



LIFE STORIES EXHIBIT AT LEGACY

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THE RING

FEBRUARY 2021

The University of Victoria's
community newspaper

ring.uvic.ca



University
of Victoria

SPEED READ

SAVE THE DATE

Virtual Campus Update

The next Campus Update will be held over Zoom on Feb. 17 from noon to 1 p.m. President Kevin Hall, VP Academic and Provost Valerie Kuehne and Acting VP Finance and Operations Kristi Simpson will make an interview-style presentation about our COVID-19 response and future plans, as well as our institutional budgeting process and proposed areas of priority. Advance questions are welcomed, and pre-registration is required. uvic.ca/campusupdate

UNITED WAY

Calling all trivia buffs

On Feb. 12 from noon to 1 p.m., join the UVic United Way campaign's lunchtime trivia game, hosted by Cliff Lequesne of The Q. Bring together up to five friends or colleagues to form a team to do some good and win prizes. Members of the winning team will receive a bag packed with goodies, including UVic coffee mugs, T-shirts and hoodies. Best of all, participants will be entered to win a 64GB iPad Air. We will also be welcoming guests from Royal Roads for a bit of friendly competition. Come together online to connect with our community and show your local love. Tickets are \$10 per person. bit.ly/trivia-21



Harrington, at left, passing monitoring equipment to Royal Jubilee Hospital nurse Misha Sojonky. UVIC PHOTO SERVICES

440,000

NUMBER OF
NURSES IN
CANADA IN 2019,
ACCORDING TO
THE CANADIAN
NURSING
ASSOCIATION

Documenting the hidden burdens of healthcare workers

BY JODY PATERSON

Tasha Vollo-Crawford has long known that her nursing job causes her stress—all the more so since the start of the pandemic.

But it wasn't until a UVic researcher put a watch-sized heart rate monitor on her wrist, to wear during her shifts, that she fully grasped the impact of that stress on her physical health.

"I knew that my heart rate was always high on my shift, from beginning to end," says Vollo-Crawford, a nurse at Victoria General Hospital. "I see now that I'm in a constant state of stress at work."

Vollo-Crawford is one of the Victoria-area health care workers recruited by UVic grad student Marisa Harrington for a study monitoring physiological stress responses in Victoria-area health care workers.

These are still early days of data collection. But for Harrington, who's pursuing a master's degree in exercise physiology, the results are already confirming what every health-care worker already knows: their work is stressful.

"This is such a unique area to research during a pandemic," says Harrington, whose study is funded by WorkSafe BC and UVic's Centre for Occupational Research and Testing, in the School of Exercise Science, Physical and Health Education. Her research is evaluating how well those who carry the responsibility to keep us safe and healthy are staying safe and healthy themselves, she says.

The study is part of broader research being conducted by Lynne Stuart-Hill, an occupational physiologist and associate professor at UVic. She is studying the stress

responses of Greater Victoria front-line healthcare workers whose jobs include shift work.

The main focus of Harrington's research initially revolved around shift work itself. But then COVID-19 struck, bringing the rare opportunity to examine the objective and subjective stress levels of nurses—not just in terms of shift work, but during a global health crisis.

Preliminary findings

The 10 nurses who participated in Harrington's ongoing study wore monitoring equipment over an eight-day shift rotation. Their sleep patterns were monitored alongside the rate and variability of their heartbeats.

SEE NURSING STRESS P.4

PHILANTHROPY

\$1.875M gift supports environmental and climate journalism



Wayne Crookes in Vancouver, BC in early January 2020. PHOTO: MARTIN ROLAND

The threat of climate change is the most perilous of our time—especially at the beginning of this new decade, which has been frequently identified as the most crucial for preventing catastrophic consequences. Now, one concerned individual is personally addressing that threat with an inspiring gift of \$1.875 million to the University of Victoria in support of the Wayne Crookes Professorship in Environmental and Climate Journalism.

The donation announced in late January from Vancouver business leader and political activist Wayne Crookes includes both the \$1.5 million professorship and a separate \$375,000 fund to focus on environ-

mental and climate journalism research and outreach. The new professor—to be appointed later this year within UVic's Department of Writing—will help mentor the next generation of climate correspondents and writers.

"Wayne Crookes' support of environmental and climate journalism echoes UVic's deep conviction to help address the challenges posed by climate change," says UVic President Kevin Hall. "Extreme weather, melting ice sheets, incessant flooding and other alarming events serve to remind us that we are not only together

SEE CLIMATE JOURNALISM P.3

around
the ring

Employee Learning
Program:
Learning that Shifts U

HR's new employee learning program supports the professional development of all UVic regular full-time and part-time employees by offering free-of-charge learning sessions. Sessions can now be categorized into six new series including: UVic Citizen, Understanding Self and Others, Clear Communication, Personal Effectiveness, Manage People, and Lead Teams. Employees may take individual courses or pursue completion of a full learning series. Employees may self-enroll in a community of learning (hosted on Brightspace) at any time to engage with one or more series. Subscribers will access a range of benefits including early notification about course availability. Check out the various series and courses at bit.ly/21-shift.

SUSTAINABLE INVESTMENTS

Working capital fund goes fossil fuel free

The University of Victoria's working capital fund is now free of any fossil-fuel investments with the move of \$80 million to a short-term bond fund that focuses on reducing the carbon intensity of the investments within the pool. Also in keeping with UVic's commitment to promote sustainable futures, the university is investing \$10 million to further its responsible investment policy goals in a renewable power impact fund that will measure the carbon emissions avoided by the fund investments. BlackRock's Global Renewable Power III Fund supports 250 renewable power projects across the globe including an onshore wind facility in Norway and a floating solar farm in Taiwan. All projects in the fund align with United Nations' Sustainable Development Goals (SDGs).

In December, UVic announced its investment in the Raven Indigenous Impact Fund LP and the Vancouver Island Investment Hub. "We are acting on our commitment to address climate change in every domain at UVic including through our investments," says UVic Treasurer Andrew Coward. "The opportunity to invest in renewable power is clear and it aligns with UVic's responsible investment strategy allowing for support of future technologies while also ensuring a strong financial return. Investing in the fossil fuel free fund allows us to lower the carbon footprint of our investments which helps to mitigate the investment risk associated with climate change as society transitions to a greener economy that is focused on reducing greenhouse gas emissions."

