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MAGAZINE

The Future of Food



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THE UNIVERSITY OF BRITISH COLUMBIA

THE GLOBE AND MAIL*



Editor's Note



FORK IN THE ROAD

You can tell a lot about someone by looking inside their refrigerator or pantry.

You could take a good guess at where they live, their current or future state of health, their socio-economic status – even their politics.

As well as being essential to life, food is a bedrock of culture, a determinant of health, a yardstick for social equality, and a focus of political debate.

Food shortages can be a flashpoint of war, and the ready availability of food its casualty. What food gets produced, and how, can have huge implications for the environment, and whether or not we will be able to sustain ourselves. And beyond the myriad of food-related issues here on Earth, food is even a deciding factor in the possibility of humankind ever making it to Mars (rocket fuel is one thing, astronaut fuel is another).

Despite so much hinging on food, many people on the luckier end of the food security spectrum haven't given it much thought, beyond what to choose for dinner from the supermarket aisle. The complexities involved in getting it from source to shelf have remained largely out of sight.

Repercussions of the COVID-19 pandemic burst that bubble and spurred greater awareness of food systems. Our eyes were opened to the precariousness of food supplies and the extent of food insecurity, even within wealthy countries. And, with evidence of climate change all around us, the question of how land is being used to grow food is increasingly a focus of hot debate.

Burgeoning food security and sustainability movements are advocating for localized food supplies and food systems that are driven less by profit and monopoly and more by human and ecological considerations. Yet there is still the need to produce food at a scale that can feed a rapidly expanding global population.

Aspects of 20th century technology and farming practices that helped to increase agricultural yields and combat famine have also compromised biodiversity and become a major contributing factor in climate change. An increase in meat consumption has had detrimental effects on human and planetary health, as well as the welfare of farm animals.

Can 21st century technology and innovation provide sustainable answers? Food engineering could strengthen crops and add nutritional value to food. We could implement ways of growing food using less energy, land, and water. Animals could become the rarest source of protein. Food waste could become a thing of the past.

Climate change and technology together will influence what we eat in the future. But a sustainable, nutritious, and plentiful tomorrow will also depend on the choices we make today – as consumers, as voters, as dependents of a fragile Earth.

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THE GLOBE AND MAIL*

THE FUTURE OF FOOD

- 4** Feeding 10 Billion
- 10** Space Food
- 14** Surviving on Mars
- 16** Diet as Medicine
- 22** Food Sovereignty
- 26** WWII Food Policy
- 30** Food Preservation
- 34** What About Animals?

A close-up photograph of a woman's hands planting a small green seedling into the soil. She is wearing a blue and white patterned dress. The ground is dark brown soil with some dry leaves and twigs scattered around. The title "The Future of Food" is overlaid in large white text across the middle of the image.

The Future of Food

As well as being essential to life, food is a bedrock of culture, a determinant of health, a yardstick for equality, and a focus of hot debate. Its future, and ours, will be shaped by climate change, transformative technology, and human will.

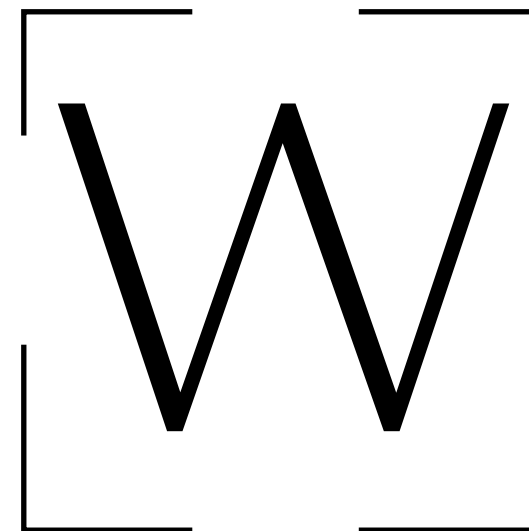
Cover: *Illustration by DAQ*

This page: A woman plants Gnetum (okok) in Center Region, Cameroon. The plant grows in tropical forest regions of Africa and is a source of food and medicine. *Photo by Ollivier Girard/CIFOR*

10 billion mouths to feed

A complex problem in need of a complex solution. It's going to be tough, says Professor Navin Ramankutty.

BY RICHARD LITTLEMORE



“WE PLACE TOO much faith in revolutionary ideas.”

Despite that note of caution, Professor Navin Ramankutty – who holds the Canada Research Chair in Data Science for Sustainable Global Food Systems – has all the markings of a frustrated radical. If you give him the slightest nudge on the topics of land use and global food security, he launches into a passionate and urgent discourse:

We self-obsessed humans have set aside fully one-third of all land on earth to feed only our own species, he laments, and yet we still leave almost a billion people undernourished and another two billion malnourished. Agriculture is the biggest driver of biodiversity loss, he notes, and a leading cause of climate change, chemical

pollution, air pollution, soil erosion, and the pollution and overuse of water. And despite the rapacity and impact of our current agricultural practices, he warns that we still need to do more.

Aside from failing so many in our current population, by some estimates we will have to increase world food supply by 70 per cent by 2050 to feed an anticipated population of close to 10 billion. On the list of so-called “wicked” problems (those characterized by their complexity and intractability), Ramankutty says this land-use problem may be “worse than climate change.”

