



# REPORT ON RESEARCH EXCELLENCE

2022

# CELEBRATING RESEARCH ENGAGEMENT & KNOWLEDGE CREATION

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Research is thriving at Trent University. In 2022, the number of research grant applications nearly doubled. We also generated new research collaborations with industry and government partners. Locally and globally responsive research has included dozens of community-based research projects in the Peterborough and Durham regions. Our work with the EaRTH District (involving five higher education institutions in the region) has engendered new research grant opportunities for collaborative projects focused on clean and green environmental solutions to local

and global challenges. And on the international stage, Trent generated new agreements for research activity with Trento University in Italy, with Ho Chi Minh City University of Technology in Vietnam, and with new collaborators of the International Institute for Environmental Sciences.

In the pages of this second annual Report on Research Excellence, you can read highlights from the important and innovative research undertaken by Trent students, faculty and research centres in 2022. We have promoted research activity and the tremendous impacts of research in our expanding Chairs program, in the awards won by members of the Trent community, and in our steady stream of news stories over the year.

Looking forward, the Office of Research & Innovation is currently engaged in a process of establishing Trent University's strategic research priorities for the next five years (2023-2027). This has involved an active process of gathering extensive feedback through listening sessions, meetings and online surveys. We look forward to sharing our resulting research priorities with corresponding actions that will cement Trent University's position at the forefront of finding solutions toward a sustainable, healthy and productive future.

A handwritten signature in black ink that reads "Cathy Bruce". The signature is fluid and cursive, with the first name "Cathy" and last name "Bruce" clearly distinguishable.

**DR. CATHY BRUCE**

Vice-President, Research & Innovation

# AWARD-WINNING RESEARCH



## 2022 DISTINGUISHED RESEARCH AWARD

**Dr. David Patton, Physics & Astronomy**

*Highest honour conferred on Trent faculty for research and scholarly activity*

A prolific and impactful researcher, **Dr. David Patton** is an internationally renowned scholar in the field of galaxy formation, galaxy-galaxy pairs, and galaxy evolution. He has notably contributed to the field through his work on the Sloan Digital Sky Survey to develop a pipeline to assemble one of the largest samples of galaxy-galaxy pairs. This work has resulted in numerous collaborations and partnerships and is a recognized benchmark in understanding galaxy interactions.

## EARLY CAREER RESEARCHER AWARDS

**Dr. Karen Blair, Dr. Graham Raby, Dr. Elizabeth Russell**

*New award celebrates research excellence at Trent*



**Dr. Karen Blair's** research is at the forefront of sexual and gender identities and stigma, prejudice, and discrimination, and the social determinants of health. She has collaborated on six funded research grants resulting in nine papers published in high-impact peer-reviewed journals.



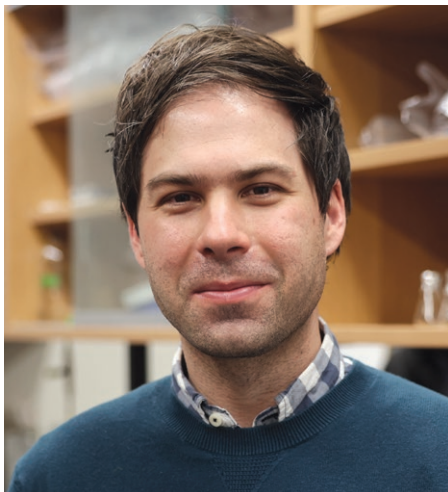
**Dr. Graham Raby**, a pre-eminent researcher of fish ecology, has demonstrated impressive skills in securing funding, developing and publishing knowledge and creating an extensive network of research collaborators. Not only has Prof. Raby earned success with funding requests, having secured approximately \$700,000 in research funding from multiple national and bi-national sources, he has also published nine papers while navigating the complexities of the COVID pandemic.



A leading expert on aging and society, **Dr. Elizabeth Russell's** research focuses on the sustainability of rural, age-friendly community programs. Prof. Russell was unanimously appointed director of the Trent Centre for Aging & Society due to the impact and leadership potential of her research in addition to her contributions to community-engagement, student mentorship and faculty collaboration.



# SPOTLIGHT ON FACULTY RESEARCH



## **Treating Rare Neurodegenerative Disease** *A Significant Step Towards a New Approach*

Dr. Robert Huber, associate professor of Biology at Trent University, recently made a significant contribution to the understanding and possible treatment of Batten disease, a rare neurodegenerative disorder characterized by the body's inability to get rid of cellular waste. This waste buildup presents in a variety of symptoms, such as vision loss, cognitive decline, loss of motor skills, and ultimately death. The scientific literature has described Batten disease as a series of defects in lysosomes – the cell organelle that contains digestive enzymes. Work in Dr. Huber's lab at Trent, coupled with an analysis of over 20 years' worth of literature, suggests that altered protein secretion due to the mutation of genes associated with Batten Disease might also play an important role. These findings can be used to identify biomarkers, for example in urine, that could be used for diagnosis, prognosis, and monitoring responses to therapies.