Last year, the university approved a new policy for its \$225-million working capital fund to materially lower the carbon emissions across the entire portfolio by 45 per cent by 2030, allocate 25 per cent of the funds to thematic impact investments—including in energy companies that will be part of the required transition and investments that support Indigenous economic development—and encourage better disclosure of carbon emissions and climate-related risks. In approving the new policy, the university acknowledged that the passionate commitment, research and perspective shared by students and faculty in pressing the university to address climate change through its investments played an important role in the Board of Governor's deliberations. The move of funds to the RBC Vi-

sion Fossil Fuel Free Short Term Bond Fund will mean investing in holdings that prioritize low carbon intensity investments and exclude companies directly involved in extracting, processing or transporting fossil fuels. Management of the university's financial assets is among the many ways that UVic is responding to the climate crisis. Through research, academic programs, campus operations and community outreach, students, faculty and staff are tackling the complex challenges of climate change and striving to make a difference. Promoting sustainable futures is a priority in the Strategic Framework that sets out the university's goals and priorities. For more details on the university's working capital investments visit: uvic.ca/vpfo/capitalinvestments.

Engineering expansion poised to build climate resiliency

UVic has reached the detailed design stage of the engineering expansion project of world-leading green buildings that combine leading edge energy efficiency design features with a mass timber structure, and green and solar roofs that showcase UVic's expertise in environmental sustainability. The buildings will serve as a living lab for experiential learning, research and industry partnerships to build community resilience and tackle climate change, clean energy and healthcare solutions. Funding still needs to be secured, to bring this vision to fruition.

"Through the expansion of our engineering and computer science facilities, we are leading by doing—advancing green building design and construction, fostering innovation and technologies to create new jobs and prosperity for the province, and deepening our commitment to climate action and sustainability on a local, national and international level," says UVic President Kevin Hall. Expansion plans include a six-storey extension to the existing Engineering and Computer Science Building. The 5,906m2 mass timber extension with a green roof will include multidisciplinary instructional and research labs with highly specialized equipment and infrastructure, design studios, computer labs, faculty and graduate student office space. An adjacent 2,253 m2 High-Bay Structures Research Lab (HBSRL) will be located on parking lot A near the Engineering Lab Wing and will feature a three-storey space equipped with a gantry crane, a large shake table and other engineering facilities which



Architect's rendering

will serve the unique needs of civil engineering research. In addition to research focused on structural testing, the HBSRL will also accommodate large-scale experiments related to geotechnical, and materials and building science research. The growing demand for engineering and computing science spaces "These facilities will help the faculty of engineering attract world-class scholars and talented students to UVic—scholars and students who will develop innovative technologies to address the problems that are changing the world around us," says Acting Dean of Engineering Peter Wild. The building expansion will fill an urgent need for teaching and purpose-built lab space. The number of undergraduate students in the faculty has more than doubled since

2009. This continued growth is driven by popular new programs and labour market demands. The Province of BC is providing substantial funding to increase engineering and computer science enrolments at UVic by 500 new undergraduate degree spaces—a 25 per cent increase—by 2023. Support for the project's design and sustainability features Online surveys revealed strong support for the vision of the expansion project, including the orientation of the buildings along Ring Road to create an engaged pedestrian realm, the buildings' use of mass timber, forest views, social spaces, natural light and student common areas. Survey respondents also expressed strong support for the buildings' sustainability features, including water efficiency, zero-carbon certification and photovoltaic panels and leading-edge

energy efficiency. To support campus transportation demand management goals, the project will incorporate covered and uncovered bike parking stalls, end-of-trip facilities such as showers and lockers, and cycling and pedestrian pathways fronting Ring Road. Learn more about the sustainability features. The third and final round of public engagement on this project wrapped up in early October 2020, with over 1,140 people providing feedback on the proposed building designs. More than 500 people, including over 300 students, participated in the fall virtual open house online survey. Funding is being sought from provincial, federal and philanthropy that, together with UVic contributions, will allow the project to move to construction. Construction is scheduled to begin in fall 2021 if funding has been secured.



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Strategic Framework

Impact Fund supports six new projects

From Water Sustainability to Mental Health new projects support UVic’s Strategic Framework



BY KRISTA BOEHNERT

Six initiatives have received funding in the second year of the Strategic Framework Impact Fund. The fund provides up to \$300,000 per year to projects that are directly related to implementing the priorities of the Strategic Framework 2018-2023.

“Hats-off to our most recent impact fund recipients! These innovative initiatives will make a significant impact across our university community, and confirm my initial impressions of the breadth of talent and expertise we have at UVic,” says President Kevin Hall.

The call for 2021 submissions is now open. The Strategic Framework Impact Fund is open to individual UVic staff and faculty, academic and administrative units, including research centres and affiliated entities. Collaboration across faculties and administrative units is encouraged. The fund provides total funding of up to \$100,000 for a single proposal; the length of the initiative may be up to three years. The call for 2021 funding proposals is open until Feb. 26, 2021. Application details are available at bit.ly/21-impact.

2020’s impact fund project highlights include:

The Water Sustainability Collective

Led by Caetano Dorea (civil engineering), this three year initiative is an interdisciplinary multi-faculty

research collaboration. The Water Sustainability Collective (WSC) will engage in a multitude of water sustainability activities ranging from events to policy briefs to pursuing external funding applications. “The WSC brings together experts from across campus to tackle water related challenges facing the world today, and in our future,” says Dorea. The WSC received \$75,000 from the Impact Fund.

Staging Equality: anti-racism & de-colonization through arts-based community engagement

Department of Theatre project leads Yasmine Kandil and Sasha Kovacs will re-imagine how theatre can address issues pertaining to systemic racism, the meaning of diversity, actionable equity, and Indigenization. Their interdisciplinary team of students, faculty and community partners will build and test a new structure for theatre studies at UVic including a community-based theatre performance, led by an Indigenous artist-in-residence that addresses the Indigenous histories of the land on which UVic resides. The three-year project received \$64,087 from the Impact Fund.

UVic Bounce

“UVic Bounce shares faculty and alumni stories of challenge, difficulty and resilience with the goal of supporting student mental health,” explains project lead Rebecca Gagan (Department of English). The funding will help UVic Bounce to develop and share new video stories to further the conversation on overcoming challenges and mutual support. UVic Bounce will also establish an advisory board as they continue their work. The three-year program received \$51,716 from the Impact Fund.

Also funded in 2020 were: Vancouver Island Impact Investing Hub; Employee Electric-Bike (E-bike) Purchase Program; Scaffolding and Integrating Experiential Learning; Building on our strengths and learning from one another.

For detailed descriptions of the 2020 initiatives, visit the Strategic Framework website: uvic.ca/strategicframework

CLIMATE JOURNALISM

CONTINUED FROM P. 1

in this crisis, but also of the urgent need to effectively counter misinformation through the rigour of credible journalism. Actions like Wayne’s will carry us into a better future.”

A former federal Green Party campaign manager and political campaigner, Crookes is the owner and founder of West Coast Title Search Ltd. and the founder of Integrity British Columbia. He sees this donation as a way of increasing the quantity, quality, depth and prominence of science-based environmental journalism and media coverage to address the impacts of climate change and biodiversity loss.