If that sounds like hyperbole, or like an academic trying to one-up someone else’s field of study, it’s important to know that Ramankutty’s first graduate degree (University of Illinois) was a master’s in atmospheric science. He was already stressing about climate change when he diverted into land resources during his PhD (University of Wisconsin-Madison). And now he directs the Institute for Resources, Environment and Sustainability at UBC. So he’s not challenging the scale of the climate threat – only commenting on what we have come to talk about as its relative wickedness. With climate change, he says, the experts overwhelmingly agree on the causes, the consequences, and the best possible responses. Regardless of the manufactured debate in the public square, “there’s not much controversy among scholars.” But when it comes to feeding humanity with a minimal environmental footprint, “I don’t see an obvious solution.”

Ramankutty is cross-appointed at UBC’s School of Public Policy and Global Affairs. In what he characterizes as a “vociferous debate” among leading scholars, there are two main schools of thought about the best way to achieve sustainable food security goals. On one side are those who argue for “sustainable intensification,” leveraging more of the elements that helped us increase food production during the “Green Revolution” that began in the 1950s: irrigation, mechanization, fertilizers, pesticides, crop breeding, and, latterly, genetic engineering. Recalling the famines that were common in the 1970s and ’80s, there is no question that these technological interventions worked miracles in helping to reduce world hunger, even as the global population roughly doubled between 1975 and 2020.

On the other side of the debate, however, are those who look at the concurrent damage caused by modern farming and call instead for solutions based in agroecology. They urge a more organic, environmentally friendly approach conducted in greater harmony with nature.

At first blush, Ramankutty seems to lean into the latter camp. He talks wistfully about the sustainability of organic farming, but then he asks, “What are the trade-offs?” In most organic operations you get better quality food but lower yields, which means we would have to repurpose more land to feed even the current population. Since the days when Indigenous peoples were truly living in harmony with the land, the world has transformed and the human population has exploded. “There is no going back,” Ramankutty says.



Drone shot depicting a top-down aerial view of one man working outdoors in a vegetable garden. coldsnowstorm via Getty Images

There is, however, a third solution – still no silver bullet, but one that deserves consideration. Instead of focusing on supply-side fixes designed to provide more food overall, Ramankutty says we should attend to the demand side: managing human consumption and reducing waste and loss in the harvesting, storage, distribution, and preparation of food. Ramankutty points out that, globally, we waste 30 per cent of the food we produce.

Individually, we let it rot in the fridge or scrape the excess off our plates into the garbage or the compost bin. Collectively, we lose huge amounts of food during production, through poor harvesting techniques; during storage and handling, when food is degraded by pests, fungus, or disease; during processing and packaging, when food is spilled, damaged, or rejected as unmarketable; and during distribution and marketing, when foods go bad on the shelf because they don't meet aesthetic standards or outlive their "best before" dates.

We also farm and eat wastefully. We use some of the best land on the planet to grow corn but deliver only 24 per cent of that crop as calories that people eat. Instead, we use some to produce biofuel and even more to feed animals that return only between three and 40 per cent of the food value in calories. With cattle, for example, only three per cent of the plant-based calories used for animal feed are delivered to humans as consumable beef. And, on average, North Americans and Europeans eat twice as much meat as is recommended for a healthy diet. In that context, one study showed that shifting crops away from animal feed and biofuels to human consumption could increase global calorie availability by as much as 70 per cent.

But, taken individually, none of the solutions above appears likely to set humanity on a satiated and sustainable course. In keeping with

We use some of the best land on the planet to grow corn, but deliver only 24 per cent of that crop as calories that people eat.

BY THE NUMBERS

ONE-THIRD

Fully one-third of all land on earth is used to feed only our own species.

1 BILLION

A billion people are undernourished and another two billion malnourished.

70%

We will have to increase world food supply by 70 per cent by 2050 to feed an anticipated population of close to 10 billion.

30%

Globally, we waste 30 per cent of the food we produce.

24%

We use some of the best land on the planet to grow corn but deliver only 24 per cent of that crop as calories that people eat.

3%

Only three per cent of the plant-based calories used for animal feed are delivered to humans as consumable beef.

70%

On average, North Americans and Europeans eat twice as much meat as is recommended for a healthy diet. In that context, one study showed that shifting crops away from animal feed and biofuels to human consumption could increase global calorie availability by as much as 70 per cent.

Projections forecast an increase in hunger in Africa and decreases in other regions that would make Africa the region with the largest number of undernourished people by 2030.

Source: Food and Agriculture Organization of the United Nations.

