

Welcome to the 2023 Undergraduate Research Excellence Awards Presentation

Research that's out of this world!

Tonight, the University of the Fraser Valley is thrilled to present 24 students with research awards totalling over \$20,000.

These students were nominated by faculty for exceptional research work, either as part of the UFV work study program, for contributions as research assistants on faculty projects, or for an outstanding research project of their own. As Captain Kirk said, they have dared to go where no one has gone before.

Since inception, these awards have launched almost 500 students into their futures with over \$370,000.

Tonight, we also acknowledge students who received prestigious awards from UFV, federal granting agencies, and other external organizations.

Congratulations to all the students whose research activities create new knowledge through amazing experiential learning opportunities. Connecting knowledge, skills, and experience with creative minds provides the fuel for Canada's economy to reach warp speed!

With more than 14,000 students attending UFV this year, these awards represent only a small portion of the research and other experiential learning activities that students are able to explore on their way to new beginnings.



A Message from the Acting President

Dear Undergraduate Research Excellence Award Winners,

UFV's strategic plan IYAQÁWTXW - House of Transformation – outlines our commitment for UFV to be known as a gathering place for learners, leaders, and seekers. Leading through our values of integrity, inclusivity, community, and excellence, UFV is dedicated to pursuing diverse pathways of scholarship, leading to community connection, reconciliation, and prosperity, locally and beyond.

Guided by this vision, many of the research projects that our students participate in with our faculty are often focused on topics that are important and relevant to the communities in which we live, work, and learn.

Tonight's award winners represent research and scholarly excellence across a number of disciplines and address a multitude of important issues. When weaved together, they represent learning from the past, reflections on the current, and projections to the future.

I continue to be inspired by the quality, impact, and high level of engagement in research and scholarly activity by our undergraduate students.

Each of the research projects featured tonight and the many other research activities that have engaged our students have all made significant contributions to make the world a better place to live in their own unique way.

While tonight reminds us that learning can truly take place anywhere, it also demonstrates that with learning comes the responsibility to share that knowledge with others.

It takes courage to share what you have learned with others, and I want to applaud all the students who have shared their research and scholarly works for demonstrating such courage. While we celebrate you and your accomplishments, you open yourself, and your ideas, up to scrutiny and criticism when you publicly share your work.

However, this is all part of the pursuit of discovery. Harnessing the energy of discovery and being committed to explore solutions,

however challenging they might seem, is at the heart of the advancement of any society.

If tonight is any example, the future generation of researchers and scholars are not afraid to tackle the big, important and complex issues facing society now and in the future.

The success of our student researchers and scholars could not be possible without the tremendous dedication and support of their faculty supervisors. Their tireless dedication to mentor, inspire, challenge, and teach our students is a shining example of their commitment to engage learners, transform lives, and build communities. Thank you to those who mentored and inspired all of UFV's students to pursue knowledge through discovery.

Sincerely,

Dr. James Mandigo

Acting President and Vice-Chancellor

Student Speakers

We are delighted to have two student speakers this evening selected from our Student Research Day Microlecture presenters.

JJ Janzen

This past April marked the final semester of my Bachelor of Arts degree in which I majored in psychology. I aspire to be a registered clinical counsellor and I am looking forward to pursuing my graduate education at Trinity Western University in the Master of Counselling Psychology Program.

UFV has provided ample research opportunities for me to develop and hone my skills to best prepare for graduate school.

For my honours research project, I selected self-compassion as I was interested in running a study that could have real-world implications while also being applicable to my career aspirations. Self-compassion—involving self-kindness, mindfulness, and common humanity—appears to reduce stress and rumination in response to setbacks. Despite these benefits, studies suggest self-compassion exercises/workshops are underutilized/attended by men and that reframing self-compassion (e.g., with more masculine-stereotypical language) may boost interest/participation. Here, however, such reframing had little effect on men's interest (sign-up rates) and dramatically reduced women's sign-ups. Nonetheless, high self-compassion individuals—regardless of workshop (vs control) participation—showed lower rumination. Thus, alternative strategies to boost self-compassions appeal should be explored as these may ultimately improve men's wellbeing in response to setbacks.

UFV Undergraduate Research Excellence Award Recipients

Community Service Research

Carter Johannes

Saba Berenjforooshazar

– Scf5

Faculty of Health Sciences

Carter Johannes, Saba Berenjforooshazar

School of Land Use and Environmental Change

Faculty Supervisor: Mariano Mapoli

Award: \$500 each

Carter: Carter is a Physical Geography major at UFV who plans to complete the Geographic Information Systems certificate. The research he has done has broadened his view to the universal applicability of GIS and he hopes to continue to use the technology for many years to come in his career or otherwise.