“This is a very important priority for me,” Crookes says. “We need to communicate more effectively with journalists—especially editors—about the risks of climate change and the threats to biodiversity that humanity as a whole is facing. I believe climate change is an existential threat that the world is not doing enough to meet.”

Crookes’ gift will increase media

literacy and coverage by connecting students, journalists, citizens and policymakers through a public database of environmental scientists and climatologists, as well as strengthen UVic’s journalism and publishing program. It will support research and outreach to enable the professorship to catalyze a variety of community-based research projects, advocacy initiatives and educational activities for maximum impact.



PHILANTHROPY

For the love of sprinkles

Bringing the UVic community together for a fun giving day

BY SARAH TARNOPOLSKY

Each year that Jim Dunsdon, associate vice-president student affairs, has been the honorary chair of UVic’s Giving Tuesday initiative he’s grown prouder and more passionate about the event’s mission and its ability to bring people together.

“Part of what makes Giving Tuesday at UVic so powerful is the opportunity for alumni and other community members to feel connected to the many critically important initiatives underway at UVic that are making a difference in the lives of people across our country and around the world,” he says. “That feeling of being a part of something special, something that bring us together as a community, is so important during this time.”

Over the past five years, the event has become a unique, fun and heart-warming tradition that increasingly inspires support. This year, it raised \$148,260 for 20 different funds on campus. That money will support students, power exciting research and expand outreach programs that encourage safe and healthy communities.

Another key metric of the event’s success—participation—has also been rising steadily. Event organizers knew this aspect would be the biggest challenge they faced in 2020. They couldn’t rely on footfall in the quad, or passers-by in the Jamie Cassels Centre like previous years. Instead, they structured plans around the opportunity to reach different members of the UVic community in a variety of virtual spaces, utilizing video, social media, email, phone and even Survey Monkey to interact with people. When all trackable participation methods

were totalled up, the numbers were surprisingly higher than in 2019. Over 4,000 people participated by donating, buying coffee, playing Campus Quest online, sending Giving Grams or through social media.

This was also the first year that donors could select from such a wide breadth of destinations for their gifts, while students chose where to allocate sponsorship dollars through the online game. Website visitors could closely follow the progress thermometers for each fund throughout the day. This resulted in some friendly competition between faculties and units. The Christine Welsh Scholarship in Humanities had the most donors, closely followed by the Women in Science fund. The Transgender Studies fund raised the most money, which shows how the added incentive of matching donations and challenge gifts, along with peer-to-peer encouragement, played a role in the excitement and success of the day.

Although primarily an initiative of the Development Office, employees from all over campus joined the organizing committee and many campus partners lent their support. An impressive list of eleven external sponsors provided in-kind or financial support to leverage giving and participation.

As President Kevin Hall explained in his thank you video message, all these types of participation are like sprinkles on a cupcake. Most gifts to Giving Tuesday were smaller donations—the average was \$131 and the mode was \$50—but they show what a collective effort can achieve. The best part about the enduring sprinkle metaphor is, even though there were literally thousands of sprinkles this year (a large proportion of them sprinkled virtually), there will always be room for more next year!

UVic alerts system

Are you registered for UVic Alerts? A successful test of the updated university notification system took place on Jan. 27.

Following a switch to AppArmor, an external service provider, the campus-wide test demonstrated that the new system is fast and user-friendly. “We were very pleased with our first large-scale test of the system,” says Rob Johns, manager of emergency planning. “UVic Alerts is a vital tool in providing timely information when disrupting events occur that affect the campus.”

UVic Alerts distributes notifications to UVic faculty, staff and students via SMS text message, email and the UVic SafetyApp. On Jan. 27, messages were distributed to almost 25,000 mobile phones and 30,000 email addresses. Most people received them within approximately five minutes. Anyone who subscribes to the SafetyApp also receives virtually instantaneous notifications to their mobile phones.

In an actual emergency, the UVic website, social media (Twitter and Facebook) and the campus DigiCaster screens would also be used to keep the campus community informed.

In order to receive notifications on your mobile phone, please register to receive text messages and download the UVic SafetyApp.

Download the UVic SafetyApp

- Find important safety information, contacts, maps and procedures—all in one place!
- The app is free for anyone—including family and friends—to download at the Apple App Store or Google Play.
- In your app settings, make sure you allow notifications to be “enabled” in order to receive notifications via the app.


Register your mobile phone to receive text messages

- Visit uvic.ca/personal-profile. If you are not already signed in to My page, you will need to log in with your NetLink ID and password.
- Add a mobile phone number to your personal and account profile if you wish to receive text messages on your mobile phone.

The UVic Alerts system is typically tested twice a year.

If you have feedback on the Alerts system or questions about UVic’s emergency planning initiatives, please visit uvic.ca/alerts or contact Rob Johns, Manager, Emergency Planning at epmanager@uvic.ca.

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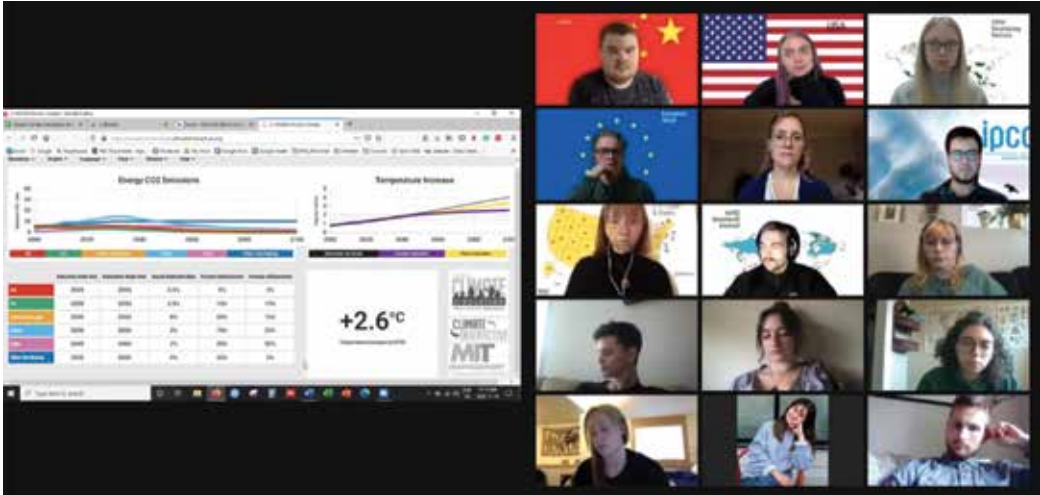
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Students in Carodenuto's geography course participated in a World Climate Simulation to role-play the potential impacts of global climate change negotiators.