2021

424.5m
Asia

56.5m
Latin America & the Caribbean

278m
Africa

767.9m
World

2030

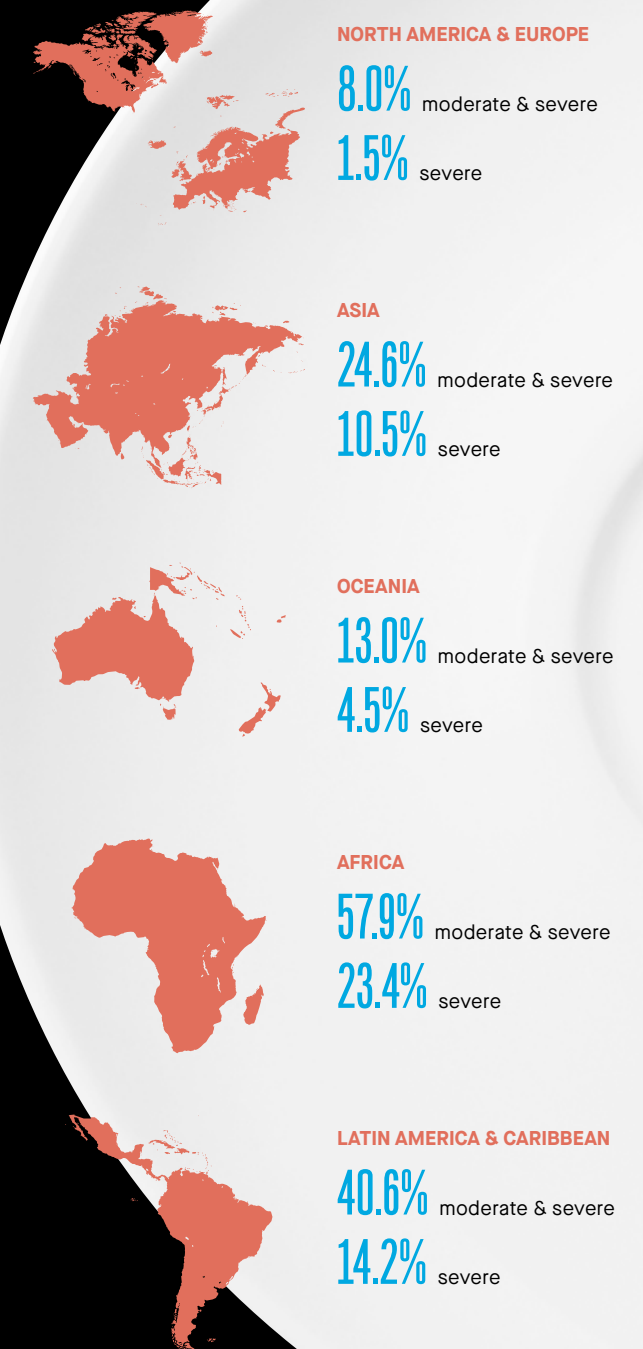
294.5m
Asia

55.9m
Latin America & the Caribbean

310.7m
Africa

669.1m
World

HOW MANY PEOPLE ARE FOOD INSECURE AROUND THE WORLD?



the complexity of the problem, Ramankutty says, we will have to embrace a complex solution; rather than trying to pick winners between the technological and organic camps, we need some cautious strategy incorporating “all of the above.” As others have said, we need evolution, not revolution. We absolutely must promote farming techniques that are less environmentally damaging, but it doesn’t make sense to sacrifice the efficiency and productivity advantages of some of the big, technologically oriented approaches. And no matter how much progress we make on the supply side, Ramankutty says it’s critical that we reduce wastage and crucial that we begin to eat less meat, eat more seasonally, and reduce dietary excess, which includes avoiding the empty calories in refined fats, sugars, alcohols, and oils.

This is going to be tough, Ramankutty says. We’re not just trying to nudge willing collaborators toward better decision-making. We have to overcome the technological and financial inertia that is sometimes referred to as “path dependency” – the reluctance, after investing heavily in a particular practice, to instigate an expensive transition to something that, especially in the short term, could deliver an equal or smaller return. For example, it’s hard to convince farmers who have spent a fortune clearing vast tracts of land and buying industrial-scale equipment to change course, reducing their plot sizes and complicating their farms. Everyone can see the environmental benefits when farmers plant new trees, hedgerows, and flower strips to support biodiversity, but farmers working the edge of profitability are likely to resist reducing or obstructing the land available for planting and harvesting.

In a world that seems increasingly hostile to outside “experts,” it was also predictable that farm (and fertilizer industry) lobbies pushed back earlier this year when the federal government suggested it might soon require a 30 per cent cut in fertilizer-related greenhouse gas emissions. To some, that sounded like the government was interfering inappropriately in their business. They argued that reducing a vital crop input by 30 per cent would result in a corresponding 30 per cent loss in harvest. In practice, though, fertilizers are frequently misused or overused, with huge amounts of nitrogen spilling over to create air and water pollution. Ramankutty says the ideal response would be farmers saving money by adjusting their practice – using fertilizer more sparingly and effectively, without losing its effect.



NAVIN RAMANKUTTY
Canada Research Chair in Data Science for Sustainable Global Food Systems, cross-appointed at the School of Public Policy and Global Affairs and the Institute for Resources, Environment and Sustainability at UBC.

RESEARCH FOCUS
He aims to understand how humans use and modify the Earth’s land surface for agriculture and its implications for the global environment.

LIFE COURSE
His fondest childhood memories are from his grandmother’s village, in Palakkad, Kerala, a southern Indian state. To this day, that beautiful landscape of paddy fields, forests, houses, and mountains is imprinted in his mind as emblematic of how humans could live in harmony with nature.

Food is also deeply cultural and increasingly political. As Ramankutty says, “People don’t eat steak for the calories.” So-called “high-quality protein” is a mark of privilege and status that people often choose as soon as they move into the middle class; it’s hard to tell them not to, even if they were perfectly well-nourished before making the change. “When you turn on the light, no one cares whether it shines because the fuel was coal or hydro,” says Ramankutty, but there are lots of reports about people complaining when they see new vegetarian or vegan features on a fast-food menu, even when no meat options have been removed.

So we have to be sensitive to culture and politics and look for solutions that have more co-benefits (such as spend less on fertilizer; reduce pollution) and fewer trade-offs. Given that current agricultural practices contribute fully a third to the forces of climate change, Ramankutty says the best part is that any progress we make on the agriculture front will help the battle against global warming. By addressing world hunger and land use, we can solve, or at least make headway against, two wicked problems at once.



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THE FUTURE
OF FOOD /
SPACE FOOD



FEEDING THE MISSION TO MARS

Getting humans to Mars is not just about rocket science
– it will also require adequate nutrition for astronauts.

BY JARED DOWNING | ILLUSTRATIONS BY GREEDY HEN

IN SPACE, no one can hear you scream. Also, the food is terrible. Due to safety protocols, astronauts have no ovens, microwaves, or stoves. They can't fry eggs or make toast. They aren't even allowed to boil water. If you could describe space food in one word, it would be "mushy."