Saba: I, Saba Berenjforooshazar am currently an international student at UFV. I came to Canada with an associate degree in computer software engineering from IAU in Tehran, Iran. I started my journey at UFV in the Fall of 2022 and hope to complete my GIS Certificate in the Fall of 2023. At UFV, I have dedicated a consistent daily effort towards my career expectations of becoming a GIS Spatial Analyst.

Participating in the “Extreme Heat Mapping” project and working alongside SLUEC professors and other students, has been a transformative experience for me, as it has provided me with the opportunity to acquire new data analysis skills which enhanced my GIS education significantly. I owe a great deal of my success in this regard to the expert guidance and meticulous instructions provided to me by Dr. Mapoli, whose skillful tutelage enabled me to process the information with utmost accuracy and precision.

Extreme Heat Mapping

Extreme heat maps produced before the heat dome event of summer 2021 were regional in scope, the spatial unit of analysis used is either the Census Tract or Dissemination Areas, and the temperature data used were calculated estimates from satellites. All problematic for a heat map that will be used at the local level. We

created an extreme heat GIS based not only on Census data, but also local/municipal data. We started with the development of the Mission Mapping Units (MMU) based on a combination of Dissemination Block and Property Parcels. Next, we identified the Most Vulnerable Parcels (MVPs) which contained the most vulnerable population. We used ground stations for temperature data to drive our Mission Climate Map (MCM), and finally, we created several scenarios for municipal planners including the use of the Mission Community Assets (MCA) to mitigate the extreme heat.

Indigenous Research

Fergus Dalton

Psychology

Faculty Supervisor: Carey DeMichelis

Award: \$1,000

Fergus: I'm a fourth-year psychology student at UFV who had little interest in research prior to my first brush with it in a Directed Studies project completed in winter 2022. Since then, it's become a passion. My goal now is to advance to graduate school to become an experimental psychology researcher and faculty member at a university like this one, and I hope to contribute to the field by applying a critical eye to all the faults and assumptions which have led to the replication crisis today.

Critical Health Psychology: Medicine Walk

On-brand with my usual deviation from the norm of assignment instructions, in my Health Psychology presentation on Indigenous Health, I diverged from the PowerPoint method and took the class for a medicine walk. Rather than citing academic sources, I consulted with my Métis Elders on traditional Indigenous medicines and scoured the UFV property in search of native plants in order to teach the subject the way it was traditionally taught. For the presentation, I took the class outside, pointing out the medicines that Elders Joe and Lorelei had mentioned to me, highlighting the historical context and cultural differences to colonial conceptions of medicine and health. Upon returning inside, I provided a prepared tea with the class from medicines I'd harvested myself and shared about my family's experience with residential schools. The presentation aimed to highlight how colonial conceptions of health diverge from traditional teachings while emphasizing the value that indigenous methods provide through engaging, hands-on learning.

Departmental Awards

Jenna Duffin

Communications

Faculty Supervisor: Nicole Stewart

Award: \$1,000

Jenna: I am a fourth year Bachelor of Arts student and am currently completing a major in communications and a minor in business. As I near the end of my studies, I hope to pursue an internship with the

Isaac Barker

Criminology and Criminal Justice

Faculty Supervisor: Irwin Cohen

Award: \$1,000

Isaac: I will be graduating this June after 5 years at UFV with a Bachelor of Arts (Hons) degree in Criminal Justice with an extended Minor in Psychology. I have always had the intention of becoming a lawyer and I am continuing this pursuit at the University of Birmingham in the UK this upcoming September. The driving force behind my focus for this project stems from the unfortunate circumstances surrounding the disappearance and recovery of a friend along the Fraser River. The subsequent involvement and efforts of Search and Rescue, despite the terrible situation, was truly amazing to witness and helped me to better understand the crucial role they play across the country. This project allowed me to build my understanding of research methods and honor someone close to me in a meaningful and impactful way. I am grateful for the opportunity Dr. Irwin Cohen and UFV's School of Criminology and Criminal Justice has provided me.