Learning how difficult it is to save a planet

BY ANNE MacLAURIN

How can countries collaborate to reduce global emissions? UVic geography students have been discovering for themselves that international collaboration to save the planet is actually quite difficult - especially in a virtual climate summit. Although their classroom work was only a simulation of the problems facing governmental leaders, students enrolled in “Global Environmental Change and Human Response” felt the pressures and problems faced by policy makers as

the world collectively strives to avoid reaching dangerous climate change thresholds. The role-play scenario was led by geography instructor Sophia Carodenuto who explains, “in my teaching, I challenge students by simulating real-world situations where they have to think on their feet, and here, they put those feet in the shoes of some of the most critical decision makers of our time—global climate change negotiators.” The virtual role-playing exercise allowed students to explore the nec-

essary speed and action required for nations to address global climate change. The class had to work together to reach a global agreement that kept climate change below 2°C. During the exercise, students tested their knowledge of global politics and experimented with a climate-modeling tool used by actual climate negotiators. “The simulated climate negotiations was truly an eye-opening experience for me,” says geography student Claire Gilmour. “I really appreciated the experience. While frustrating,

disheartening and slightly terrifying, it truly gave me so much more understanding of how difficult it must be for these powerful individuals to do their jobs,” she adds. “The world climate simulation taught the students how to explain current trends in global environmental change and demonstrate the relationship among the issues,” says Carodenuto. Given the need for strict social distancing to curb the spread of COVID-19, explains Carodenuto, many high-level political meetings

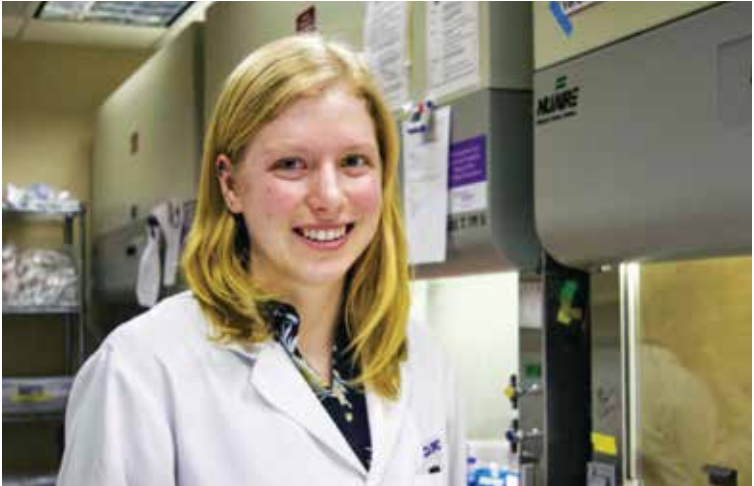
such as the United Nations Conference of Parties have been switched to online formats. Carodenuto's students are essentially mimicking the challenges of using communication technology to negotiate targets to reduce greenhouse gas emissions and pledge funding to adapt to climate change. “Based on the feedback received over the years,” says Carodenuto, “students highly value this experiential learning opportunity, including through Zoom.” sophiacarodenuto.com/teaching

Food: is it friend or foe in immunity’s fight against ovarian cancer?

Inside the tiny micro-environment of a tumour, cancer cells and immune cells are in a battle for nutrients. UVic researchers have now discovered a key culprit that will help them use gene-engineering technology to help harness the body’s immune system to fight ovarian cancer. In a study published last month in *Science Advances*, researchers discovered how to identify the cancer cell byproducts—or metabolites—that effectively cripple the body’s T cells, the type of immune cell critical for killing cancer. It is the first time that researchers have “mapped the metabolome in human ovarian cancer,” says Marisa Kilgour, lead author and PhD student in UVic’s biochemistry and microbiology department. By mapping the metabolome, researchers have a vital snapshot of the metabolites present within key cells in the tumour microenvironment. “This is the first time we have a clear picture of the relationship between the immune and tumour cells

in ovarian cancer,” says Kilgour. “This could be a game-changer in how we can design our immune system to fight the disease.” Kilgour is supervised by Julian J. Lum, a UVic associate professor and senior scientist at BC Cancer’s Deeley Research Centre in Victoria. Immunotherapy involves manipulating the body’s immune system to treat disease. It has been very successful at treating some cancer types, but not ovarian cancer. One reason is that tumour cells create a battleground by competing with T cells for nutrients, while also producing metabolites that suppress the body’s immune system. Kilgour and research partners across Canada and the United States developed a novel method to profile the metabolism of cancer cells and T cells from the tumours of ovarian cancer patients. Specifically, the researchers discovered the metabolite known as 1-methylnicotinamide (1-MNA) effectively turns off the anti-cancer function of T cells, thereby

crippling the immune system. This provides metabolic targets to improve immune-based therapies for ovarian cancer. “In this scenario, scientists can engineer T cells to do two things: they can continue to be in a ‘nutritional arms race’ by consuming more to grow stronger to fight the cancer cells. Or scientists can engineer the T cells to put up shields to protect themselves against metabolites like 1-MNA, which is the immunotherapy approach,” says Lum. Researchers can reprogram T cells using CRISPR-Cas9 gene-engineering, a technology that was awarded the 2020 Nobel Prize in chemistry. This technique has been successfully applied to restoring the function of blood cells in two disorders: sickle cell anemia and beta-thalassemia. Scientists can use this same approach to reprogram T cells as form of immunotherapy, adds Lum. This breakthrough study also opens the door to future discoveries



Kilgour

that Lum hopes will illuminate the broader societal changes required in human dietary behaviour to prevent disease. Changes in diet impact metabolism and immune system function, which directs how the human body can respond to and fight serious illness like cancer, he adds. “How does our diet affect our im-

mune system’s response to cancer? Are we eating the wrong things? We need to deeply probe this area at a molecular level to one day change human dietary behaviour,” says Lum. The research is supported by the Canadian Institutes for Health Research and the US Department of Defence.

NURSING STRESS CONTINUED FROM P. 1

A reduction in variability is a signal that the body’s sympathetic nervous system—responsible for our “fight, flight or freeze” response—is chronically dominating the parasympathetic nervous system, which keeps us calm. “It’s one of the indices of stress. When it’s out of kilter, we know that this is a body out of sync,” says Stuart-Hill. The research project also analyzes nurses’ saliva for three markers associated with stress: cortisol, melatonin, and interleukin-γ. The last of these is a cytokine—a protein related to the body’s immune response, now getting attention for the deadly “cytokine storms” that affect some people with COVID-19. Participants also kept logs while at work, noting any high-stress incidents over the shift that might later be correlated with a change in their physiological responses. “We’re still analyzing, but we have seen significant data already, around sleep in particular,” says Harrington. “These nurses are spending more time in light sleep and less in REM sleep. We’ve looked at the cardiovascular