## **Take a Walk in My Shoes**

### *Understanding Job Integration Experience of Canada's Skilled Immigrants*

Trent University Durham Greater Toronto Area associate professor of Social Work, Dr. Marina Morgenshtern, led a project looking at the experience of immigrants attempting to secure employment in the Durham region. Professor Morgenshtern and her team provided cameras to a group of new immigrants and had them write reflections on their experiences. She also conducted participant interviews. The photographs and reflections were compiled into a photobook to share with the community, showcasing the point of view of a new immigrant to identify gaps in employment services and inform best practices for service. By leveraging storytelling to drive systemic change – through improving amenities, better supporting skilled immigrants in navigating services – this project highlighted for the region ways that services can be improved to transform the integration experience.



## **At the Intersection of Music and Politics**

Dr. Hugh Hodges' new book, *The Fascist Groove Thing: A History of Thatcher's Britain in 21 Mixtapes*, melds together politics, history and music during a politically turbulent period in Britain during the 70s and 80s. With anthems of popular music from over 400 bands and solo artists presenting each chapter as a mixtape of songs from the era, Prof. Hodges brings history to life through a reverberating soundtrack.



### **Illuminating Art through Science**

Embracing his curious nature as a physicist, Dr. Aaron Slepko, a Physics professor at Trent, began playing with light polarization, resulting in a well-received paper in the *American Journal of Physics*. Prof. Slepko's paper is the result of months of experimentation with the phenomenon of polarization-filtered coloration, which was discovered and named in the 1800s and underpins LCD screen technology. Professor Slepko made this highly mathematically complicated field of optics more accessible and understandable to scientists, artists, and students by using an artistic approach with visuals such as in the art on the cover of this report to, for example, illustrate the importance of the order of operations. Prof. Slepko's paper sparked a debate on social media among experts and physicists about the underlying principles of the phenomenon and the semantics around using the term interference.

### **Spanish War Museum Opens its Virtual Doors**

A first-of-its-kind, virtual interdisciplinary museum on the Spanish Civil War officially welcomed online visitors this year to its site hosted through Trent University's Bata Library. The Virtual Museum of the Spanish Civil War, the first dedicated museum that gives a global explanation of the conflict from a variety of interdisciplinary perspectives including history, archaeology, digital humanities, literary and cultural studies, was developed by Trent's Dr. Antonio Cazorla-Sanchez and a team of expert collaborators including Dwayne Collins, digital scholarship and innovation librarian at Trent. The project, supported through funding from Social Science and Humanities Research Council of Canada through a Connections Grant, highlights the potential for digital tools to mobilize knowledge for a worldwide audience.



*Learn more*

**Trent's researchers are advancing knowledge and innovation**

### **Community Partners and Researchers Come Together to Explore Environmental Inequity & Injustice**

Dr. Stephanie Rutherford, associate professor in the Trent School of the Environment, led research, in collaboration the University of Toronto, as well as Peterborough community organizations including the Kawartha World Issues Centre (KWIC) and Community Race Relations Committee (CRRCC) that explores the intersection of environmental justice, equity, and inclusion in Peterborough/ Nogojiwanong. This research pulls in an interdisciplinary team, including co-applicant Dr. Michael Classens, assistant professor in the School of the Environment at the University of Toronto, and Trent faculty members. Dr. Nadine Changfoot, professor of Political Studies, Dr. Finis Dunaway, professor of History, and Canada Research Chair in Community-Partnered Social Justice, Dr. Naomi Nichols..



# SPOTLIGHT ON STUDENT RESEARCH



## **From the Research Lab to Your Living Room** **National Geographic and Disney+ Call on Trent Expertise**

When filming *Super/Natural*, a new nature documentary, National Geographic and Disney+ looked to Trent University for expertise on the flying squirrel. Behavioural ecologist and Environmental & Life Sciences Ph.D. candidate Sasha Newar is part of a team of researchers at Trent, including Dr. Jeff Bowman from the Ministry of Northern Development, Mines, Natural Resources and Forestry (located right here on campus), who are producing leading research on flying squirrels and joined film crews to showcase the unique and specialized traits of these highly elusive mammals. Sasha and other members of the research team at Trent were brought on as consultants to help film a segment on the fascinating (and not completely understood) behaviours of these animals, including how they use ultrasound communication and fluoresce bright pink under ultraviolet light.

