

SHOWCASE

LEADING - EDGE TEACHING AND RESEARCH AT TRENT



Living in a Material World Internationally-Renowned Biomaterials Expert Dr. Suresh Narine Relocates his Lab from Alberta to Trent

Imagine a world where your carpet and your car bumper are grown in a field and composted at the end of their product life to create more, better and safer materials...

Over the past decade, Trent alumnus Dr. Suresh Narine has made it his mission to change the way the world creates and uses everyday materials. As an internationally-renowned Professor in biomaterials, he is focussed on the investigation of ways in which we can produce things made from petrochemicals, like car bumpers, colostomy bags, packaging and coatings, lubricants, waxes and greases, etc. and recreate them in the form of environmentally-friendly (cradle to cradle) materials derived from agricultural oilseed crops such as soy beans and canola.

In a world of finite fossil oil resources, the field of biomaterials is gaining urgency and momentum. The traditional thinking about product life cycle is being transformed by Dr. Narine's pioneering biomaterials research. The "cradle to grave" model will be replaced by "cradle to cradle" zero waste models, with the innate capability of biomaterials products assuming a new functionality at the end of their product life, even if it is as compost enriching soil.

"Our research offers an alternate solution – to employ agriculture (fats and oils) to create renewable feed stocks that then can be converted using science to create materials more environmentally benign and more in sync with the natural carbon cycle to abate and combat climate change," Dr. Narine explains.

Research with a Conscience

In the 12 years since graduating from Trent as an international student from Guyana, with a B.Sc. in Chemical Physics and an M.Sc. in Applications of Modelling (Condensed Matter Physics), Dr. Narine has become a sought-after expert and leader in the field of biomaterials.

Recruited by prominent food manufacturing company, M&M Mars, straight out of his Ph.D., he first made a name for himself by helping to create a process and technology of printing edible ink on chocolate surfaces. Next was a prestigious role with the University of Alberta, where he built the Alberta Lipid Utilization

continued over

INSIDE

Trent Welcomes its Seventh President, Dr. Steven E. Franklin	2
Launch of the Centre of Knowledge in the Environment	4-5
The New Trent Community Sport & Recreation Centre	7

LEARNING TO MAKE A WORLD OF DIFFERENCE™



Living in a Material World continued from page one

Research Program, focussed on the utilization of fats and oils for the production of industrial materials, high-value edible applications, and cosmetic ingredients. As an NSERC Industrial Chair in Lipid

Utilization, Dr. Narine also built the world's leading agri-food materials science lab and plant facility and, among other feats, developed the technology to convert canola oil and other vegetable oils to biodegradable plastics.

"At the end of the day, it is research I can be proud of, something I can happily tell my children about," explains Dr. Narine, who has nine year old triplets.

Science and Serendipity

In September, Dr. Narine brought his wealth of experience and knowledge back to Trent, where he was appointed as a professor in the Departments of Physics and Astronomy, and Chemistry, as well as director of Trent's new Biomaterials Research Program. Heading up a team of dynamic researchers in a new state-of-the-art lab, he is sure to further enhance the University's excellent reputation for environmental research.

"Serendipity and scientific research are not mutually exclusive," Dr. Narine says in describing how his return to Trent has come to fruition. In less than a year since making the decision to return to the University, \$3 million in funding has been secured (and another \$3-\$4.5 million is targeted) to bring Dr. Narine and his team of researchers to Trent and to set up the new lab in the Science Complex, which, according to Dr. Narine, will be "the best built lab in the world for lipid and biomaterials research."

"When enough people believe in something, so many



"When enough people believe in something, so many things become possible."

things become possible," says Dr. Narine, who has been impressed with how quickly the lab and facilities have come together at Trent. "In eight to ten months we have been able to accomplish what took us ten years in Alberta. So, in many ways, we are benefiting from the important learning that myself and team were fortunate to be a part of at the University of Alberta."

Collaborating to Make a Difference

Dr. Narine is particularly excited about getting involved in undergraduate teaching. "There will be a lot of great opportunities for Trent students," Dr. Narine says.

With plans to have 14 graduate students working in his lab, along with upper-year undergraduates, Dr. Narine says one of his goals is to train highly qualified people to work in this new and important industry: "It's really all about them, the students. They are the ones who will become the CEOs, government leaders and farmers of the future."

Interested in the real-world applications of his research, while at Trent Dr. Narine will also continue his role as director of Guyana's Institute of Applied Science and Technology. Eager to share his knowledge with his home country, Dr. Narine is author of Guyana's Agro-Energy strategy and has created the guiding framework for future private investments in bio-fuels and bio-energy production. For his work, Dr. Narine is regarded as a pioneer of

bioenergy and agro-energy in Guyana and the Caribbean.

"The technology we are developing is making a real difference in people's lives across the world," he says proudly.

Trent Biomaterials Research Program

Utilizing natural oils to create new bio-products which replace products manufactured from petrochemicals

- Toxin-free, environmentally-beneficial products
- Reduced greenhouse gas emissions
- Economic benefits for clean technology companies and for farmers

Current Funding Partners

- Elevance Renewable Sciences Inc., Bolingbrook, Illinois – \$1,000,000
- Ontario Soybean Growers – \$500,000
- Anonymous philanthropist who established the Biomaterials Innovation Fund – \$500,000
- Ontario Ministry of Agriculture, Food and Rural Affairs – \$500,000
- Government of Canada, Community Adjustment Fund – \$500,000

Trent Welcomes its Seventh President, Dr. Steven E. Franklin



"I hope you can sense the excitement, the importance, and the remarkable privilege to help build a vision for the future of an intellectual community, a renewed vision for Trent University,"

of new science and creative performance, the exciting new undergraduate and graduate programs that are at the heart of much of the learning enterprise."