data and there is definitely an effect there as well.” “We know that this is a population that feels stressed psychologically. Now, we’re establishing that there’s a measureable physiological impact as well.” **Filling critical knowledge gaps** Harrington’s research will help fill critical knowledge gaps, says Stuart-Hill. Much of the research done to date on the physiological impact of stressful work has involved male-dominated professions such as firefighting and logging. Stuart-Hill hopes to build on Harrington’s research findings through future studies of long-term care employees, paramedics and other community-based health care workers. “The nurses are delighted that we’re studying this,” adds Stuart-Hill. “What we’re learning through the data are the things they inherently know.” Ongoing analysis will examine differences in data depending on a participant’s specific job role. But Harrington says early results are establish-

ing that participants’ stress responses are significant and similar, regardless of what department or hospital they work in. The stress of the pandemic for health care workers goes far beyond whether they’re actually working on a COVID ward, says Stuart-Hill. “These workers have to presume that anyone they are dealing with could have COVID,” she says. “If you work in these facilities, you also have to worry about bringing COVID to work, so your own home life is more stressed.” “Can you still hug and cuddle your kids, given that they’re back in school? Can you share a bed with your partner? You have to worry about all of that.” Phase two of Harrington’s study is now underway with a new round of study subjects. She anticipates concluding her work this spring. Stuart-Hill and Harrington ultimately hope the research will shed light on better ways to manage the stress of health-care work. The shift rotation that Island Health uses for



Harrington, with monitoring equipment being provided to study participants. UVIC PHOTO SERVICES.

hospital-based nurses (two day shifts, two night shifts, and four days off) is notorious for disrupting normal sleep patterns, notes Stuart-Hill. Add in a pandemic and it’s uncharted territory. “The anguish that health care workers are seeing in their patients, the frustration of seeing people in

their communities not taking this seriously, the lack of camaraderie—it’s amazing they’re able to keep doing what they do,” says Stuart-Hill. “I think there’s going to be long-term fallout from this period. This data will provide some evidence for that when the time comes.”

Harnessing the power of artificial intelligence and materials sciences for sustainability

BY VIMALA JEEVANANDAM

Growing up in Tajikistan, UVic materials chemist Makhsud Saidaminov did much of his high school homework by candlelight. While electricity has since become much more reliable, during the winter in the early 2000s, power there was limited to eight hours a day. “There was so much sunlight that could be captured,” says Saidaminov, Canada Research Chair in Advanced Functional Materials.

“That awakened my ambition to contribute to solar energy.”

He went on to study chemical engineering, where he discovered the potential of perovskite, a family of materials often used as a semiconductor with a unique crystal structure that opens the door for a myriad of technological breakthroughs.

At UVic, Saidaminov is exploring the potential of perovskites as a key component in a new generation of solar cells that promises to be cheaper and more efficient than current solar technology.

“We know that we have to replace fossil fuels with renewable energy,” he says. “We will not stop until the world is getting 10 terawatts of energy from sunlight—about half of our current annual global energy consumption.”

Considering that silicon-based solar energy currently contributes to about two per cent of energy globally, this is a bold dream.

The wide-scale utilization of solar cells has been limited by setup costs and inefficient absorption of solar radiation. Compared to conventional silicon cells, perovskite is much more efficient at harvest-

ing energy from the sun, and can be up to 200 times thinner. “We also found that despite being made at temperatures below 100 degrees Celsius, perovskite crystals offer competitive optoelectronic properties to silicon crystals typically made at over 1,000°C,” he adds. These soft conditions make it much easier to mass-produce solar cells.

Manufacturing perovskite cells requires lower startup costs and is less energy intensive to synthesize, opening up the production of solar power cells to the globe. “In many countries, there is just not enough water for hydroelectricity to be the dominant green energy source,” says Saidaminov. “And delivering energy is always a challenge. But the sun is available everywhere, and it’s free. So you can install solar cells on location and generate electricity locally.”

What makes his goal of making solar energy the dominant global power source even bolder is that he is aiming to make this new technology not just renewable, but also non-toxic. In order to build solar energy technologies that don’t rely on heavy metals, he is collaborating with Alex Voznyy’s research group at the University of Toronto. Together they are developing artificial intelligence that understands the principles of materials science, then asking the machine to predict and synthesize new materials with desirable properties.

While the first application of this AI will go towards the development of solar-harvesting materials, it could also be used to develop materials for a vast array of applications.



Saidaminov. PHOTO: UVIC PHOTO SERVICES

More solar energy reaches the earth’s surface in a single hour than the world consumes in a year, demonstrating the potential of solar energy in meeting global needs.

The perovskite structure is based on a mineral that was discovered in the Ural Mountains in Russia in 1839, but its crystal structure can be relatively cheaply synthesized in a laboratory from a variety of different elements. This structure is already being used in ultrasound machines and memory chips.

Saidaminov’s research draws from a variety of disciplines including

chemistry, physics and engineering. At UVic, he is cross-appointed in the Departments of Chemistry and Electrical and Computer Engineering.

In partnership with UVic medical physicist Magdalena Bazalova-Carter, Saidaminov is developing safer, cheaper, and more reliable X-ray photon sensors. By changing the material used to one that is more sensitive to electromagnetic radiation would require a lower radiation dose, reducing the health risks and increasing the frequency and reliability of diagnostic technologies for earlier detection of disease.

Through co-ops, awards and work studies, Saidaminov employs undergraduate researchers in discovery research and explorative work in his lab. “They bring a different approach and a certain amount of unpredictability,” he says. “For example what starts as a ‘mistake’ can end up changing the trajectory of our research, pulling us in an entirely unexpected direction.”

Saidaminov’s research is funded through his Canada Research Chair, the New Frontiers in Research Funds for Exploration, an NSERC Discovery grant, and grants from the private sector.

The world’s oceans produce nitrous oxide. Is that a problem?

BY JODY PATERSON

Deep in the ocean off Vancouver Island’s west coast, a gas associated with climate warming is making its way to the surface. Nitrous oxide (N₂O) is a product of plankton decomposition, pulled to the surface in areas where deep-sea waters migrate upwards in what’s known as coastal upwelling.

Where is it coming from? That’s a question that UVic PhD student Brett Jameson is exploring, in collaboration with Ocean Networks Canada (ONC), a UVic initiative, and the Canadian Healthy Oceans Network (CHONE).

The world’s oceans both consume and produce gases that affect climate warming, says Jameson of the School of Earth and Ocean Sciences. A quarter of the N₂O released into the atmosphere comes from the ocean. By pulling up water rich in N₂O from the deep, upwelling can transfer deep ocean N₂O to the atmosphere.

Jameson’s research, supervised by ONC’s chief scientist Kim Juniper, looks at the production of N₂O by microbes in marine sediments, and at the factors that determine whether the gas ends up released to the atmosphere or consumed along the way.

The United Nations Decade of Ocean Science for Sustainable Development begins next year, with a goal of bringing together stakeholders around the world to find ways to reverse the cycle of decline in ocean health.