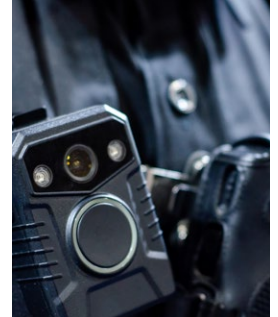


*Read more*

**News stories about the research  
being conducted at Trent**

## **Community-Based Research Project Explores Full Picture of Police Body-Worn Camera Program**

Sabrina Wolanczyk, a fourth-year Forensic Science student who is completing a specialization in Law & Policing as a part of her undergraduate degree, delved into the topic of body-worn cameras (BWCs) in collaboration with the Peterborough Police Service as part of a research project organized through the Trent Community Research Centre. Sabrina's project involved surveying the public and the police about many topics associated with BWCs, including their ability to provide accurate representations of police encounters; impact on human rights and privacy; motives behind their use; and how they influence the officers' ability on the job. Sabrina also explored issues that may drive public support for BWCs and their role in holding police services accountable, and she conducted an in-depth literature review to help identify gaps in research and examine decisions made by police services across Canada regarding BWCs. Sabrina presented her findings to senior members of the Peterborough Police Service, giving the research project the potential to inform local policing and public safety.



## **A Local Approach to a Global Issue** **How Communities are Taking on Climate Change**

On an internship jointly funded by the Mitacs Business Strategy Internship program and the City of Peterborough, Trent M.A. Sustainability student, Mohammed Abdulai interviewed municipal workers from across Ontario to learn about how they're assessing the climate impacts of their programs.

Mohammed found that most municipalities are working at a qualitative level, describing the kind of climate change implications a program has, but missing the important quantitative element, which offers clear evidence of how a city is mitigating their greenhouse gas emissions.

"If a municipality has a carbon budget, with a limit on how much greenhouse gas they want to emit, they need to compare what they have emitted against what they budgeted for. And then we can see whether we're on track in achieving the targets we've set for ourselves," said Mohammed.



At the City of Brantford, Mohammed found they were the only municipality to be quantifying their carbon emissions, and only in the public works and community housing departments. Brantford's success in quantifying its carbon emissions was one of the research findings that Mohammed presented to the Peterborough's environmental advisory committee upon completing the Mitacs-funded internship.

### Can Microscopic Organisms Shed Light on Major Environmental Problems?



Emma Kaszecki, a Ph.D. candidate in the Environmental & Life Science graduate program, is researching remediation methods for bodies of water and habitats that have been polluted with heavy metals and toxic chemicals. Emma is a member of the Emery Lab and the Saville Lab at Trent University where she studies *Euglena mutabilis*, a

freshwater protist (an organism that doesn't fit into animal, plant, bacteria or fungi groups) that thrives in environments where most organisms cannot survive. The strain of *E. mutabilis* that Emma is working with was isolated from gold mining wastewater in Timmins, Ontario. Interestingly, the protist was found to be living with fungus and bacteria, which were unable to be isolated from each other. Emma is investigating the relationship between these organisms to elucidate how their interaction plays a role in heavy metal tolerance. Her work will provide details of how these naturally occurring co-cultures can act as a model for industrial development, and this knowledge could lead to the creation of systems to treat pollution.

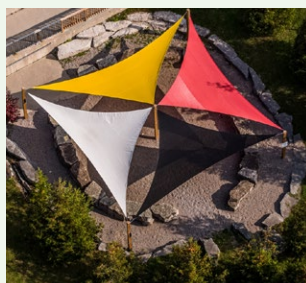


### Visualizing Femmephobia Research Through Art

Forensic Science student Cindy Zhang used their passion for visual arts to help design illustrations for a new research publication about femmephobia, considered the devaluation and regulation of femininity, or the way that femininity is seen as 'lesser than', sometimes rejected, and often scrutinized by others within society. *The Femmephobia 101 Workbook* is a collaboration between Dr. Rhea Ashley Hoskin '05 (Peter Gzowski College), an AMTD Global Talent Postdoctoral Fellow at the University of Waterloo, and Dr. Karen Blair, the director of the Trent Social Relations, Attitudes and Diversity Lab in the Psychology Department, along with Dr. Toni Serafini and Dr. Jocelyne Scott. Alongside Q&A content, Cindy's illustrations help walk the reader through Dr. Hoskin's theory on femmephobia, ultimately presenting the research in a medium more accessible to readers. This is one of Cindy's first major visual arts undertakings at Trent and is the first time their work has been published in an academic resource.

### Sharing the Stories of Indigenous-Led COVID Vaccine Clinics

Undergraduate students in Trent's Indigenous Studies Research Methodology course had the opportunity to interview 11 esteemed local Indigenous leaders to gain insight into collaborations with Peterborough Public Health and how these leaders fought for the prioritization of Indigenous peoples, planned strategies, implemented culturally engaging clinics, addressed vaccine hesitancy and mobilized volunteers as part of the Urban Indigenous Vaccine Working Group (UIVWG).