One might say it's no wonder his installation address provided an accurate, 30,000-foot depiction of Trent's place at the present time; he is used to looking at the world and assessing patterns from far above the earth's surface. Coming from the University of Saskatchewan as vice president of research, he not only led that province's university research powerhouse; he also pursued his own

research interests guided by a strong commitment to understanding and improving the environment through remote sensing technology.

Remote sensing is a very powerful approach to mapping and modelling earth resources. Using satellite and aerial remote sensing, Dr. Franklin and his students use multispectral images of the earth's surface to produce accurate thematic maps of the vegetation and land cover of a specific location or an entire region. Remote sensing is able to examine large areas of land and 'see' wavelengths invisible to humans, such as infrared and microwave energy, and thereby gather data to complement other types of environmental information acquired in the field.

An environmental scientist, Dr. Franklin published his first book, *Remote Sensing for Sustainable Forest Management*, in 2001, with a focus on forest growth, mapping forest harvesting patterns and other aspects of forest management. Later, he broadened the scope of his research, using remote sensing to study the effects of landscape change on the health of caribou in BC and grizzly bears in Alberta. His research has taken him from the boreal forests of the Yukon to eucalyptus plantations in Argentina. Just prior to joining Trent as president, he spent a full year on sabbatical mapping topography and plant communities to produce species-at-risk habitat information across the biodiversity hotspot of southwestern Australia.

"I'm not interested in technology for technology's sake, but for the sake of biodiversity assessment and ultimately environmental protection," says Dr. Franklin. "What motivates me to use remote sensing is that there's a chance to understand environmental changes as they occur and potentially manage them better. Remote sensing allows us to predict and evaluate the true cost of introducing change."

In November 2009, Dr. Franklin will publish his fourth book, this one called *Remote Sensing for Biodiversity and Wildlife Management*, at the same time as he guides the dreams and aspirations of the Trent community. He finds himself at the end of one complex process and the beginning of another and, as far as he's concerned, that's just where he'd like to be.

Vision, Values, Renewal

September 24, 2009 was a big day for Trent University and for Dr. Steven E. Franklin, as he was installed as the University's seventh president and vice-chancellor in a dual ceremony that included the installation of Trent's tenth chancellor, Dr. Tom Jackson. Dr. Franklin brought his full gestalt as an academic, researcher and administrator to bear in an installation speech that inspired further thought and reflection. In doing so, he seized the opportunity to share with the University and broader community his passion for university education and his desire to facilitate a renewal of vision for Trent. A process is now underway to review the existing Trent vision through engagement and consultation.

"I hope you can sense the excitement, the importance, and the remarkable privilege to help build a vision for the future of an intellectual community, a renewed vision for Trent University," Dr. Franklin said to the crowd of more than 300 special guests, including local dignitaries, VIPs, and government officials along with students, faculty, staff, alumni, governance and other members of the community, gathered at the University Court at Symons Campus.

"Such a renewed vision would embrace the traditions of a liberal education, the reality of professional programs, community engagement and international impacts, the discovery

Trent officially welcomed its new president and vice-chancellor, Dr. Steven E. Franklin, and new chancellor, Dr. Tom Jackson, in an installation ceremony on September 24, 2009. To listen to the speeches and view the photo gallery, please visit www.trentu.ca/installation2009.

A New, Dedicated Trent Campus in Oshawa

After 35 years of providing high quality, post-secondary education in Oshawa, Trent University has acquired property and will be turning an ideally located 40 year-old building into a highly functional hub of learning and innovation.

“The new campus will bring a greater recognition of Trent University’s long-standing presence in Oshawa and its contribution to accessible higher education,” says Dr. Rita Bode, associate dean of Trent University in Oshawa. This new, permanent home for Trent in Oshawa is set to open in September 2010 and will serve as a platform for Trent’s continued partnerships with Durham College and the University of Ontario Institute of Technology (UOIT).

Location. Location. Location.

Located at Thornton Road and King Street in Oshawa, the new campus is just five minutes north of Highway 401 and the Oshawa GO station, blocks from the Oshawa Centre mall, and steps from the Oshawa Civic Auditorium complex.



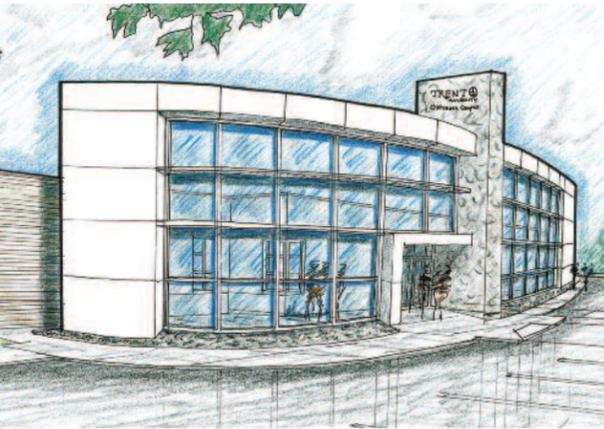
For students travelling between Oshawa and Peterborough, new, regular GO bus service between the two locations means the 50-minute trip has never been easier.

Room to Grow

Phase One of the Trent plan will see the existing building – which currently contains 15 classrooms, a library, offices, and a gymnasium – renovated and re-opened in the fall of 2010.