Searching for a Solution: A Qualitative Study into the Challenges Facing Canadian Search and Rescue

Agencies | This study explores the perceptions of a sample of SAR members about the current human, financial, and technological challenges facing SAR in British Columbia. Utilizing a convenient sample of SAR members, six in-depth, semi-structured interviews were conducted. Using an inductive approach to data analysis, themes, and patterns were extracted following the completion of the interview process. The underlying patterns include an increase in caseloads, the influences of global warming, problems associated with funding and fundraising, structural challenges in training methodologies, burnout, as well as, administrative and collaborative struggles between SAR groups. Much of the findings of the current study support similar results found in previous qualitative and

quantitative research. Considering these findings, the present study demonstrates a need for additional research into this subject matter

Sarah Brown

English

Faculty Supervisor: Hilary Turner

Award: \$1,000

Sarah: I graduated from BCIT's Marketing Management program in 2017 with many unanswered questions like "how did we get to the present moment" and "why are things the way they are." I transferred to UFV in 2018 and was thrilled to be in a stimulating environment surrounded by students and professors interested in similar questions. I am very grateful to finish the fourth year of my English Honours degree with an undergraduate research project. This opportunity to dive into deep questions about how we think and live is exactly the experience I was craving at BCIT, and I was lucky to do so under the mentorship of Dr. Turner. I intend to start my Master's studies in English in the next year or so and am interested in doing interdisciplinary research at the graduate level.

From the Phonetic Alphabet to AI-Powered Large Language Models: A Study of Writing Technology and Culture

The project titled "From the Phonetic Alphabet to AI-Powered Large Language Models: A Study of Writing Technology and Culture" considers the progression of communication technologies from ancient Greece to the natural language processing of the present. This paper contextualizes models like ChatGPT within Rhetoric and Media Studies by applying Marshall McLuhan's and Walter J. Ong's theories to the artificially intelligent language models. McLuhan argues that each technological innovation produces a profound remodelling of the human interpretation of experience, and this paper compares past large-scale readjustments of human consciousness to one brought about by adopting this new technology. This project connects contemporary technologies based on large language models (LLMs) like ChatGPT and the preceding, equally revolutionary discoveries of alphabetic writing, print technologies, and electric forms of communication in language (such as radio, cinema, and television).

Reuben Louwerse

Philosophy

Faculty Supervisor: Jeff Morgan

Award: \$1,000

Reuben: I'm Reuben Louwerse and I'm doing a Bachelor of Arts with a major in P

Muskan Manhas

Psychology

Sterling Kai Pollock

Theatre

Faculty Supervisor:

Brielle Quon

Visual Arts

Faculty Supervisor: Grace Tsurumaru

Award: \$1,000

Brielle: Brielle Quon will be graduating with a double extended minor in V

Greg Luesink

Kinesiology

Faculty Supervisor: Cynthia Thomson

Award: \$1,000

Greg: I started rock climbing in my first year of university, and this has directed a lot of my goals. One day I would like to work as a physiotherapist for climbers and other outdoor athletes. I wasn't offered a spot in the UBC MPT program for this fall, so I am planning to work as a Kinesiologist to gain some experience before I reapply. This project gave me an opportunity to simultaneously learn about the research process and do it in an area that I am passionate about.

Investigating the Effect of Eight Week Hangboard and Handheld Training Methods on Finger Strength and Endurance in Intermediate and Advanced Rock

Climbers | Having rehabbed from several climbing-related finger injuries myself, I wanted to test different training devices for improving finger strength in climbers, while mitigating injury risk. Specifically, comparing conventional hangboard training to pinch block and crimp block devices, which have not been empirically tested. Overall, I found that all three training methods had similar improvements for finger strength and endurance over time, measured by hangboard, pinch block, and crimp block tests. Only one significant difference between groups was found. For Left Hand Pinch Block Endurance, the Pinch Block training group outperformed the Crimp Block training group. This supports the Specificity principle of training - Specific Adaptations to Imposed Demands. Pinch Block training may be the safest and most versatile due to portability, low training load, and activation of both the finger flexors and extensors, all of which may be important for preventing injury of the fingers, hand, and wrist.

Jasleen Brar

School of Health Studies

Faculty Supervisor: Shelley Canning

Award: \$1,000

Jasleen: I am going into my fourth year of Bachelor of Sciences in Nursing degree. After graduation, I plan to work at the Abbotsford Regional Hospital's medical unit and eventually move to the emergency department. In the future, I also plan to pursue my Master's degree in Nursing. I am very grateful to be involved in this research study with Dr. Shelley Canning which has helped me recognize barriers that impact healthcare providers and patient care. I am excited to continue working as a research assistant and help develop an education module to improve cancer care practices at BC Cancer.