As a result of their course work, the students were able to document how the leaders representing First Nations, Métis, and urban Indigenous peoples championed Indigenous prioritization in the vaccine rollout and subsequently implemented 35 vaccine clinics in Curve Lake and Hiawatha First Nations, and in key communities around Ontario.



### Walks in Nature Can Affect our Mood

Trent is the ideal spot to study the correlation between spending time outside and mood. With over 30 km of trails and 1,400 acres of land. Recent B.Sc. Psychology graduate Nicholas St. Germaine '18 made some discoveries to feel good about this past year.

As part of his undergraduate honours thesis project, Nicholas worked alongside Dr. Elizabeth Nisbet, associate professor of Psychology at Trent, to survey students about their mood before and after taking a walk around campus. The student volunteers walked in nature areas surrounding Trent, either at Lady Eaton Drumlin Nature Areas or along the Otonabee river, taking breaks along the way to observe and absorb the scenery. Students then completed a post-walk questionnaire about their moods during and after the walk.

Nicholas found that regardless of walking location and people's connection to nature before the walk, being outside induced the same positive mood in all participants. There were also statistically significant differences between how two groups of students felt related or connected to nature, but the walks brought both groups to the exact same mood.

### Sustainable Guyana Program Building the Skills to Empower Future Environmental Leaders

Students in the Sustainable Guyana Program, a partnership between Trent, the University of Guyana, CGX Energy Inc., and Frontera Energy Corporation, have had an active year in their research programs. They have been taking advantage of opportunities to conduct fieldwork and sample collection in Guyana, and working with support from their faculty advisors while utilizing Trent's research facilities in their analytical work. The program welcomed two new students in 2022, bringing the program compliment to four Ph.D. students and three students studying in M.Sc./M.A. programs.





# BUILDING RESEARCH TALENT

## MEET TWO OF OUR NEWEST CANADA RESEARCH CHAIRS



**Dr. Bharati Sethi, Tier II CRC in Care Work, Ethnicity, Race and Aging**

Professor Bharati Sethi is a highly published early-career researcher studying the experiences of immigrant health-care workers to find how best to support newcomers in suburban and rural communities. By making her research available in formats that are easy to understand she gives voice to the social and cultural issues facing immigrants and racialized health-care workers whose jobs are precarious, undervalued, and physically and mentally demanding.



**Dr. Andrew Tanentzap, Tier II CRC in Climate Change and Northern Ecosystems**

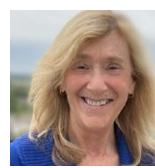
Professor Tanentzap's research contributes to Trent's reputation as a leading environmental institution. He focuses on the effects of climate change on northern soils and fresh waters and how those effects will impact the benefits those systems provide for northern communities. By tracking the large-scale associations between organic molecules and microorganisms and finding how these connections impact water, forests, and fish, he provides important data for management and identifies opportunities for mitigating climate change.

## EXPANDING OUR CHAIRS PROGRAM



**Dr. Cristine de Clercy: Inaugural Jarislowsky Chair in Trust and Political Leadership**

Trent University is taking an important next step in enhancing the education of current and future leaders in government, politics and the public service with the appointment of Dr. Cristine de Clercy to the prestigious role of Jarislowsky Chair in Trust and Political Leadership. Dr. de Clercy, one of Canada's foremost experts on the study of political leadership, joins Trent's esteemed faculty as part of a first-of-its-kind collaboration across five Canadian universities. As a highly regarded expert on political leadership, Professor de Clercy's brings expertise to conversations around Canadian politics, comparative politics, political economy, and women in politics.



**Dr. Elizabeth Elliot-Meisel: Inaugural Fulbright Research Chair in Comparative Canada-US Studies**

Through Trent University's School for the Study of Canada and the Canada-US Fulbright Foundation Dr. Elizabeth Elliot-Meisel, a highly-regarded American scholar with a deep understanding of Canada-U.S. relations, joins Trent as the inaugural Fulbright Research Chair. As Fulbright chair, Prof. Elliot-Meisel, an associate professor of History from Creighton University (Omaha, Nebraska), will contribute to the development of far-reaching and interdisciplinary research, talks and curriculum at Trent with the goal of promoting the exchange of knowledge and scholarship between Canada and the United States.