"Because of the means they have to prepare food, the textures are all very uniform and unexciting, so food fatigue is a big issue," says UBC chemical engineer John Frostad.

Frostad's research into the physical structures of food addresses some of the myriad challenges of feeding astronauts in space, especially for long-term missions. One problem is texture and variety: Slurping your morning eggs from a hermetically sealed bag may be tolerable for a few weeks or months, but not years.

Furthermore, there are certain vital nutrients – such as omega fatty acids – that can't be preserved for long periods of time. "One of the reasons we cannot go to Mars right now is that the astronauts would die of malnutrition," Frostad says.

Frostad, who hails from Washington State, is not a nutritionist, though he does love food. His favourite things about Canada are poutine and Vancouver's vibrant sushi scene. In addition to the Department of Chemical and Biological Engineering, he is also a member of the Faculty of Land and Food Systems, an interdisciplinary body that is working on some of the biggest problems facing the effort to feed the modern world.

As an engineer, Frostad tackles food-related challenges using physics and math. For example, one of his

non-space projects developed an additive for pesticides that sticks to plants instead of letting it drip off onto the ground, saving money for farmers and reducing soil pollution. In another project, Frostad is designing a spray coating for canola plants and other grains that keeps their kernels from falling off the heads, a process known as "shattering" that causes farmers to lose up to half their yield. "You can essentially double the production of grain worldwide with no new agrichemicals," Frostad explains.

The grain spray is a long way from completion; Frostad calls it a "pie in the sky" project. But he isn't afraid to think big. His ultimate dream is literally out of science fiction: "I would really like to see the food replicator from Star Trek," he says, referencing the fictional invention that can create any dish in an instant. "I'd like to see somebody figuring out how to molecularly assemble food to get natural flavour and variation," he says. "That's gonna require all kinds of crazy innovations, maybe even on the quantum side of things."

Unfortunately, the real-world food industry tends to be less adventurous than Frostad would like. Profit margins for food manufacturers are razor thin, and they make money by keeping volume high and costs low. Frostad's approach – which involves advanced mathematical models – is often too costly. For example, he once consulted with a tofu maker whose recipe was thrown off after changing the supplier of one ingredient. Frostad wanted to develop a sensor that could monitor the tofu-making process on a chemical level, but in the end it was cheaper for the company to fix their recipe using simple trial and error. They still didn't understand the problem, but at least they could keep making tofu.

The conflict between innovation and the need for quick, cost-effective solutions affects every aspect of the food industry, from tofu factories to the International Space Station. Fortunately, the Canadian government does incentivize private manufacturers to partner with scientists at institutions like UBC, and this has led

"ONE OF THE REASONS WE CANNOT GO TO MARS RIGHT NOW IS THAT THE ASTRONAUTS WOULD DIE OF MALNUTRITION."

– JOHN FROSTAD

to many promising innovations. In the meantime, Frostad will continue working to solve the most difficult dietary puzzles.

For his latest project, he is developing a way to preserve omega fatty acids for long space flights. Many Earthlings associate omega fatty acids (especially omega-3s) with fish-oil pills purchased from health stores. But in reality these essential nutrients are derived from many common food items. And furthermore, says Frostad: "If you don't eat them for some period of time, two-ish years, you're gonna die."

Unfortunately for astronauts, these fatty acids break down too quickly to be stored on a multi-year space voyage. But simply vacuum-packing fish oil won't do the trick; the acids need to be protected on a molecular level.

To this end, Frostad and his team are working on tiny capsules

containing flaxseed oil, a rich source of omega fatty acids. "You have a small droplet of oil the width of a hair," he explains, "and you pack some kind of protective shell around it." Frostad believes such a shell can be made of starch, a material found in basically every plant (and dry cleaner's shop) on Earth. On the microscopic level, starch resembles tiny marbles. "There are still gaps between them where oxygen could get in," explains Frostad. "What's cool about starch is that when you heat it up, it swells, and we can use the swelling process to seal the gaps between the particles."

Et voilà: a microscopic-starch-marble shake mix that gives omega fatty acids an extra-long shelf life, can be readily ingested during a long voyage, and could save the future of deep space exploration.

There may also be a use for his invention here on Earth: weight loss. Basically, when our stomachs are full, undigested fat goes directly to the intestines, which the body uses as a signal to shut down your appetite. As it happens, starch breaks down in the intestines, not the stomach. Thus, by sending undigested fat directly into the intestines, Frostad's fat capsules could theoretically trick your body into feeling full, even though there is room in your stomach.

Frostad doesn't know if what began as an effort to feed the first mission to Mars will end in the miracle diet pill of the future, but he intends to find out.



What will Martians eat?



In their new book, two food security experts explore how the first Mars colonists might feed themselves.

BY JARED DOWNING
ILLUSTRATION BY GREEDY HEN

IN THE 2015 film *The Martian*, a stranded Matt Damon struggles to survive on the Red Planet by making water from scratch, building a greenhouse from duct tape, and growing potatoes in human excrement.

Now imagine that premise, but with thousands of Matt Damons living on Mars – not for months, or even years, but forever. And these people aren't just surviving, but thriving: growing whole farms of potatoes, lounging in artificial parks, and eating dinner together in glittering dome canteens as they admire the red sunset.

That vision not only can, but will be a reality one day, say food security experts and UBC alumni Lenore Newman and Evan Fraser. Their new book, *Dinner on Mars: The Technologies That Will Feed the Red Planet and Transform Agriculture on Earth*, begins with a single problem: What would Martians eat?