ONC and its researchers will be key in that work. ONC continuously deliv-

ers and manages real-time data for researchers from its network of cabled observatories, remote control systems and interactive sensors installed along Canada’s three coasts.

“ONC has been monitoring low-oxygen waters off Vancouver Island for the past 10 years, and there’s convincing evidence that the oxygen-minimum zone (OMZ) is expanding along with other global OMZs,” says Jameson, referring to the distinct bands of deep water he is studying, known to act as hotspots of N₂O production.

He has studied nitrous oxide production in marine sediments in Bermuda and off Vancouver Island’s west coast, where a mid-water OMZ extends from the island to Oregon. He sampled sediments in pristine coastal mangrove forests in Bermuda to compare with results from his deep-sea research.

The two oceans manage nitrous oxide differently. The Atlantic mangrove sediments seem to act as a “sink,” absorbing N₂O from the atmosphere. Pacific deep-sea sediments off Vancouver Island release nitrous oxide to the water, and then to the atmosphere.

“These systems are acting very differently—what might be driving this?” asks Jameson. “Are there important differences in the microbes that produce N₂O? Or is this variability due solely to environmental factors, such as oxygen concentrations and nutrient levels?”

The notion that pristine mangrove ecosystems may draw in N₂O from



Jameson. PHOTO: UVIC PHOTO SERVICES

the atmosphere and consume it will have important implications for conservation and restoration initiatives, he adds.

Most of the growth in N₂O concentrations in the atmosphere is a result of human activity. It’s a by-product of agricultural practices, fossil fuel combustion and industrial processes.

But as climate change accelerates the expansion of OMZs, the oceans may account for more of this growth in the future. His research adds to a growing understanding of that vital connection.

Nitrous oxide isn’t as prominent as carbon dioxide in the public discussion around climate warming, but it has more than 300 times the potency of CO₂ as a greenhouse gas.

Oceans are “big and hard to study,” notes Jameson, and his research in the waters off Bermuda and Vancouver Island will need to be followed up in other parts of the world to learn how other ocean environments are managing N₂O. “What I hope our research does is stimulate interest in looking at these environments,” he says.

Not one to let a pandemic get in

his way, Jameson travelled to Bermuda this past summer as planned to finish field studies. He co-mentored a UVic student while there, pleased to be “in the cool spot of straddling the line of learning and teaching.” His research is funded by the Bermuda Institute of Ocean Sciences, ONC, CHONE and UVic.

Jameson’s research was recently published in *Limnology and Oceanography Letters*. Building on this research, the team is developing new methods to investigate processes in marine sediment.

New Legacy exhibit explores life stories through art

BY JOHN THRELFALL

Technology and history may change across cultures and generations, but the human journey remains the same: we're born, we age, we have relationships, we die. Yet along the way, we are all shaped by the objects which help us navigate life's stages, passages and rituals—a favourite toy, say, or a wedding dress. This shared experience is at the heart of the new Legacy Gallery exhibit *Life Stories*, curated by art history and visual studies (AHVS) professor Erin Campbell.

"I like to use the present to interrogate the past," says Campbell. "This was an extraordinary experiment for me to prove my historical contention that objects and artworks really do shape our life passages. I've published a lot of articles about that, and this exhibit gave me the chance to bring that thesis to the wider public."

A learning experience

A fixture in the AHVS department for nearly 20 years, Campbell's research and teaching typically focuses on early modern European art and material culture, including cross-cultural connections and the domestic interior—yet she admits mounting a full gallery exhibit was a learning experience for her.

“Some would say it’s a bit of a risk, because this isn’t about deeply delving into a historical period and bringing forward objects with new research—it’s more about developing a theme and capturing the imagination,” she explains.

An ambitious exhibit

Featuring nearly 100 paintings, drawings, photographs, textiles, ceramics and furnishings from UVic's extensive art collection—plus a virtual exhibition, a range of public events (including a special alumni tour on January 27) and one commissioned art piece ("Related Repose" by recent visual arts MFA Elly Heise)—*Life Stories* is an ambitious undertaking, supported by Campbell's latest SSHRC grant.

“Because art has the capacity to both fix and layer time—project the past into the present and the future, or the future into the past—we wanted to explore similarities across cultures, across time and across geographies, but we also wanted to avoid sentimentality.”

Indeed, while art and objects may inspire memories and reflection, such imagery can also be a source of cultural stereotypes and result in marginalization, emotional pain and feelings of loss. "It's important to me that we're not presenting a monolithic, prescriptive approach to life stages that 'everyone' goes through," she says.

While planning for *Life Stories*



Life Stories exhibit at Legacy Gallery, January 2021. PHOTO: JOHN THRELFALL

A team effort

While she coordinated the AHVS 50th anniversary exhibit at the McPherson Library's Legacy Maltwood Gallery in 2017, this is Campbell's first time curating an exhibit at downtown's Legacy Gallery and she laughs at the misperception that all art historians are also, by default, curators. "I am not a professional curator," she says with a gentle laugh. "It's a totally different skill-set . . . you need to acquire those skills, you can't just do it."

Campbell gives ample credit to the work of her *Life Stories* co-curators, Holly Cecil and current PhD candidate Jaiya Anka—both AHVS MA alumni. “We worked as a team, the three of us—it came out of my research and I funded it out of my grant, but we brainstormed every aspect of this exhibit together,” she notes. “And the support from the Legacy team has been just fantastic. I give full credit to their staff: to have their help and guidance was invaluable—they’re a really great UVic resource.”

Life Stories continues until April 3 at downtown's Legacy Gallery, 630 Yates, Wednesday to Saturday, 10 a.m.-4 p.m.

legacy.uvic.ca



Campbell at Legacy Gallery, January 2021. PHOTO: JOHN THRELFALL



"Related Repose" by Elly Heise, part of the Life Stories exhibit at Legacy Gallery
January 2021. PHOTO: JOHN THRELFALL



Life Stories exhibit at Legacy Gallery, January 2021. PHOTO: JOHN THRELFALL

into a historical period and bringing forward objects with new research—it's more about developing a theme and capturing the imagination," she explains.

An ambitious exhibit
Featuring nearly 100 paintings, draw-

began back in 2017, Campbell and the Legacy team found themselves dealing with a surprise plot twist when the planned exhibit collided with COVID-19. "We had to modify not only when it would open but also the level of visitor engagement with the gallery."

A series of public events

The exhibition includes a number of online events—including a public conversation between acclaimed Canadian documentary filmmaker Jennifer Baichwal (*Anthropocene: The Human Epoch*) and local director/producer Barbara Todd Hager (February 3), as well as a series of interpretive performances (February 13, 20, 27) and an artist talk (March 17) with Connie Morey, and a poetry workshop (March 6) with Carla Funk, both UVic alumni.