### Trent is Now Home to 10 Canada Research Chairs

**Dr. May Chazan**, Tier 2 Canada Research Chair in Feminist and Gender Studies

**Dr. Whitney Lackenbauer**, Tier 1 Canada Research Chair in the Study of the Canadian North

**Dr. Dennis Murray**, Tier 1 Canada Research Chair in Integrative Wildlife Conservation

**Dr. Naomi Nichols**, Tier 2 Canada Research Chair in Community-Partnered Social Justice

**Dr. Anne Pasek**, Tier 2 Canada Research Chair in Media, Culture and the Environment

**Dr. Ian Power**, Tier 2 Canada Research Chair in Environmental Geosciences

**Dr. Bharati Sethi**, Tier 2 Canada Research Chair in Care Work, Ethnicity, Race and Aging

**Dr. Paul Szpak**, Tier 2 Canada Research Chair in Environmental Archaeology

**Dr. Andrew Tanentzap**, Tier 2 Canada Research Chair in Climate Change and Northern Ecosystems

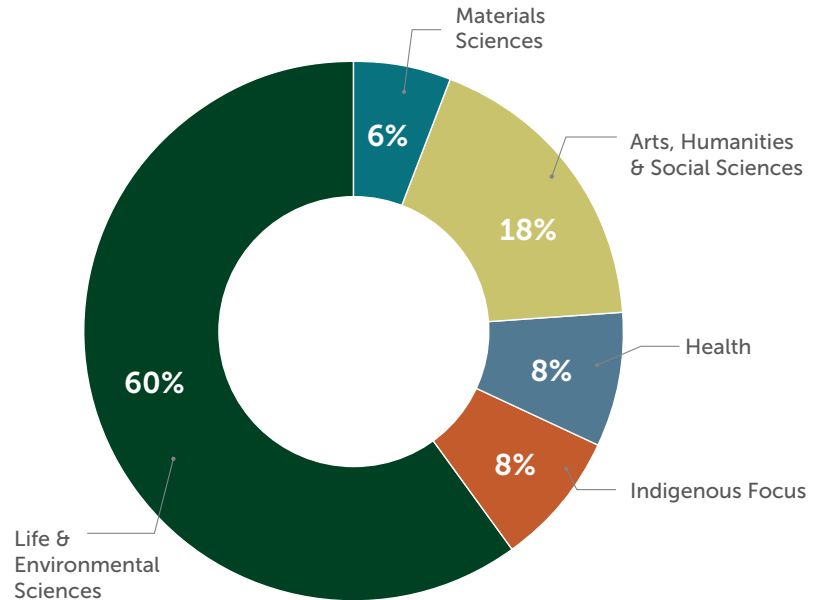
**Dr. Marguerite Xenopoulos**, Tier 1 Canada Research Chair in Global Change of Freshwater Ecosystems



*Get to know*  
**Trent's CRCs**

# TRENT RESEARCH BY THE NUMBERS 2022

## 2022 ACTIVE RESEARCH GRANTS

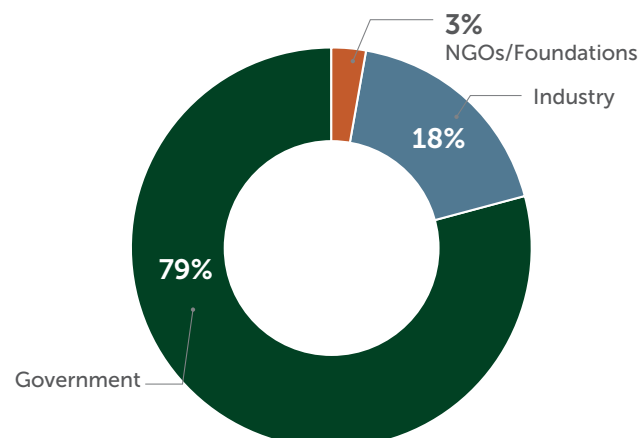


### Tri-Agency grant applications

**89% increase**

in Tri-Agency grant applications  
in 2022

## RESEARCH FUNDING BY SOURCE



## RANKINGS HIGHLIGHTS

### MACLEAN'S UNIVERSITY RANKINGS\*

- #1 UNDERGRADUATE UNIVERSITY IN ONTARIO FOR 12 YEARS IN A ROW** (#4 in Canada)
- #1 OVERALL REPUTATION IN ONTARIO** (#2 in Canada)
- #2 MOST INNOVATIVE IN CANADA**