“It’s important for us to do it well, to create the right atmosphere,” says Don O’Leary, vice president, Administration. He and others on the 15-member Trent in Oshawa-Durham Region Steering Committee are giving significant attention to the renovation process with a mind to modifying the building to give the right first impression, and to create a beautiful, enticing, highly functional, university learning environment.

The University has also entered into a long-term lease arrangement for a 3.3 acre parcel of land adjacent to the school. This brings the site to approximately eight acres in total, offering untold potential for suitable development. ■



Features at Trent’s new location in Oshawa:

- Access to classes and labs in a bright renewed building
- Newly outfitted labs and seminar rooms and wood accents in lecture halls with vaulted ceilings
- Proximity to all the conveniences of Durham region, not to mention easy access to Toronto

Exploring the Story World

Studying the Implications of How We Read

“In order to be drawn into a story, we have to forget the here and now. We replace the real world with the story world,” says Dr. Michael Chan-Reynolds, professor of Psychology at Trent, who is currently researching how people are drawn into narratives and how technology affects that experience.

In recognition of his innovative research, the Canada Foundation for Innovation (CFI) recently awarded Prof. Chan-Reynolds with a substantial grant to outfit a new lab at Trent with the technology needed to study how we read in the real world.

“With this new technology we can study how people are really interacting with text in real time,” Prof. Chan-Reynolds says, describing the new equipment, which includes eye trackers and devices used to monitor our body’s reaction while reading text. This technology allows him to study and compare our physiological reaction, including skin temperature and heart rate, body position and body movement, while reading printed text versus reading electronic text. By tracking our physiological reactions to printed and electronic text, Prof. Chan-Reynolds hopes to understand how certain mediums affect our relationship with the written material.

A Timely Project with Vast Implications

The possible implications of Prof. Chan-Reynolds study are vast. Results could improve electronic reading devices, technology for the learning disabled, how we gather information, and even how we write. From a medical standpoint, his results may also have implications for whether or not a patient’s chart should be prepared on a Personal Digital Assistant (PDA) or handwritten.

“We’re changing from traditional methods to digital media right now,” he says. “We need to get in there while we have both generations – those who are more comfortable with paper and books and those who are doing all their work on computers – and study this now as the changes are taking place.”

Since much of the equipment is portable, it is also possible for Prof. Chan Reynolds to conduct his research outside of the lab environment. “This represents a qualitative change in how psychology research is conducted,” he notes excitedly. With the new technology it will be possible to study how people perform everyday tasks in the real world, including while driving a car.

“As a student at Trent myself, I learned that you can collect evidence and study empirically. You don’t just have to read about answers to other peoples questions, you can ask your own questions and try to answer them by doing empirical research on the subject. It was what made me decide to do this for a living.”

hopes to open their eyes to “the other side of University” – the research side. He notes the opportunity to get involved in research as an undergraduate to be one of the more unique qualities of Trent.

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MEET THE INNOVATORS

Understanding Our Place in the World by Studying Our Past



As an archaeologist and Canada Research Chair, Dr. James Conolly uses innovative methods to understand human-environmental relationships and human behaviour in its long-term evolutionary context.

“There is a misunderstanding that archaeologists are only concerned with ancient artifacts or ruins,” Dr. Conolly says, “but more than that, we provide a deep perspective on human behaviour on a scale of thousands of years.”

In his research, Dr. Conolly uses computer technology to explore ideas about the emergence of farming in southwest Asia, and the subsequent appearance of agricultural village communities in Europe. Using Agent Based Models (ABM), a branch of computer modelling, he studies past human-environment interactions and builds understanding about how farming originated, spread and adapted in the first few millennia that humans were growing domestic crops and raising livestock.

He and his colleagues have compiled detailed records of past subsistence practices from hundreds of archaeological sites in the Middle East and Europe, which allows him to develop and test hypotheses about changes in human ecology. Prof. Conolly is one of only a handful of archaeologists in Canada using ABM, but he works with other researchers, including some at Trent, who use similar methods in completely different disciplines. The resulting interactions are one of his favourite parts about working at Trent.

“Cross-disciplinary exchanges are easy to accomplish at Trent,” he says. “Being a smaller university, we can all feel that we are part of the whole institution, rather than just a department.”

Gaining Better Understanding of Human Society

While the origins and spread of agriculture are the subject of Prof. Conolly’s research, his other archaeological interests spill over to his work with graduate students, one of whom is using ABM to understand the impact of the ‘8.2K event’. This is a rapid, significant, but brief change in climate in the northern hemisphere that occurred approximately 8,200 years before the present, and is associated with significant changes in human social and settlement organization. “Graduate students are a major contributor to my research program, and I see them more as colleagues than as students,” he says.



Involving Students

As he conducts his study, Prof. Chan-Reynolds, a Trent alumnus, will involve many of his students. By including undergraduate students in his work, he

Trent Launches Centre of Knowledge in the Environment

First of Four Virtual Centres Celebrates Breadth of Environmental Expertise at Trent

Trent University has been a leader in the environment since its inception in 1964. More than 40 years later, Trent's expertise in and commitment to this important topic and area of study is being acknowledged and celebrated as a vital and distinct focal point of excellence with the launch of Trent's Centre of Knowledge in the Environment.

The first of four virtual centres to be unveiled leading up to the University's milestone 50th anniversary in 2014, the Centre of Knowledge in the Environment exemplifies the interdisciplinary nature of Trent. Trent leaders in this Centre strive to build even further specialty expertise by infusing Trent's understanding of Indigenous knowledge into the study of climate change, water science, biomaterials, sustainable agriculture, ecology and conservation biology.