Implementing a Dementia-Friendly Care Approach for Cancer Patients Living with Dementia

The purpose of this study is to develop and implement a dementia-friendly education module and recommendations for improving cancer care practices at BC Cancer. The study will follow a qualitative design and ethnographic approach. The study consists of two phases. Phase one explores experiences of patients with both diagnoses of cancer and dementia, their caregivers, and their care providers. Currently, the team is gathering data via participant observations and interviews. Early findings reveal lack of formal dementia diagnoses, lack of dementia education, gaps in care provider communication, and increased patient safety risk during treatment. Once data analysis is complete, phase two will begin, which includes developing a dementia awareness education module. This phase will also include practice recommendations for BC Cancer healthcare professionals and an evaluation of the education module. This research study will help develop evidence-based practices that are necessary to provide safe, high-quality, dementia-friendly care to cancer patients.

Saransh Ahuja

Computing

Faculty Supervisor: Amir Shabani

Award: \$1,000

Saransh: As a high-achieving student and a dedicated participant in esports, my intellectual tenacity is mirrored in my academic excellence, earning me a place on the Dean's List. My entrepreneurial spirit led me to start my own company, and I've also been making substantial impacts in the top departments of a prestigious organization, demonstrating my versatility and commitment to innovation.



Improving Deep Learning methods for Speech Emotion Recognition

This paper presents a fine-tuned ChatGPT approach for emotion recognition and regulation in social companion robots. The methodology involves feature extraction using MFCC, CQT, and Mel spectrograms, speech-to-text conversion, and fusion of emotional features for accurate emotion recognition. The RAVDESS dataset is employed for training and evaluation, showcasing high accuracy in emotion recognition and the effectiveness of the fine-tuned ChatGPT API in regulating emotions during human-robot interactions. The integration of this system into social companion robots holds potential in healthcare, education, and elderly care, fostering more engaging and emotionally supportive interactions.

Maor Arad

Chemistry

Faculty Supervisor: Golfam Ghafourifar

Award: \$1,000

Maor: Participating in research at UFV, has enabled me to connect the content that I've learned in class, into real world applications. The project that I have been a part of is directly connected with my goal of advancing personalized medicine and disease detection. The experience the I've gained will be vital as I continue onto graduate school where I will apply the methods that I have developed at UFV on a large scale.

Rapid Proteomic Workflow Utilizing Pepsin within an in-situ Fabricated Open-Tubular Immobilized Enzyme Microreactor (IMER)

Proteomics is the study of all of the proteins present in an organism. Generally, enzymes are added into a protein sample to break them down into smaller pieces called peptides. However, common methods employed can take upwards of a day to complete. My research was focused on developing a new method that was faster and fully automated. I was successful in developing an Immobilize Enzymatic Microreactor (IMER), which works by linking enzymes into the inner wall of a capillary. This allows proteins to be cleaved into peptides as they pass through. The IMER I developed is reusable, and only requires 15-minutes per sample, which is much faster than what is currently used throughout the research and healthcare fields. The IMER is now being tested with biological samples, with the goal of its use being adopted on a large scale.

Abbey Riddols

School of Land Use and Environmental Change

Faculty Supervisor: Steven Marsh

Award: \$500 each

I am happy to be graduating this June after 6 long years at UFV with a double honors in Biology and Physical Geography. I plan on spending some time after graduation working in the field, and getting some much needed traveling in. Performing this research during my undergraduate years deepened my connection with the Chilliwack River Valley, and the people who live in it. I would like to thank the Ts'elxwéyeqw Tribe for allowing me to conduct research on their lands.

Ashely Sharma, Jacey Giesbrecht

Social Work

Faculty Supervisor: Karun Karki

Award: \$500 each

Ashely:

NSERC Undergraduate Student Research Awards (USRA)

Student Presentation Grants

In addition to the awards mentioned here, the Research and Graduate Studies Office provides travel grants to students presenting their research at professional conferences. In 2022-23, 26 students were provided up to \$1,500 each to p (o)-9.6m75.9 (h)-0.7 (tA6 (n)-00.8 (a)[(r)

UFV Student Research Day Awards

Each year the UFV Research Office invites undergraduate student researchers to showcase their work by participating in a fast-paced 2-minute Microlecture

Maor Arad –