### TRENT RANKS IN TOP 10 IN CANADA

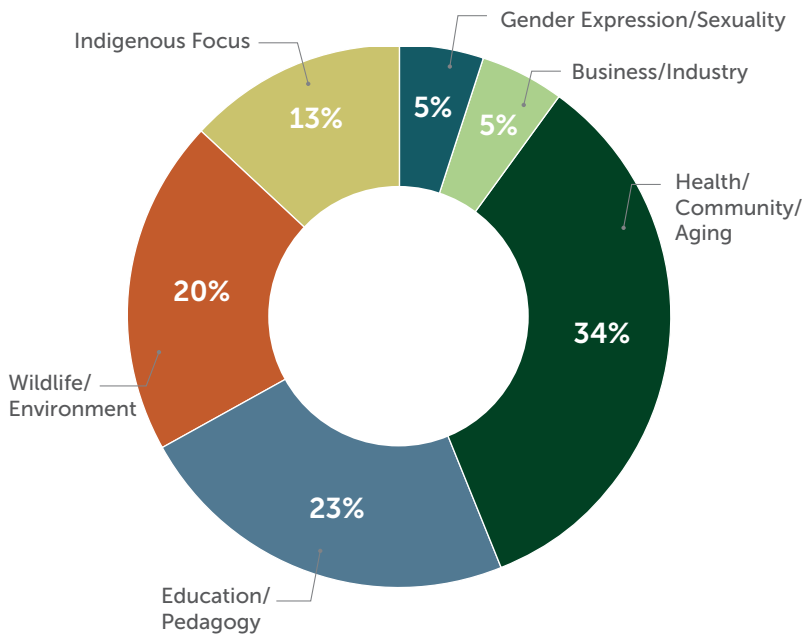
#### Research Infosource Rankings\*

- #2 IN CANADA, #2 IN ONTARIO**  
NSERC Research Income as a Percentage of Total Research Income (Winner's Circle)\*
- #2 IN ONTARIO; #5 IN CANADA**  
CFI Research Income as a Percentage of Total Research Income (Winners Circle)
- #3 IN ONTARIO; #7 IN CANADA**  
Social Sciences and Humanities Research Council (SSHRC) Research Income as a Percentage of Total Research Income
- #4 IN ONTARIO; #10 IN CANADA**  
Canadian Foundation for Innovation (CFI) Research Income Overall
- #5 IN ONTARIO; #10 IN CANADA**  
SSHRC Research Income Overall
- #6 IN ONTARIO; #10 IN CANADA**  
Natural Science and Engineering Research Council (NSERC) Research Income Overall

\* Reflects undergraduate category



## HUMAN & ANIMAL RESEARCH PROJECTS 2022



## 3 NEW INTERNATIONAL AGREEMENTS IN 2022

- Trent University – University of Trento, Italy
- Trent University – Ho Chi Minh City University of Technology, Vietnam
- International Institute for Environmental Science – now partnered with 22 institutions in 10 countries

## TRAINING THE NEXT GENERATION OF RESEARCHERS

**848** GRADUATE STUDENTS training in research

**36%** INTERNATIONAL GRADUATE STUDENTS

**64%** DOMESTIC GRADUATE STUDENTS

## #TRENTURESEARCH ON SOCIAL MEDIA

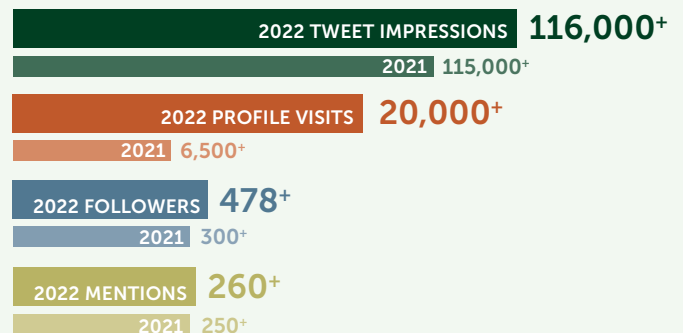
Research is also a prominent feature on the University's main social media channels with the tag #TrentURsearch. This year's Trent Luminaries campaign on LinkedIn (trentu.ca/luminaries) featured key research projects and garnered significant engagement:

**3,185**

TOTAL PAGE VIEWS

**418,854**

TOTAL IMPRESSIONS  
across social media



## TRENT RESEARCH IN THE NEWS

**110+** TRENT NEWS STORIES OR PRESS RELEASES on student and faculty research and funding announcements

**1,300+** MEDIA MENTIONS of Trent researchers Between Jan. 2022 and Dec. 2022, including features in the *New York Times*, *The Globe and Mail*, the *Hill Times*, CBC, *National Geographic*, *University Affairs*, *The Conversation*, *The Narwhal*, and BBC.



## TRENT ANIMAL CARE

After the CFIA seized 7 illegally imported and endangered Chinese Big Headed Turtles (*Platysternon megacephalum*) TRENT ANIMAL CARE was asked to overwinter the animals and keep them in a state of brumation before attempts are made to induce breeding with the animals spring of 2023. The animals are kept under Trent ACC protocol 28003 and housed in environmental chambers which are customized for housing live animals at various temperatures as required by the needs of the animal or project.

