria pulmonaria*." Tyler is currently supported by an NSERC Postgraduate Scholarship.

Matthew Sojan (Geography, U of Guelph) – Co-Supervisor: J. Ollerhead
Research Area: Mathew's research will focus on the application of digital photogrammetry and geographic information system (GIS) technology to modeling coastal beach and dune dynamics at temporal scales ranging from days (individual storm events), to months, to decades. He will carry out much of the work for his project using PCI Geomatica (a Canadian software product) and with the Greenwich Dunes in Prince Edward Island National Park as his primary field site.



Centennial Hall, 1895 (Mount Allison University Archives Picture Collection, Folder 73)

New Funding for the Archives

The Mount Allison University Archives was recently awarded funds to support three new projects.

1 A grant in the amount of \$3,645 from the Canadian Council of Archives (CCA) Control of Holdings Program was awarded to support work on the arrangement and description of records of the *Canadian Parents for French* (CPF). These records consist of 2.1 metres of correspondence, reports, subject files, and photographs related to the functions and activities of this group from 1976 to 1997.

Ms Donna Beal, Project Archivist, is working on the production of a finding aid in order to provide access to these records for private study and research purposes. Researchers investigating the development of second language education programs, lobby groups, and the history of education in NB and Canada, will find these records of interest.

2 The federal government approved a grant application submitted by the Mount Allison University Archives through several funding streams – the *Canadian Council of Archives/National Archives/Canada's Archival Information Network* (CAIN). Funding will be channelled through the *Canadian Culture Online Program* of Canadian Heritage to develop and mount a virtual exhibition tentatively titled "*Marshland*."

This exhibition will focus on archival documents in the holdings of the Mount Allison University Archives. Access to these documents will be increased through this project and the exhibition will contribute to the dissemination of information and knowledge of this unique area known as "*Tantramar*." Themes such as a sense of place, society and the economy, immigration and settlement, and family history will be linked to images of original documentation with archival identification and secondary interpretation. Not only will this exhibition support research and increase awareness of the region and Mount Allison, but it may also be used as a teaching tool.

3 A Winthrop Pickard Bell Archival Residency for 2003-2004 has been approved and funded by the Bell Endowment Funds Committee of Mount Allison University. Noted scholar and Allisonian, Dr. Winthrop Pickard Bell, had a deep interest in archives and based much of his research and publications in the fields of genealogy and settlement history on archival sources.

It is fitting that Bell's name be associated with this Residency which supports professional work experience for a new graduate of an archival studies degree program. Mr. David Mawhinney, BA (McGill)1989, MIS (University of Toronto) 2003, has been appointed Winthrop Pickard Bell Archival Resident 2003-2004 and will work with the Archives on various projects.

The main focus of this Residency will be on the arrangement and description of the Winthrop Pickard Bell fonds and the production of a detailed finding aid which will provide increased access to these documents for private study and research purposes. The Winthrop Pickard Bell fonds consists of 7.5 metres of textual records (correspondence, diaries, lecture notes), photographs, post-cards, and clippings.

These records, which date from 1834 to 1965, relate to Bell's life, work, and family. They are a rich source for primary research not only on Bell, but also on the areas of scholarship in which he was involved (philosophy, phenomenology, psychology) and on Germany prior to and during WW I when Bell, a visiting graduate student, was imprisoned in Ruhleben internment camp.

For further information on these projects or records, please contact Cheryl Ennals, University Archivist, Tel.: 364-2563.

Grant Opportunities 2003-2004

External Deadlines 2003

Nov. 15	The Canada-U.S. Fulbright Program
Nov. 17	SSHRC Research/Creation Grants in Fine Arts

External Deadlines 2004

Feb. 1	CIHR Operating Grants (Registration)
Feb. 16	CFI New Opportunities Fund
Mar. 1	CIHR Operating Grants (full application)
Mar. 15	SSHRC Research Development Initiatives
May 1	SSHRC (Aid to Occasional Research Conferences and International Congresses in Canada)
June 16	CFI New Opportunities Fund

Open Competitions *(no deadline)*

NSERC Idea to Innovation Program (I2I)
Phase 1 – Proof of Concept Stage
Phase II – Technology Enhancement
Phase IIa – Early Stage Investment Partner
Phase IIb – Partnership with a Canadian Company
NBIF Research Innovation Fund
Emerging Projects
Concept Validation
Innovation Capacity Development Initiatives
Research Technicians Initiative
Start-up Grants for Professors and Researchers

More detailed information about the major external grant opportunities can be found at:

The Canada-U.S. Fulbright Program: http://www.fulbright.ca
NSERC (Natural Sciences and Engineering Council): http://www.nserc.ca
SSHRC (Social Sciences and Humanities Research Council): http://www.sshrc.ca
CIHR (Canadian Institutes of Health Research): http://www.cihr.ca
CFI (Canada Foundation for Innovation): http://www.innovation.ca
NBIF (New Brunswick Innovation Foundation) http://www.nbif.ca