The Centres of Knowledge are a new way to talk about Trent, and the exceptional expertise, facilities and strengths of this institution. As virtual centres, they recognize the University's intellectual capital, our outstanding faculty, as the engine that drives innovation and student success. Therefore it is fitting that this first centre is focused in the Environment, a long-standing area of excellence at Trent and an essentially important subject for future study and investment.

"In today's world, environmental research, knowledge and awareness are critical to the health and well-being of all human beings and the planet," says Dianne Lister, vice president of External Relations and Advancement.

"As such, it is important for Trent to ensure we continue to foster future leaders and remain on the leading-edge of environmental research to solidify our reputation as a national and international leader."

Trent's Centre of Knowledge in the Environment was launched with a dynamic two-day program on October 21 & 22 complete with guest speakers, donor announcements and new lab openings and tours. For full details about the launch and to read more about Trent's expertise in the environment, visit www.trentu.ca/cofk/environment.



Environmental Leaders for the Emerging Green Economy

Around the world, community, political and business leaders are recognizing the urgent need to change our social, economic and industrial models to safeguard the future of the planet. Today, more than ever, there is a need to equip our future leaders, policy makers, and researchers with the tools required to make a difference.

From the first class of students to the most recent graduates, Trent alumni are the real-world examples of how the University is showcasing its innovative environmental leadership in the emerging green economy.

- Richard Fleming: Senior Research Scientist, Great Lakes Forest Research Centre; Member of the Intergovernmental Panel on Climate Change (IPCC) for ten years. The IPCC was awarded the Nobel Peace Prize in 2007.
- G.H. Copp: Director, Centre for Environment, Fisheries & Aquaculture Sciences, UK. Manages and implements applied and fundamental research to inform policy on non-native freshwater fishes in the UK.
- M. Cowley: National Park Warden based in Terra Nova National Park, Newfoundland. Manages the Atlantic Salmon count, gathers scientific data for ecosystem monitoring programs, monitors park wildlife populations, patrols the park's Atlantic Ocean coastline.
- J. Kenney: Policy Analyst, Alberta Environment – Oil Sands Environmental Management. Plays a critical role in supporting policy issues related to air, climate, land and water management. Is developing a policy landscape that will enable carbon capture and storage.
- Chris Magwood, Coordinator, Sustainable Building Design and Construction Program, Fleming College. He has been building with bales and teaching others for the past seven years, involved in the creation of over 35 straw bale structures in Ontario, including private homes, commercial structures and demonstration projects.

Centres of Knowledge Signal Start of a New Era in Philanthropy at Trent

The Centres of Knowledge make up a key component of Trent's 50th anniversary campaign, to realize \$50 million in new investments by the University's milestone anniversary in 2014.

Trent's 50th Anniversary Campaign (2007-2015) includes:

- ✓ **Creation of a Graduate Studies College** (\$2M) – Trent's downtown college, Catharine Parr Traill College, has been repurposed into a primarily graduate studies college. (Campaign successfully concluded in 2008)
- ✓ **Enhancing Athletics and Recreation** (\$4M) – A dynamic Athletics Campaign will drive an exciting expansion and refurbishment of the Trent Community Sport & Recreation Centre (2008-2010)
- ✓ **Annual Special Initiatives and Library Enhancements** (\$4M) – Revitalizing Trent's signature Bata Library (to be launched 2010)
- ✓ **Centres of Knowledge** (\$40M) – The Centres of Knowledge are at the heart of the new Philanthropic Plan and include endowed chairs and professorships, student support and funds for facilities. Trent will launch four interdisciplinary and inclusive Centres of Knowledge balanced among the humanities, social sciences, sciences and professional programs. The four Centres of Knowledge at Trent University are:
 1. Centre of Knowledge in the Environment
 2. Centre of Knowledge in Humanity & Culture
 3. Centre of Knowledge in Health
 4. Centre of Knowledge in People, Communities & Institutions

Stay tuned for the fall 2009 issue of Trent's Report on Philanthropy to learn about the \$15 million raised to date for the 50th anniversary campaign.

TRENT SPEAKS: On Trent's Reputation



Student Perspective: **Timothy Shah**, fourth-year Environmental & Resource Studies and Human Geography student

Perfect Setting for Environmental Change and Leadership

As an avid blog writer and passionate environmentalist enrolled at Trent, I have been asked many times how Trent leads on the environment. Just what exactly differentiates Trent's green endeavours from other universities?

Trent leads on the environmental front because we have concentrated our endeavours in environmental education and through the formation of innovative community partnerships. On environmental education, Trent is home to one of Canada's greenest buildings known as the Camp Kawartha Environment Centre. It was designed and recently built by students in Fleming College's Sustainable Building Design and Construction program. This sustainable building demonstrates Trent's environmental leadership; from its educational workshops, sustainable living demonstrations and the educational setting it creates whereby students, faculty and members of the community will be able to exchange ideas, share knowledge and learn practical ways on how to improve sustainability within the academy and the community.

Another important green initiative on campus was recently given a boost thanks to a generous grant of \$67,400 from the Ontario Trillium Foundation. Volunteers from a not-for-profit group called Community Living Peterborough, will now help carry out recycling initiatives on campus. This new endeavour is centred on institutional and community interaction providing volunteer opportunities to people with intellectual disabilities to advance the recycling program on campus. Such an environmental partnership is an example of how communities can collectively play a vital role in waste reduction and education whether it is on campus, at elementary schools or community centres. As we continue to lead as an expert in the environment and as this environmental consciousness permeates our campus, Trent will see more intelligent and creative environmental design paving the way for sustainability in the future.