There's also a fascinating set of interdisciplinary thematic films featuring a range of campus voices—including Maureen Bradley (writing), Neena Chappell (Centre on Aging), Aaron Devor (transgender studies), Ulrich Mueller (psychology), Leah Tidey (theatre), Lorilee Wastasecoot (Legacy) and Victoria Wyatt (AHVS)—and a series of soundscapes responding to the exhibit, created by students in Alexandrine Boudreault-Fournier's "Anthropology of Sound" class.

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Graphic novels illuminate survivors’ memories of the Holocaust

BY PHILIP COX

A UVic-based, international project that connects accomplished graphic artists with Holocaust survivors to transform their vivid stories into compelling visual narratives has released excerpts from a forthcoming collection of graphic novels for International Holocaust Remembrance Day, in honour of those whose stories have not or cannot be told.

With partners on three continents, the Narrative Art and Visual Storytelling in Holocaust and Human Rights Education project teaches a global audience about racism, antisemitism, human rights and social justice while illuminating one of the darkest times in human history.

Filling in the Blanks

Since 2019, artists Gilad Seliktar (Jerusalem, Israel), Miriam Libicki (Vancouver, Canada) and Barbara Yelin (Munich, Germany) have worked closely with survivors Nico and Rolf Kamp (Amsterdam, Holland), David Schaffer (Vancouver, Canada) and Emmie Arbel (Kiryat Tiv'on, Israel) plus a team of researchers, students and community partners to co-create graphic narratives based on the personal experiences of each survivor before, during and after the Holocaust.

“Sharing the stories of survivors is particularly important in these divided times,” says Charlotte Schallié, Holocaust historian and chair of UVic’s Department of Germanic and Slavic Studies, who leads the initiative. “Again we are seeing a rise in anti-semitism, ardent nationalism, and threats to democracy in Europe and North America. Understanding where this led us in the past is crucial to preventing history from repeating itself in the future.”

Through their illustrations, the artists are able to depict memories of situations for which there are few, if any, forms of visual record.

To fill in any blanks and ensure a high degree of accuracy, the artists collaborate with the project’s researchers and historians to compare the survivors’ recollections with the testimonies of other survivors and verify certain details through existing historical records. The artists then translate these memories into a narrative form, sketch out rough storyboards, and bring them back to the survivors for approval.

Preserving Memories of the Past

Next year, all three narratives will be published in a single collection by New Jewish Press, an imprint of University of Toronto Press. This collection will be accompanied by freely-available education resources written in Arabic, Dutch, English, French, German and Hebrew for teachers around the world.

Archival material produced by the project will be housed at UVic Libraries for long-term preservation and access.

“Being able to work with this community to preserve these stories is both an honour and a great responsibility,” says Matthew Huculak, digital scholarship librarian and head of advanced research services at UVic Libraries, who has been involved with the project since its inception.

“At its heart, the Narrative Art and Visual Storytelling in Holocaust and Human Rights Education initiative is about cultural memory and making sure that future generations will have access to accurate representations of the survivors’ experiences. UVic Libraries is proud to be able to provide physical and digital spaces for the global community to gather and reflect on the work produced by this project.”

Moving Forward

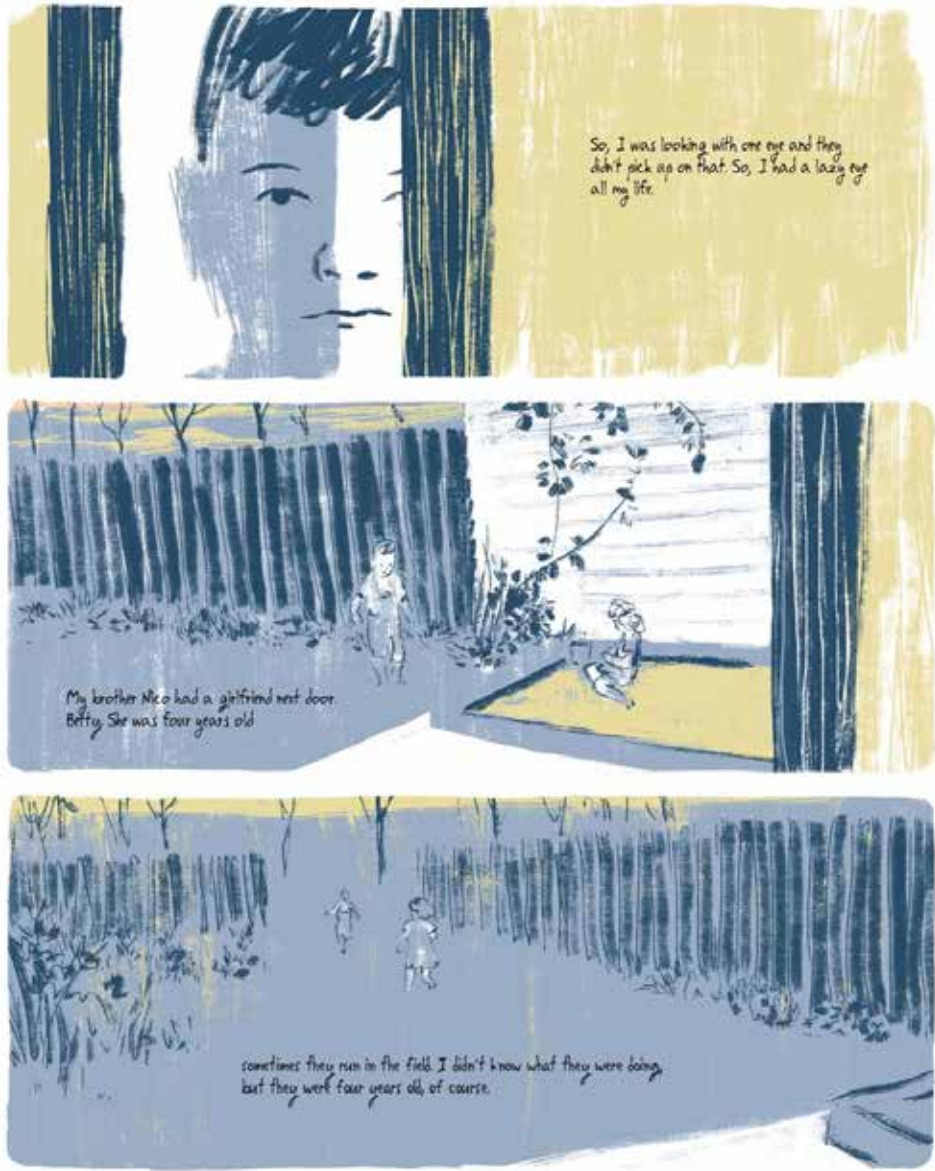
The Narrative Art and Visual Storytelling in Holocaust and Human Rights Education initiative is supported by a SSHRC Partnership Development Grant, with partners on three continents in Canada, Germany, Israel, the Netherlands, the UK and the US.