Mount A Internal Competition Deadlines 2003-2004

Feb. 3	Summer Undergraduate Awards
	NSERC Research Awards
	Crake Fellowships
	Goodridge Fellowships
	Junior Research Fellowships
Mar. 12	Mount Allison Internal Grants for Science Research
	Mount Allison Internal Grants for Social Sciences and Humanities Research
	SAC Awards for Academic Research
	Crake Summer Research Awards for Faculty
	Marjorie Young Bell Awards for Fine Arts and Music
	Marjorie Young Bell Faculty Fund Awards (Sabbatical, Travel, Research)

Information and application forms for Summer Undergraduate Awards can be obtained from Debbie Estabrooks in the Dean's Office, 2nd floor, Centennial Hall. The application forms for Mount Allison internal faculty research awards can be found at: http://www.mta.ca/research_act.html

Message from the Editor

On Sept. 4, 2003 faculty and staff associated with research and creative activity at Mount Allison attended a half day of presentations and sessions, celebrating various aspects of the creative and scholarly mission here at the university.

President Wayne MacKay provided opening remarks, which were followed by Michael Fox's overview of accomplishments in research and creative activity over the past year. After these introductory comments, Helen Pridmore and Karin Aurell explained the artistic mission and goals of *Motion Ensemble*, a new music group based in New Brunswick that specializes in avant-garde and experimental music. Professor Pridmore and Ms. Aurell also performed some music from *Motion Ensemble's* current repertoire. The session was truly awe inspiring.

Other presentations were delivered by faculty with diverse sets of scholarly interests. These included: Colin Laroque (Geography), Odette Gould (Psychology), Nauman Farooqi (Commerce), Nancy Vogan (Music), and Glen Briand (Chemistry).

Although we did celebrate the fact that funding from all sources has increased by fifty percent over the previous year, in my own closing remarks I echoed some of the points already made earlier by President MacKay and Vice-President Michael Fox, who both stressed that in many cases we are doing much with very little (dollar wise), or in some cases with next to no supplementary funding at all.

I then took a historical tack, and pointed out that James B. Sumner had written many years ago that he had "...little time for research, not much apparatus, research money or assistance." This fact, however, did not deter him from taking a "long shot," or from attempting something "daring and important." These thoughts were put to paper by Sumner around 1917. His daring proved to be fortuitous and in 1926 he undertook the first crystallization of an enzyme. After

this ground breaking work, the protein nature of enzymes would be experimentally and unequivocally demonstrated. Sumner's contributions to scientific knowledge (along with those of two other scientists) would be formally acknowledged in 1946 with a Nobel Prize in Chemistry. Perhaps it is no coincidence that Sumner's early years were spent teaching chemistry and physiology at Mount Allison (around 1911).

It seems that everywhere we turn we can point to a "culture of greatness" that has been evolving here at Mount Allison for well over a hundred years. It is not unusual to hear of our own faculty being somehow connected with previous Nobel Prize winners, either directly or through their previous supervisors. Or, if we quickly look at the creative arts, we will note that Alex Colville had no trouble choosing Mount Allison as a place to teach some years ago. But as an artist, he was still not afraid to take "chances and risks" in his work. And if we were to list all of those in science, social sciences, the arts and humanities, who have somehow touched and shaped this "culture of greatness" it would be a long list indeed.

In fact, the future demands that we strive for new heights in applying to the major granting agencies and councils – CFI keeps raising the bar of excellence in each new round of competitions; CIHR will be severely competitive as there is no medical school in New Brunswick; and NSERC is increasingly focusing on new programs that have to do with innovation and applied research, while SSHRC remains extremely competitive, and is moving in new directions that will tend to categorize the human sciences into thematic areas.

In any case, if we're willing to take those "chances" or "long shots" in order to accomplish something "daring and important," then we will be well positioned to meet the challenges of the future.

Creative Activities

The Live Bait Theatre
presents the world
premiere of:
We Happy Few

by Mark Blagrove

November 11-15, 2003
8 p.m. Tweedie Hall
Mount Allison University

Set in a convalescent hospital during the First World War, this play grapples with the human fallout of war and the question of the artist's responsibility to society. Two war-wounded soldiers and an aging actor-manager rehearse a production of Shakespeare's *Henry V* and a counterproduction of the *Battle of the Somme*. The professional cast is directed by Sarah Stanley from the National Theatre School.

For information on reservation or tickets,
please call: 536-2248

Motion Ensemble debuts in New York City

Motion Ensemble, of which Helen Pridmore of the Department of Music is a principal member, made its New York debut on Wednesday, October 8. The new music group performed a concert at TONIC, a club in Greenwich Village, which regularly features performances by avant-garde artists. This concert marked the release of *Motion's* CD of works by John Cage (*Variations I, II and III*). The CD is part of a series of recordings of the complete works of John Cage, which is being released world-wide by Mode Records.

For more information on Motion
Ensemble visit:
<http://www.motionensemble.com>

THE CAMPUS SCHOLAR

Mount Allison's newsletter of research and creative activity

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