# CREATING A BETTER TOMORROW

## Conserving our Lakes through Community-Driven Research

Researchers from the Trent Aquatic Research Program (TARP) have set out to reveal previously unseen fish behaviors. Through a multi-year Stoney Lake Fish Tracking project, researchers are discovering when and where fish spawn, survival and habitat needs, and the effects of changing water quality.

Undergraduate and graduate students are working alongside Trent Biology professor and research lead, Dr. Graham Raby, and researchers from the Department of Fisheries and Oceans Canada (DFO) and other government agencies and organizations. Prof. Raby and his students, along with the DFO, are studying multiple fish species, with an emphasis on walleye, and are relying on acoustic telemetry to track the movements of fish – putting acoustic receivers in the water and implanting acoustic transmitters into fish – while adhering to international best practices for fish surgery. The team aimed to tag close to 100 fish and will be monitoring key habitat variables including water temperature, clarity, and dissolved oxygen.



The project is also engaging community members, including Indigenous communities, to co-create knowledge, which is key to building trust and relationships and results in stronger advocacy when it comes to potential policy changes around aspects such as fisheries management and fish habitat conservation.



## Green Brewing Technologies for a Carbon-Negative Future

Through a first-of-its-kind research collaboration in North America, Trent University and Karbon Brewing Co. are working together to research and develop sustainable brewing technologies for a carbon-negative future, while also collaborating on curriculum development and offering students hands-on, experiential learning opportunities. This year saw Karbon Brewing Co. working closely with leading researchers in Trent's Chemistry department studying how to repurpose carbon-rich brewing waste byproducts, such as brewer's spent grain and providing hands-on learning and research opportunities for students with Karbon CEO and co-founder Stephen Tyson visiting a fourth-year managerial accounting class to talk about the way businesses can contribute to sustainability and climate change solutions. With climate change and sustainability accounting standards being new elements of the accounting curriculum, Tyson offered Karbon's own experience as a valuable case study for students learning new ways of integrating environmental, social, and governance (ESG) responsibility across all areas of business operations.





### Trent Expands Research Network in Ho Chi Minh City, Vietnam

The International Institute for Environmental Science (IIES), whose establishment depended greatly on IIES director and Trent professor emeritus Dr. Douglas Evans, welcomed its newest member this year at the seventh annual IIES conference in Ho Chi Minh City, Vietnam.

In the fall of 2022 the Ho Chi Minh City University of Technology (HCMC UT) was added as a new member, with Dr. Cathy Bruce, vice-president, Research & Innovation at Trent University, signing the initiating agreement for Trent to establish new research collaborations between the two

schools during the Conference, an opportunity for experts from universities around the world to collaborate on solving global environmental issues.

While in Vietnam, President Dr. Leo Groarke signed an agreement that brings Trent University and HCMC UT together to explore future collaborations in the areas of faculty research projects, student exchanges and study abroad opportunities, as well as graduate student research opportunities.



### Research Collaborations with Private Sector Partners Eyeing New Opportunities at Cleantech Commons

Three private sector companies collaborating with Trent University researchers on solutions to global challenges could see new opportunities for innovation at Cleantech Commons, a green technology research and innovation park being built on Trent's Symons Campus in partnership with the City of Peterborough. Carbonix, Noblegen, and Karbon Brewing Co., which are all also current members of the research park's Cleantech Innovation Portal, are exploring potential tenancy at Cleantech, where they would have access to greater collaboration and knowledge exchange to advance the development of clean technology solutions that address energy, environment, and climate challenges.

# NURTURING RESEARCH EXCELLENCE

## Trent Partners in EaRTH District

Trent University is a key partner in the Environmental and Related Technologies Hub (EaRTH) District consortium and have been working collaboratively to advance research on topics such as the development of on-campus food assets, clean energy alternatives, waste reduction, and recycling pollutants. By combining resources, including research expertise and facilities, the EaRTH District, a partnership between five institutions in the eastern GTA, is working to develop the region's clean, green, sustainable technology sectors. Trent's own Dr. Sanela Martić is leading the Electro-EaRTH project, along with a group of researchers from Trent, Ontario Tech University, University of Toronto Scarborough, and Centennial College who are working to integrate each other's work into ongoing projects and teaching. The group's expertise includes:

- converting chemical pollutants, such as industrial byproducts, into reusable value-added chemicals;
- using electrochemistry methods to create new fuel cells through alcohol oxidation;
- creating microbe-driven energy using bacteria in fuel cells;
- making the microbial fuel cells themselves;
- measuring the power generated through these cells.