Project partners include the World Holocaust Remembrance Centre, Yad Vashem in Israel, the Anne Frank House in Amsterdam, the Ravensbrück Memorial in Germany and the Canadian Museum for Human Rights in Winnipeg, among others.

Three short documentaries have been produced to capture a living memory of the first encounters of the artists and survivors. These videos and other details about the project can be viewed at holocaustgraphicnovels.org.



Page from *But I Live*, by Barbara Yelin (artist) and Emmie Arbel (survivor).



Page from *Thirteen Secrets* by Gilad Seliktar (artist) and Nico and Rolf Kamp (survivors).



Page from *If We Had Followed the Rules, I Wouldn't Be Here*, by Miriam Libicki (artist) and David Schaffer (survivor).

Social (in)justice takes centre stage at Humanities Literacy Week

BY PHILIP COX

A week-long series of events designed to showcase the strength and creativity of humanities research at UVic will shine a spotlight on issues of race, power and state violence during the third annual Humanities Literacy Week.

From Feb. 8–12, students and faculty of the Faculty of Humanities will present provocative and inspiring original research that reveals the assumptions, histories and structures undergirding our present moment.

The week starts off Feb. 8 at 7 p.m. with “Power and Resistance: Six Histories in Six Objects” where a panel of scholars will each share an everyday object that has its own story to tell about the past or present of Indigenous Peoples and people of colour.

Designed with a Zoom audience in mind, the objects selected by Sikata Banerjee (gender studies), Patrick Lozar (history), Sada Niang (French), Charlotte Schallié (Germanic and Slavic studies), Jordan Stanger-Ross (history) and waaseyaa’sin Christine Sy (gender studies) will provoke critical reflection about culture, history, inter-connection and the ethical consequences of human actions.

Cue the student research for the fast-paced and surely surprising “Un-essay Competition” on Feb. 10 at 6:30 p.m. Students will compete for top prizes by presenting their own research through any creative form of expression that is not an es-

say—ranging from videos to video games, digital design to painting and sculpture.

The Un-essay Competition is being hosted in collaboration with the Moose Hide Campaign, a grassroots movement of Indigenous and non-Indigenous men and boys working to end violence towards women and children. The movement’s National Youth Ambassador and recent UVic grad Sage Lacerte will join celebrated author Lucky Budd and professors Angie Chau (Pacific and Asian studies), Rachel Hope Cleves (history), Lisa Kahaleole Hall (Indigenous studies), Chase Joynt (gender studies) on the panel of event judges.

Capping off the week is “Humanities Reads,” featuring Black feminist writer, activist, and educator Robyn Maynard on Feb. 12 at 6:00 p.m. Hosted by Humanities Dean Annalee Lepp and moderated by Moustapha Fall (French), this event centres on Maynard’s 2017 award-winning national best-selling book, *Policing Black Lives: State Violence in Canada from Slavery to the Present*. Maynard will read select excerpts from her book, engage in conversation with Lepp and Fall and take questions from the audience.

All Humanities Literacy Week events are free, online and open to the public. ASL interpretation is also available upon request. More information can be found on Instagram or Twitter (@UVicHumanities) or online at hcmc.uvic.ca/humanitiesweek/

Five new UVic research chairs named

Whether investigating water to improve ecological health or increasing our understanding of how the brain’s immune cells contribute to healthy aging, UVic researchers were recognized in December for their research excellence and community impact as Tier 2 Canada Research Chairs (CRCs).

Kristian Dubrawski

CIVIL ENGINEERING/GEOGRAPHY

Four billion people face severe water scarcity and up to six million Indigenous and non-urban citizens in Canada face disproportionate exposure to contaminated water, yet up to 90 per cent of wastewater is discharged untreated, causing pollution and disease. These numbers can change, says Dubrawski, who is appointed CRC in Water Sustainability for Indigenous and Rural Communities. His research focuses on the space where water quality and technology intersect with community and ecological health. His group, the UVic Community Water Innovation Lab, will investigate how communities can strengthen links between human and natural water systems. Initially, the group’s work will include developing a community-led decision support system for nature-based solutions for water, as well as develop nature-based technologies for water-reuse.

Aloysius Newenham-Kahindi

GUSTAVSON SCHOOL OF BUSINESS

Appointed CRC in International Sustainable Development, Newenham-Kahindi focuses his research on multinational enterprises (MNEs) operating in developing economies, specifically sub-Saharan Africa. The fast-growing region attracts many international business interests, with complex impacts on host governments and local stakeholders. By ex-

ploring how MNEs adapt to formal and informal institutions—both written rules and unwritten norms—Newenham-Kahindi asks questions such as: Why does governance under informal institutions work? How can businesses succeed or fail in this context? His research aims to further our understanding of developing economies’ evolving institutions, and how they impact multilateral organizations and MNE performance.

Makhsud Saidaminov

CHEMISTRY

Materials scientist Saidaminov, CRC in Advanced Functional Materials, is uniting chemistry and physics to address urgent global challenges—from the limitations of renewable energy sources to the precision of X-ray imaging. Saidaminov’s research uses novel materials chemistry and engineering techniques, including the development of artificial intelligence to discover new materials for solar energy technologies that do not rely on toxic heavy metals. A central focus of his lab is the development of a new generation of solar energy technologies that are cheaper and safer to produce and more efficient at energy harvesting. (See page 5 for more about his work.)

Nicole Templeman

BIOLOGY

Templeman, appointed CRC in Cell Biology, aims to better understand how to delay and slow the progression of age-related deterioration. Aging is characterized by cellular deterioration that underlies a myriad of changes, including a reduced capacity for reproduction, and increased susceptibility to diseases. However, the rate and severity of this decline is malleable, and is controlled by signaling pathways and molecular mechanisms that are



Tremblay. UVIC PHOTO SERVICES

largely consistent across species. The Templeman lab uses techniques based on genetics, physiology and molecular biology to study age-related changes from the molecular and cellular levels to the whole organism.

Marie-Eve Tremblay

DIVISION OF MEDICAL SCIENCES

Breakthrough research from Tremblay, Canada Research Chair in Neurobiology of Aging and Cognition, continues to expand our understanding of how the brain’s immune cells—called microglia—play an essential role in the maintenance of lifelong brain health. She and her team are using state-of-the-art technologies to identify unique microglial functions that contribute to learning and memory, stress resilience and overall adaptation to our constantly changing world. This knowledge paves the way to the future development of innovative therapies that will promote healthy cognitive aging.

About the Canada Research Chairs program

The CRC program is an initiative of SSHRC, NSERC and the Canadian Institutes of Health Research. December’s announcement was complemented by new funding of more than \$14 million by the Canadian Foundation for Innovation, supporting CRCs with cutting-edge equipment to carry out their important work.



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Yew Tree Yoga

Just down the hill from UVic — with lots of parking!