In answering this simple question, Newman and Fraser sketch out a fully-realized Martian society based on present-day and near-future technology. Their imagined city, dubbed BaseTown, is a utopia of glass domes, lavish greenhouses and aviaries, and colossal indoor fields plowed by solar-powered tractors. Its 10,000 or so residents work together to maintain a fully self-reliant community in the harshest environment known to humankind, yet somehow they find time for art, entertainment, philosophy, and love.

"It was the perfect pandemic project to try and build a world in which these Martian citizens didn't starve to death," says Newman. She and Fraser, who have been friends for decades, came up with the idea during COVID isolation. "We were just chatting because we were bored... we were, like: 'You know, we may as well be on Mars, cause we're trapped.' And we started talking about it."

The innovations Newman and Fraser came up with include seeding the Martian soil with genetically-engineered algae, fortifying plants with nanoparticles, and generating power

with swarms of robots with solar panels that unfurl "like butterfly wings."

BaseTown would also raise animals, but Newman and Fraser disagreed, somewhat, on the question of whether or not the people of BaseTown would eat them. "But why would we take animal farming, which is horribly inefficient and morally bankrupt, with us to a new planet?" asks Newman in a chapter devoted to the question. Fraser counters that it would be difficult to get people excited about living in the colony without the prospect of an occasional steak. "I don't know if we'll be able to sell Mars if it's vegan," he said.

Dinner on Mars is filled with these sorts of exchanges between its authors, who are both renowned academics. Newman, who took her undergraduate degree at UBC, directs the University of the Fraser Valley's Food and Agriculture Institute and has advised both the Canadian and British Columbian governments on agriculture and food security. Fraser attended UBC for his doctorate in environmental studies and resource management and currently directs the Arrell Food Institute at the University of Guelph. Yet despite this scholarly cachet, *Dinner on Mars* reads like a conversation between two friends at a bar bantering over whether or not the Mars utopia should serve bacon.

But why should readers care about an imaginary interstellar situation when there are so many real-world problems left to solve down here on Earth? Newman emphasizes that all of the book's space-age wonders are based on real-world engineering, and argues that many of the book's solutions can be used to solve present-day problems such as pollution, food security, and climate change. BaseTown's indoor farming techniques, for example, could be employed today to grow crops in harsh winter climates. "One example of great importance for Canada is growing leafy greens indoors year-round," Newman explains. "In five years, in the winter you will not be buying lettuce from

the Salinas Valley in California, you'll be buying it from down the road."

"Mars is the mother of all sandboxes," adds Fraser. "We're using the sandbox of Mars to think about applications of existing technologies that can solve existing problems."

In this case, "sandbox" is both literal and metaphorical. Mars has no petroleum, because the fuel is formed from the remains of ancient marine organisms, and Mars had no such life that we know of. Thus, the people of BaseTown will have no way to make plastics, which means the greenhouses, windows, bottles, and fibre optic cable would be made of glass manufactured from the planet's sand. This meant Fraser and Newman spent a lot of time researching glass-

spent on space exploration could be purposed to higher and better purposes on Earth," Fraser says. "But I think that the value of the Martian mission is that it allows us to dream on the biggest possible scale, and it gives us a galvanizing common problem to work towards."

Make no mistake: As fictitious as BaseTown may seem, the pair truly believe that a Mars colony is not a matter of if, but when. Newman majored in astronomy and physics at UBC, and throughout her career has always kept an eye on the stars. In fact, she goes so far as to dream of *Dinner on Mars* being read in future classrooms of Mars University. "They'll be looking at it and critiquing it to see how wrong we were."

The imagined Martian city, dubbed BaseTown, is a utopia of glass domes, lavish greenhouses and aviaries, and colossal indoor fields plowed by solar-powered tractors.

making, from present day to ancient Rome. "I was like, 'Oh God, this is gonna be so boring. And it turned out to be really fascinating. Glass is much more complex than I ever imagined,'" Newman says.

For all of its far-future speculation, *Dinner on Mars* spends a lot of time in the past. Indeed, the preface begins 150 years ago, with the notorious expedition of Sir John Franklin, who died attempting to explore the Arctic. Technology may have changed since Franklin's time, but Newman and Fraser maintain that our drive to explore, innovate, and solve seemingly impossible tasks has stayed the same since humans lit the first fires and plowed the first fields.

"I realize that there are pressing issues on Earth, and maybe the money

DIET AS MEDICINE

We've long known that diet and health are closely linked, but researchers are now learning more about how nutrition affects specific diseases.

BY ROSEMARY ANDERSON, BA'74, MFA'19
PHOTO BY BRITTANY WRIGHT

“YOU ARE WHAT YOU EAT,” the old saying goes, and a growing body of research is demonstrating that informed food choices optimize wellbeing, while poor choices contribute to disease.

Here, three scientists, each with a different disease focus, share their evidence-based dietary wisdom, with the caveat that one size does not fit all. Individuals with health concerns should always seek professional medical advice before making changes to their diet.

MEDITERRANEAN-TYPE DIETS ARE CREDITED WITH THE LATER ONSET OF PARKINSON'S

Dr. Silke Appel-Cresswell, a neurologist at UBC's faculty of medicine, works primarily with patients afflicted with Parkinson's, an age-related disease of the brain without a cure. There is currently no medication to delay the onset, slow down the progression, or reverse the disease once it takes hold. Recently, however, increasing evidence has shown correlations between healthy, Mediterranean-type diets and a lower risk of developing parkinsonism, slower disease progression, and better survival rates. In addition, diet is strongly correlated with the age of onset of Parkinson's, as shown in a recent retrospective study led by Appel-Cresswell and fellow UBC professor Dr. Brett Finlay.