*Electro\_EaRTH Research Day hosted by Trent University showcased research from Trent, Ontario Tech University, University of Toronto Scarborough, and Centennial College*



## Globally Acclaimed DNA Research Facility

Trent University's Natural Resources DNA Profiling and Forensic Centre has been gaining attention due to its role in supporting a provincial COVID-19 wastewater surveillance project, an initiative supported by Public Health Ontario. The Centre is a leading scientific facility specializing in genetic testing related to wildlife, agricultural, and environmental projects, and Forensic Science professor Dr. Christopher Kyle is leveraging resources at this facility to contribute local COVID-19 wastewater data to the province. Additionally, the facility provides services for a number of national and international agencies – from species, sex, and even specific individual identification of a wildlife sample – which informs and benefits wildlife management across a range of jurisdictions in Canada and globally.





## Understanding Aging

### *A Community-Centered Approach to Research and Knowledge Mobilization*

Building on Trent's interdisciplinary strengths in social sciences and humanities research, the Trent Centre for Aging & Society (TCAS) is a key academic research, knowledge mobilization, and community engagement initiative. With support from a Social Sciences and Humanities Research Council (SSHRC) Institutional Grant, TCAS brings together faculty, students, staff, and community stakeholders to participate in interdisciplinary aging studies that seek to understand diverse experiences of aging and challenge ageist practices in our communities and culture. Recent projects include a number of COVID-19 related studies, including the impact of the pandemic on older volunteers and volunteer-based programs and identifying social isolation as a concern for seniors and their caregivers. Based in one of Canada's most rapidly aging rural regions, TCAS is well positioned to support community engagement that is responsive to the challenges and opportunities facing older people and aging communities.

## Growing Knowledge Right on Campus

Trent University's Experimental Farm – a hands-on living lab on Trent's Symons Campus – provided researchers a wealth of opportunities this past growing season and saw the installation of a new drainage tile system which will expand on the research opportunities linking water quality and soil health. Through the use of the underground drainage tile excess water can be removed from a field forcing plants to grow deeper roots during the early wet season, with an aim to enable better absorption of water and nutrients in the dry season to follow. By splitting the Experimental Farm into segments – one with drainage tile and one without – this novel set-up will allow Trent's researchers a side-by-side comparison to look at how different management treatments will impact both the soils and the quality of water coming off the field via the drain tile. The installation of drainage tile is one of several larger projects Trent researchers are hoping to undertake to further the goals of supporting experiential learning and generating new knowledge about sustainable agriculture. These aspirations include a new structure that will include a barn, a space for food preparation, a teaching and research space, and equipment to help students in their work growing crops.



**The Research Centres, Institutes and groups at Trent play a critical role in our pursuit of research collaborations with national and international recognition, diversity of research across scholarly disciplines, an emphasis on interdisciplinary research, and involvement of students in research**

### Research Institutes

Institute of Integrative Conservation Biology  
Institute for Watershed Science  
International Institute for Environmental Studies  
Trent Biomaterials Research Program  
Indigenous Environmental Institute

### Research Groups

African Studies Research Group  
EditionsTrent  
Molecules, Cells, and Systems Research Group  
Trent Arts Research Group

### Research Centres

Trent University Archaeological Research Centre  
Trent Centre for Aging & Society  
Canadian Environmental Modeling Centre  
Water Quality Centre  
Trent Centre for Materials Research  
Natural Resources DNA Profiling and Forensic Centre  
Frost Centre for Canadian Studies and Indigenous Studies  
Trent Centre for Communicating Conservation  
Entrepreneurship & Social Innovation Centre



# ON THE HORIZON

## Setting Our Sights on the Next Five Years

2023 will be a milestone year in which Trent University's new Strategic Research Priorities will be released. The 2023-2027 Strategic Research Plan will identify Trent's Strategic Research Priorities which will: promote and signal areas of strength; identify areas for further intensification and exciting exploration; and articulate common goals and related actions for research activity. These Strategic Research Priorities will also closely align with the principles identified in Trent's new Academic Plan.

Through a series of collaborative discussions, opportunities for feedback with faculty and students as well as analysis of existing data, several important big ideas and themes have emerged.

For 2023-2027, Trent University will:

- Place an emphasis on enhancing research intensity and impact;
- Engage in collaborative research focused on complex problems and contexts;
- Actively pursue research on creating healthy and sustainable environments and societies.

To date, the focus of consultations and survey input has also helped us to determine some essential shared goals for research at Trent. These include:

- Prioritizing student engagement with research to ensure that research is an essential part of the undergraduate and graduate education experience at Trent
- Enhancing faculty support and mentorship by engaging new and mid-career faculty with research opportunities and supports
- Fostering opportunities for research funding from external sources that engender greater research opportunities and impact overall
- Further enhancing communications that promote and recognize research capacity, significance and impact
- Facilitating research collaborations through opportunities for researchers to cluster together by areas of mutual interest and curiosity
- Developing greater opportunities for researcher leadership locally and globally

We are excited to see how the strategic priorities for research develop over the winter months and look forward to sharing the final plan in the spring of 2023.



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