Timothy Shah is a member of the student group, Sustainable Trent, and runs a blog about the environment and current affairs with friend and classmate, Chris Ferguson-Martin, at www.enviroboys.com

Role in the Environment

Trent's Green Initiatives

Just to name a few...

- A new Environmental Education Centre was built at Trent in the summer of 2009 to house the new Camp Kawartha Environment Centre – a groundbreaking environmental education and teacher training facility. Using innovative green architecture, the facility will be one of the most sustainable buildings in Canada.
- Trent's Sustainability Office was established to help create student-driven environmentally friendly initiatives on campus. "Eco-Trent" is the umbrella under which environmental performance on campus is bringing an ecological consciousness into the students' daily living, learning and working environments.
- Trent Tops CBC's One Million Acts of Green: Trent University won the top spot on the 2008/09 CBC-sponsored challenge as Canada's leading "green" organization. Trent had the most acts of green, the most participating members and the greatest contribution to greenhouse gas reduction.
- Trent Nature Areas and Trails are a vital part of the University's commitment to preserving and honouring the natural world around us. With over 1,400 acres of land situated on the banks of Otonabee River and over 30 kilometres of nature trails, Trent boasts one of the most picturesque University campuses in the country.
- Green Energy Hydroelectric Projects – since its inception, Trent has owned and operated the Stanley Adamson Hydroelectric Power Plant on the Otonabee River. This hydroelectric plant has generated electricity for the University, supplemented by the electricity purchased from the grid. The University is also currently developing with private sector partners a second green hydroelectric power plant just upstream from the Trent campus at Locks 22 & 23.
- The Rooftop Garden, part of the original design for the Environmental Sciences Building, is exemplary of urban agriculture, providing organic produce, and acting as a living laboratory for students and researchers at Trent.
- Seasoned Spoon Café – Trent's student-driven, multi-disciplinary, vegetarian, organic, and fair trade café offers a delicious and ethically-minded alternative for students, staff and faculty.
- Expansion of Waste Diversion Programs lead to the addition of compost in all of our waste stations and the rebranding of waste stations as "Resource Recovery Stations" to help motivate people to take the time to sort time waste.

To learn more about Trent's sustainability initiatives, please visit www.trentu.ca/sustainability



Role as a Leader in the Environment



Faculty Perspective: **Kelly Young, Associate Professor, School of Education and Professional Learning, Chair of Environmental Advisory Board (EAB)**

Contributions to Trent's Commitment to Environmental Leadership

As chair of the Environmental Advisory Board (EAB), I have had the opportunity to work with extraordinary staff and faculty at Trent University who are dedicated to helping Trent to continue to evolve in its effort as a leader in the environmental field. The most notable example involves putting in place the Sustainability Office and hiring Shelley Strain as the sustainability coordinator. Her role has involved a lighting retrofit project across campus with an estimated 1,000,000 KWH savings annually. In addition, the Sustainability Office works with the TCSA, Colleges, Sustainable Trent and the Bottled Water Action Group in order to promote the new water filling stations in Otonabee College and Gzowski College. Of course, many will recall how Trent provided its first water bottle free convocation that included a promotion of public transportation for the three days of convocation.

Education initiatives play a large role in the Sustainability Office's mandate. For example, the development of ongoing seminars for students and new staff and the "2009 Pocket Guide to Sustainable Campus Living" that has been distributed to all dons and residence staff. "Green volunteers" continue to be a part of an ongoing initiative to help students learn how to be "Trent Green."

In addition to the sustainability coordinator, two staff members, and several faculty members, the EAB has two student representatives from the TCSA and Sustainable Trent who are involved in many green initiatives such as contributing to the development of an online e-kit for greening offices project as part of the 380 course, Greening the Campus. The project will continue in the upcoming academic year and several departments will be involved. Finally, the EAB is currently working on recommendations for updating Trent's 1995 Environmental Procurement Policy and an environmental strategy to reinforce the University's leadership role in the environmental field.



Staff Perspective: **Rob Loney, Lab Technician, Environmental & Resource Studies and Geography**

Long-Standing Reputation of Excellence

Trent University, known for its beautiful natural spaces, sports a gem among its academic offerings – an outstanding undergraduate environmental education program.

Established in 1974, the Environmental and Resource Studies (ERS) Program is one of the oldest university undergraduate environmental programs in North America, and has a reputation among its peers as one of the best.

The program offers over 80 original courses which teach essential skills and address a wide range of environmental topics such as waste management, climate change, and environmental law, to name a few. Trent's flexible academic structure permits students to complete a single major ERS degree, or combine an ERS degree with any other Trent degree, allowing students to tailor their university education to their particular interests. In upper years there are opportunities for thesis study and for-credit environmental work within the local community.

The ERS program is unique in its planned integration of science and studies ('arts'). This greatly enhances a student's understanding of environmental issues, since most involve both: science for understanding the physical problem, and social science for understanding the social attitudes, impacts and solutions.

To accomplish this integration, the ERS Program offers both science (B.Sc.) and arts (B.A.) degrees. Additionally, most individual ERS Program courses explore both science and studies aspects of the course topic. And new in 2009, the ERS Program is introducing the Bachelor of Environmental Science/Studies (B.E.S.S.) degree, where students take similar numbers of science and studies courses.

For more information visit the ERS Program website at: www.trentu.ca/ers



Securing the Future: RBC Funds New Project to

Protect Source Water in Northern Indigenous Communities



With the support of RBC Foundation, Trent University is proud to be launching a new project to empower Indigenous communities in Canada's north to develop and implement multi-barrier approaches to provide access to clean, safe drinking water.

The \$500,000 grant

through the RBC Blue Water

Project will assist Trent, in partnership with Fleming College, to develop the Protecting Drinking Water in Indigenous Communities in Canada's North Program.