Dividing the study's participants into separate cohorts of men and women, the researchers compared patients who followed a Western diet with those following some form of Mediterranean diet. They were particularly curious about the Greek Mediterranean diet as well as the MIND diet, a Mediterranean-type diet that advocates fresh berries and vegetables, whole grains, poultry, fish, beans, nuts, and olive oil.

Believed to be the first such study to examine the role of the MIND diet within a strictly Parkinson's disease

cohort, some of the results were astounding.

On average, Parkinson's affects more men than women, and progresses faster in men. Interestingly, there also seem to be differences in how diet is related to the disease: Among men with Parkinson's who most closely adhered to the Greek Mediterranean diet, the study found the age of onset of the disease was up to eight years later than the age of onset in men who had unhealthy, Western-type diets (typically rich in red meat and processed, fried, sweetened, and pre-packaged foods). For the women who closely followed the MIND diet, the age of onset was up to 17 years later. Interventional trials are now needed to put Mediterranean diets to the test in their ability to slow down disease progression and to untangle the various mechanisms involved.

Despite the strength of these results, Appel-Cresswell is quick to point out that diet is not the only factor determining brain health. Lifestyle is also extremely important. In 2019, with this in mind, Appel-Cresswell helped found the BC Brain Wellness Program, which offers numerous free programs that support exercise, socialization, education, stress reduction, coping skills, arts-based practices and, of course, healthy eating.

MEDITERRANEAN DIETS EASE ULCERATIVE COLITIS AND CROHN'S DISEASE

One of the reasons Mediterranean diets are considered healthy is due to the large amount of fibre and the types of fats they contain. Humans lack the enzymes to break down plant fibre, so we rely on our gut microbes to do a lot of this work for us. In the process, the microbes secrete beneficial metabolites (one example is butyrate) that promote balanced inflammation and healing. Until recently, it's been widely thought that IBD patients can't consume a high fibre diet when they have a flare-up – the very time when butyrate would benefit them most.

But some new research suggests we need to study different types of fibre in regard to this, since not all exacerbate symptoms.

Dr. Deanna Gibson, a microbiologist at UBCO, studies IBD (an umbrella term for Crohn's disease and ulcerative colitis) and it has been the focus of her research for more than two decades. “We need inflammation to survive foreign pathogens,” Gibson explains, “but when foreign pathogens are gone, we then need the healing process to take place. It's a circle. In IBD, that circle is broken. All we have is inflammation; we have no healing.”

Gibson notes that, in addition to being a metabolite of plant fibre breakdown in the gut, butyrate is readily found in butter and cheese, which suggests that butter and cheese would benefit IBD patients as long as they are not lactose intolerant. Interestingly, butter and cheese are frowned upon in the MIND diet advocated for brain health. The good news, though, is that healthy living is a holistic endeavour. Knowing which foods are good for us is just one piece of the puzzle. The key to optimal health also includes exercise, socialization, and – yes – eschewing a Western diet.

The biggest difference between the Western and Mediterranean diets is that the latter's blend of fats mainly consists of monounsaturated fatty acids, as found in olive oil and avocados, for example. It still contains saturated fatty acids, but a healthy proportion. Mediterranean diets include quite a bit of fish, which is full of omega-3 polyunsaturated fatty acids as well as some saturated fat. As Gibson points out, fats are more satiating, and therefore we tend to eat less compared to eating processed and simple carbohydrates.

Processed foods, which typify the Western diet, contain excessive amounts of omega-6 polyunsaturated fatty acids, not to mention artificial chemicals and binders. The Western diet is characterized by large amounts of polyunsaturated fats, very little fish, sugary foods, and insufficient fibre. To be healthy, we need to reconsider dietary patterns found in the West and perhaps consider changes

that mirror the Mediterranean diet, Gibson advises. A few key changes could include consuming lentils at least once a week, eating fish once a week, and eliminating processed foods.

THE FOOD WE EAT CAN ACTIVATE – OR DEACTIVATE – GENES RESPONSIBLE FOR CANCER

Dr. Barbara Stefanska is an assistant professor of food, nutrition, and health at UBC. Using cutting-edge technology, her lab examines ways in which dietary bioactive compounds and nutrients affect the genome functions and our body's ability to fight and heal cancer. This field of science, which studies the effects of diet and lifestyle factors on the ways our genes behave, is called epigenetics. Stefanska offers the analogy of a musical score, with epigenetics being the melody produced when the notes – our genes – are “played” by our diet, lifestyle, and environment.

Stefanska's experiments prove that “good genes” are not the only determinants of cancer-free living, while carcinogens – cancer-causing agents – are not the only enemies in the war against cancer. Together with her research team, she has identified alterations in the epigenetic makeup that deactivate specific, desirable, cancer-silencing genes and activate otherwise-dormant genes that contribute to tumour formation.

Any cancer can be triggered by genetic changes or environmental factors, Stefanska says, but the damage may be reversible, especially in early stages, if we remove the harmful exposures. Type 2 diabetes, a known risk factor for cancer, is similar. In 80 per cent of cases this disease is tied to being overweight and, in most cases, it may be reversed or attenuated with positive lifestyle changes.