"The unique aspect that Trent and our partners and collaborators bring to this project is the ability to ensure that our work will both respect and be enhanced by Indigenous knowledge," said Dr. Chris Metcalfe, director of Trent's Institute for Watershed Science, and the lead on this project. "We will ensure that the outcomes from our training can be implemented within the individual household and within the community."

Collaborating to Build Sustainable Futures

Trent will build upon the experience of the Institute for Watershed Science and the Indigenous Environmental Studies Program, and established relationships with Fleming College and communities in the north by also collaborating with a number of other educational institutions, Indigenous organizations and non-governmental organizations on this project, including: the United Nations University International Network on Water, Environment and Health (UNU-INWEH), among others, as well as three northern colleges.

The goal of the new program is to enhance capacity within northern Indigenous communities to ensure that the natural sources of water are protected from threats that

could degrade the quality and quantity of drinking water. Trent University, working with its partner organization, Fleming College, will develop training modules on source water protection that will be delivered through a combination of face-to-face and distributed learning formats. Through collaborations with three northern colleges, certification in source water protection and training in source water protection will be available to Indigenous students. Ultimately, the experience gained and materials developed for this project will serve as a template for similar capacity enhancement projects within other

Indigenous communities in Canada and potentially internationally.

"Freshwater is essential for human health and all life on earth, so it's really the cause for the ages," says Shari Austin, vice president of Corporate Citizenship at RBC. "It's important for people to understand the value and vulnerability of our water resources. That's why we are excited to be working with Trent University on this important project – to help protect our watersheds and ensure access to clean drinking water for generations to come."

RBC's Blue Water Project, established in 2007, is a wide-ranging, multi-year program to help foster a culture of water stewardship in Canada and abroad, so that people have clean fresh water today and tomorrow. Over the next ten years, RBC's goal is to contribute to a future of sustainable water resources worldwide, to promote sustainable water use and create an understanding of the value and vulnerability of our water resources.

Trent's project was successful in receiving the top amount available within the RBC Blue Water Project's National Leadership category and is one of two universities selected this year from 159 applications.



RBC Foundation®



TALK ABOUT TEACHING

Crossing Interdisciplinary Boundaries

"If you can't put a traditional academic label on what I'm doing, then I am succeeding in changing the context of the education I am providing my students," states Dr. Chris Furgal, a Trent professor who is crossing the boundaries of interdisciplinary learning as a member of both the Indigenous Studies and Environmental & Resource Studies Departments at the University.

Cross-appointed between the sciences and humanities, Professor Furgal exemplifies the world-renowned multidisciplinary learning that flourishes in the classrooms and labs of Trent. And he is grateful for the opportunities the Trent learning environment grants him.

"Often universities are very uni-disciplinary in their organization and structure. But at Trent, multidisciplinary teaching and the development of courses with the potential to cross disciplines is not only permitted, it's encouraged," he explains. "Opening up students to other disciplines and to different ways of problem solving and learning, helps them recognize that they have a lot to offer in any classroom. Being a multidisciplinary thinker, researcher and writer is critical in our world."

Multidisciplinary Discussion

Because of his dedication to making his courses as accessible as they are relevant and interesting, Prof. Furgal is a sought-after teacher. Time and again his current and past students mention his thoughtful manner, and respect for his students.

"Professor Furgal appreciates multidisciplinary discussions and respects what each student can offer," says Chrissy Larocque, a Trent Nursing graduate who took a course on Indigenous Environmental Health with Prof. Furgal. "His class exposed me to a population with unique health challenges that I had not considered before. I sincerely believe every university student deserves to



experience learning from teachers like Professor Furgal."

Robert Tookoome, another former student of Prof. Furgal's adds, "He cares about what he teaches, has a passion for the Arctic and the people. He made me push myself, and was at the same time very patient with me. He made me believe in my abilities and he gave me skills that I will use for the rest of my life."

Real World Approach to Learning

Providing students with the tools and knowledge they need to make a difference in the world is a key piece of Prof. Furgal's teaching philosophy. With personal research interests in investigating environment and health interactions with a focus on Indigenous populations in rapidly changing environments, Prof. Furgal understands the urgency of ensuring that future generations of thinkers and decision-makers have comprehensive knowledge of the important issues concerning our planet today.

"It's about making the connection between student and subject in a contemporary and relevant way. The issues my students are learning about are important to us all," he says.

It is a hands-on lesson his students appreciate. "By discussing and encouraging students to look critically at current environment and health issues Indigenous communities are facing today, we are able to become engaged both in the classroom as well as see how we can

apply our knowledge and skills in the "real" world," says Katelyn Friendship, a second-year masters student who is studying under the supervision of Prof. Furgal in the Canadian Studies and Indigenous Studies graduate program.

"... every university student deserves to experience learning from teachers like Professor Furgal."

Preparing Students for the Future

According to Prof. Furgal, one of the most critical pieces of knowledge he can pass along to his students is "an awareness of the importance of learning about the issues facing Indigenous communities today and the urgency of these challenges." It is a lesson he feels is vital to the health and well-being of our planet.

"What we see happening to Indigenous communities that are so connected to the health of the environment is a precursor to what will happen to us all. We are on the cusp of the need for dramatic change. Students need to be empowered by this knowledge because they will need to make the necessary changes, and it won't be for social or economic gain, but out of necessity. Trent is where these important lessons can be learned and explored."

Opening Fall 2010:

Trent Community Sport & Recreation Centre

An Athletics Destination for Students, the Community and the World

The home of athletics and recreation at Trent is undergoing a major facelift as construction is underway on the Trent Community Sport & Recreation Centre – a 76,000 sq. ft., state-of-the-art new building designed to serve the wellness needs of students, staff and faculty, and all residents of the Peterborough community.

Slated to open in the fall of 2010, the new and modern centre will provide all users – from youth and students to community groups and seniors – a full-spectrum indoor and outdoor athletics and recreation experience unparalleled anywhere in the region.

Building on an existing reputation of excellence in delivering award-winning recreational programming,

the centre will also feature many new highlights, including:

- New cardio loft and weight room
- State-of-the-art 28 ft. high indoor climbing facility
- Unique indoor rowing/paddling tank, the only combination training tank of its kind in North America
- International competitive squash court
- Warm therapy pool, equipped with state-of-the-art features
- Expanded Clinic for Health Excellence offering on-site physiotherapy, rehabilitation, and sports health services
- Complete makeover of the Trent pool
- Updated and redesigned change rooms and showers

www.trentu.ca/athleticscampaign

- Improved accessibility
- Bistro café

“These new facilities will take athletics and recreation at Trent to a new level,” says Bill Byrick, director of Athletics. “We are excited about the innovative design and new feature elements of our renewed and expanded Centre that will help to open new health and wellness opportunities for the community and improve the competitive advantage of our regional athletes.” ■

Read more about the building on page 8

TAKING THE NEXT STEP: GRAD STUDIES AT TRENT

Collaborating on Groundbreaking Research

When speaking about masters student, Colleen Doyle, Dr. Barry Saville says, “She is a superstar.”

Ms. Doyle, a second-year masters student in the Environmental and Life Sciences (ENLS) Graduate Program, is an integral part of Dr. Saville’s research team. She is currently studying the plant pathogen *Ustilago maydis*, or *U. maydis*, responsible for common corn smut, a fungus that infects the corn plant producing black tumors where the fungus produces its spores, essential to meiosis and reproduction. Plant pathogenic fungi, like *U. maydis*, are responsible for great damage to food crops, with some fungal

infections resulting in potential monetary losses of up to \$100 million.

Understanding the Relationship between Fungus and Plant

Understanding how *U. maydis* becomes competent to undergo meiosis is central to Ms. Doyle’s research. Her project aims to determine how meiotic competence is achieved by analyzing genes that control meiosis. Because meiosis can only occur once *U. maydis* has

entered the corn plant, understanding the relationship between the fungus and plant is an essential part of Ms. Doyle’s research. The research Ms. Doyle is doing will provide much needed information about it and other damaging plant pathogens.

“Learning more about the relationship between the fungus and the plant may lead to the development of more effective controls,” Ms. Doyle explains.

Innovative Research on Pathogens

This complex study is only one facet of Dr. Saville’s work, which the Ontario Ministry of Research and Innovation has pledged nearly \$2 million to support. The Innovation Cluster, Operitel and Trent University are also contributing monetary and in-kind support to Dr. Saville’s multi-year project, which examines fungal diseases in crops to improve sustainability of agricultural production and ensure a more secure food supply for the people of Ontario. Dr. Saville’s innovative research involves studying five different pathogens and conducting genomic analysis in order to detect themes that will help in the development of novel ways to combat plant disease. Ms. Doyle’s role is to develop a model that can be used to answer questions about other fungus.

“By using this model, Colleen can help us understand other plant pathogens. It’s a very novel approach, and we are the only people currently doing this in Canada,” Dr. Saville notes, before adding, “Colleen is great for this research. She thinks beyond what many other students do. I hope she continues to work with me on this project, before moving on to bigger and better things.”



MATTER OF COURSE

Getting Students’ Feet Wet

*Aquatic Environmental Chemistry
Environmental & Resource Studies 2620H
Professor: Dr. Céline Guéguen*

For most second-year students, Aquatic Environmental Chemistry will be their first opportunity to begin to understand what environmental chemistry means and how it works in the real world.

“Students will begin to see what we can do as chemists in the environment. We’ll study the chemical composition of different types of water, from tap to ocean, in lectures and labs,” explains Dr. Céline Guéguen, assistant professor of Chemistry and a Canada Research Chair in Aquatic Science and Biogeochemistry, adding that this is the first year the course is being offered with a lab portion.

According to Prof. Guéguen, the lab portion is an important addition, as it adds a much needed, hands-on component to the course. “It’s about getting your hands dirty and your feet wet,” she says. “We won’t be offering new concepts but, we will be applying learned concepts to the environment.”

Applications of Chemical Concepts in the Real World

Observing and understanding the application of chemistry in the real world, and specifically in the environment, is an important goal of the course. “Environmental



Chemistry is a field focused on the processes that operate within and between various environmental compartments and the ways in which human activities interact with natural processes,” says Prof. Guéguen.

Also included in the course is a field trip to the Peterborough water treatment plant to help students develop a good idea about where water comes from and how our drinking water gets treated. It is also an excellent illustration of chemical concepts applied in the real world, explains Prof. Guéguen.

For past students of the course, Aquatic Environmental Chemistry has been a stepping stone to exciting research. Two of Prof. Guéguen’s former students took their interest in environmental chemistry gained through this course, on board a research vessel bound for the Arctic. Chase Cassels and Chad Cuss, each spent their summers on board a research vessel watching and studying the application of concepts learned in class. It is an experience that Mr. Cuss described as “unrivaled, first-hand experience of our Northern environment and the effects of climate change.”



MEET A TRENT STUDENT

International Student Ready to Leave her Mark on the World



“Academic achievement is a reflection of what you know rather than the status of your transcript,” says third-year International Development Studies (IDS) student Linh Phan.

Originally from Hanoi, Vietnam, Ms. Phan came to Trent as an international student on a prestigious Trent International Program (TIP) Global Citizen scholarship. Since arriving at Trent, she has been dedicated to learning as much as she can, both inside and outside the classroom.

As a first-year student Ms. Phan lived in the Trent Global Living Community at Champlain College (TGLC) and she became actively involved with the Asian Youth Forum, an event that has taken her across South East Asia. She is also a dedicated member of the World Affairs Colloquium committee, the Trent South East Asia organization, and the OPIRG board, and works in the TIP Office as both a recruitment student assistant and

“I have always been interested in learning about other people and cultures, I also want to understand how the world is shaped economically and politically.”

coordinator for the International Ambassadors program. With a reputation as an outstanding student, she represented Trent last year with TIP Director, Dr. Mike Allcott on a Canadian Universities delegation to Vietnam, and then traveled to Italy to participate in a leadership course.

“I have always been interested in learning about other people and cultures,” Ms. Phan says, adding, “I also want to understand how the world is shaped economically and politically.”

This fall Ms. Phan begins her third year of Trent study in Ecuador, as a participant in the IDS year abroad program. “I don’t have any specific expectations for the year ahead,” she says, “but I hope for a positive experience and to expand my knowledge of another region of the world and learn how things really work after studying the theory in class.”

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Voluntarism Paradox

An ongoing research program to build a comprehensive understanding of the evolving role of voluntarism as it relates to caring for older people in Canada’s rural communities, led by Dr. Mark Skinner, a Geography professor at Trent, has revealed three interesting facts. First, there is a ‘paradox to our growing reliance on volunteering in rural areas.’ Second, the success and failure of volunteer-based programs and initiatives for older people is dependent on local leadership. And third, understanding the central role of women, as volunteers, residents and leaders, is critically important for building knowledge about how voluntarism plays out in the rural context. Research from Dr. Skinner’s SSHRC-funded Volunteer Caregiving in the Countryside project, helps answer the critical questions about the sustainability of volunteer caregiving for older rural people who need help in the community and for individual rural volunteers who are aging themselves.

Testing Darwin

More than 100 years after Darwin came up with a theory, Trent Biology professor Dr. Marcel Dorken has proved that it’s true. “Our results were consistent with Darwin’s hypothesis and showed that the separation of the sexes is favoured by resource-poor conditions,” Dr. Dorken explains of his research to understand how and why sex ratios in plants change over time. That separate sexes have evolved numerous times in plants was of great interest to Darwin, who was one of the first to study the issue. But in spite of this interest by Darwin, and by many biologists since, we still know relatively little about the conditions that favour the separation of the sexes. Over the past decade it has been Dr. Dorken’s goal to examine these conditions.



The Health of our Rivers

After examining the quality of dissolved organic matter in 34 rivers located near or on environmentally-friendly agricultural land, Dr. Maggie Xenopoulos, professor of Biology at Trent, and Environmental & Life Sciences Ph.D. candidate Henry Wilson, found that higher levels of cropland cultivation and usage resulted in the structural simplification of dissolved organic matter in rivers. In their study, Dr. Xenopoulos and Mr. Wilson further discovered that intensive agriculture decreases



A glimpse into the latest findings at Trent

the chemical complexity of dissolved organic matter in nearby rivers, which could affect the release of carbon dioxide from river systems. “Our work is a first step in identifying how organic matter is processed in agricultural streams,” explains Mr. Wilson. “Hopefully it can help to inform land use decisions pertaining to the health of downstream aquatic systems and can inform future research geared at improving our ability to make these decisions.”

Cottaging: Quintessentially Canadian?

What can we learn from our summers at the cottage? Anthropology professor Dr. Julia Harrison’s research indicates that we can learn a lot about ourselves. Her new study of cottaging in Haliburton offers insight into middle class Canadian cultural values and social identity, and examines a central dimension of what is “taken for granted about life in Ontario.”



Through her research, Dr. Harrison has found that the cottage both creates and nurtures family and kinship relationships. It is also a space where gender roles are defined. Dr. Harrison’s study has revealed that some regard the cottage as a place for children and men; the physical labour required to maintain a cottage is deeply satisfying for men, the experience rewarding for children, but for women the cottage is just another site of domestic labour.

Profound Impact of Merging Galaxies

As the pioneer of a new approach for measuring the galaxy merger rate, Dr. David Patton, professor of Physics and Astronomy, has discovered that roughly one per cent of galaxies are involved in mergers at the present time, a much lower merger rate than in the past. He has also found that mergers have a profound effect on the galaxies that are involved. “Strong tidal features are often present, indicating that each galaxy is gravitationally disrupting the other,” he explains. Dr. Patton’s research on galaxy mergers focuses on how they occur and how they affect the galaxies we are involved in. Most interesting is that galaxies roughly the same size of the Milky Way are the most influential in terms of galaxy mergers. Galaxies much larger are too rare to be involved in mergers and galaxies much smaller have relatively few nearby companions and therefore fewer mergers.



Sustainable Building at Trent

The renewed and expanded Trent Community Sport & Recreation Centre will strive to be one of the most sustainable buildings at the University and in the community by achieving a silver rating through the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™. A LEED-designated building is environmentally sound and energy efficient and leaves as small an environmental footprint as possible.

“This project is important because it reduces the impact that our construction project has on the environment. This is both in terms of the materials that the building is constructed from and in terms of reducing the on-going impact of operating this building,” says Shelley Strain, sustainability coordinator at Trent and a LEED-accredited professional.

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