While food or dietary supplements cannot replace medical treatments for cancer, they do have a powerful role to play. Stefanska's team has shown that pterostilbene, for example, which is derived mostly from a variety of berries, has a bidirectional epigenetic function: it can turn off “bad” cancer genes and also activate, or turn on, cancer-silencing genes. And they have demonstrated that groups of bioactive compounds known as polyphenols promote health and help ward off cancer when ingested as part of the diet. Polyphenols of various types are found in grapes, especially grape skins, and in blueberries, soybeans, and caffeinated and decaf green tea and coffee. Alone, though, these bioactive compounds are not enough. Just as our body depends on vitamin C to help it absorb the iron in our diet, these epigenetically active compounds achieve the optimal efficacy in the context of our entire food matrix.

On their own, even the best possible genes cannot prevent cancer, nor is there any single magic food that can accomplish this feat. But if we do our part to pursue a healthy lifestyle, breathe clean air, and consume a balanced diet replete with fresh, unprocessed foods, bioactive compounds, and essential nutrients, we give our genes their best chance to serve us long and well.



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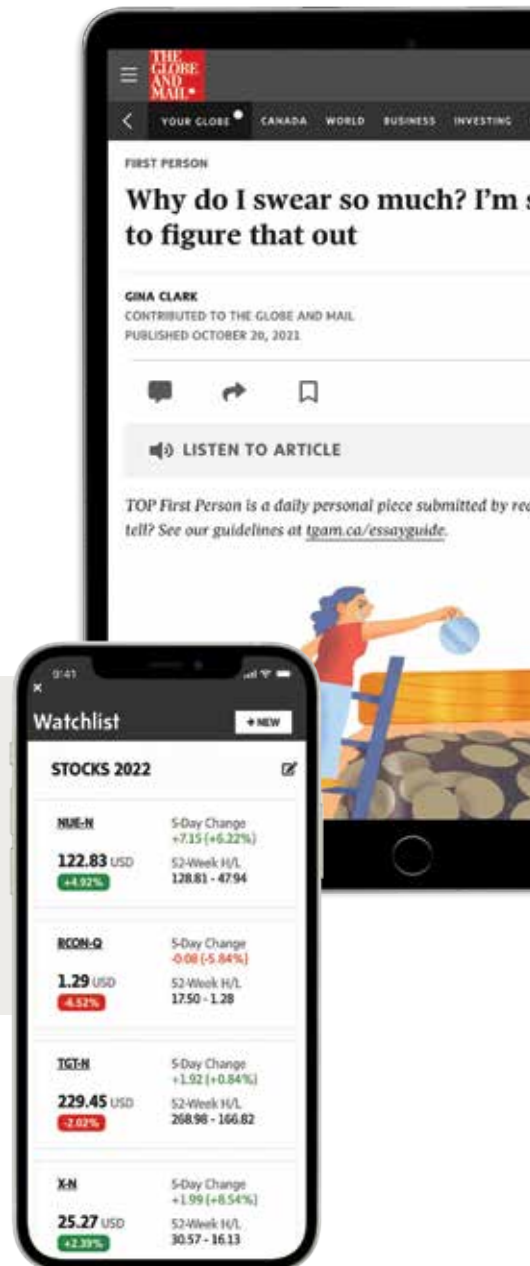
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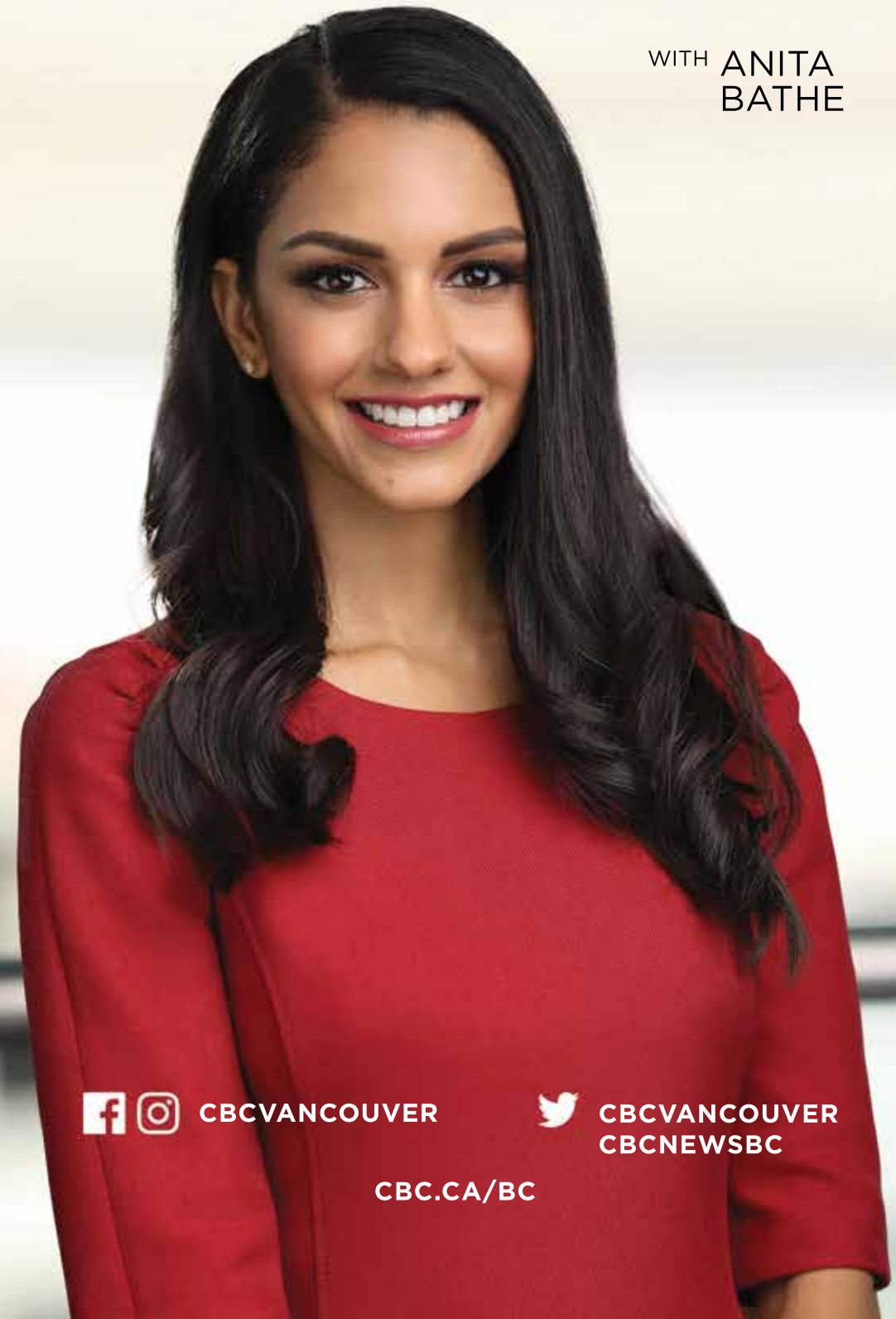
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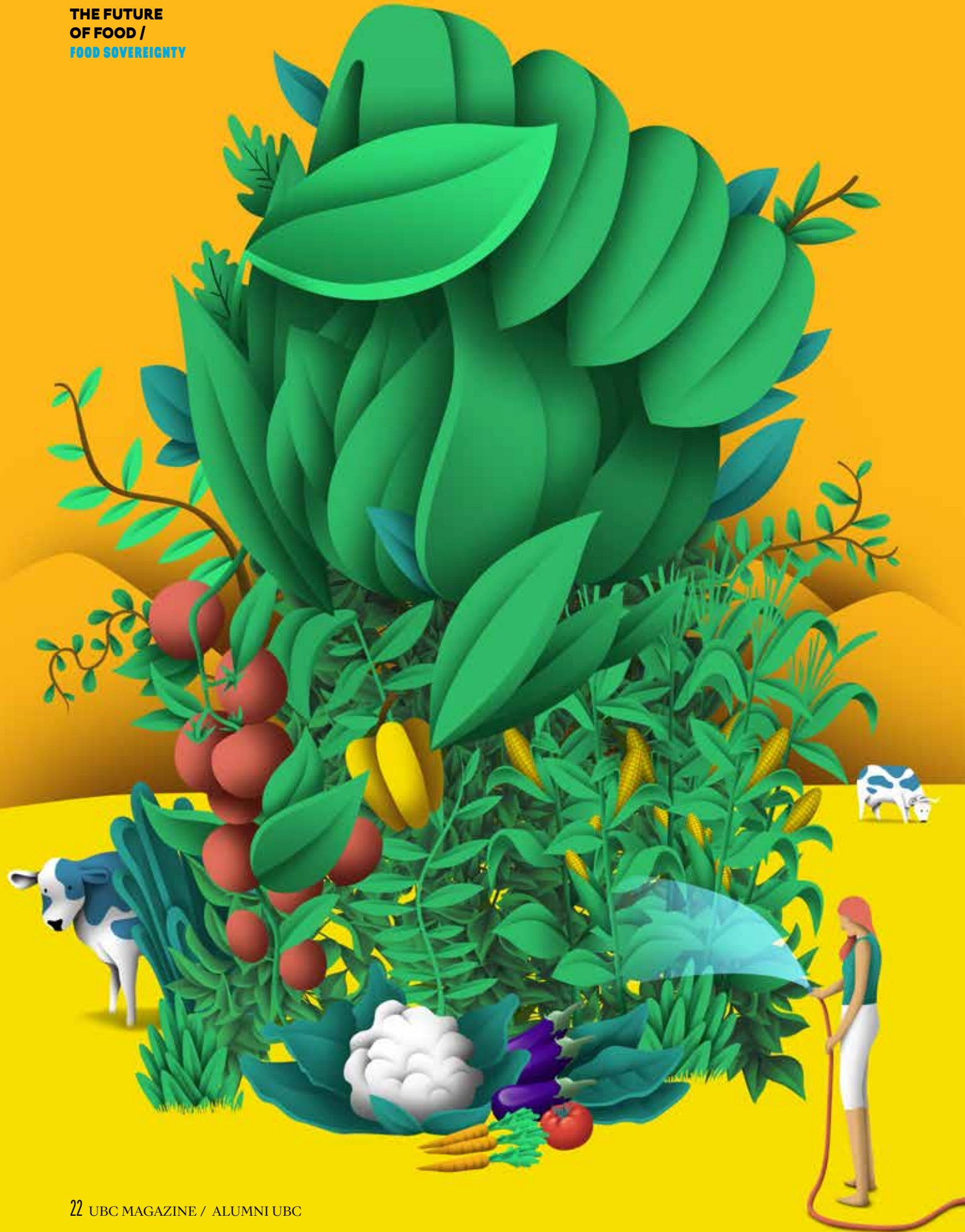


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Food Fight

The struggle for agricultural reform and food sovereignty.

BY CHRIS CANNON | ILLUSTRATION BY DAQ

HANNAH WITTMAN GREW up on her family's grain and cattle farm in northern Idaho, an independent dryland operation raising a diversity of crops. The land is now stewarded by her sisters, brothers-in-law, and cousins, whose children are the fifth generation to farm it.

Today, Wittman is a professor working with UBC's Centre for Sustainable Food Systems and the Institute for Resources, Environment and Sustainability.

"My family think it's pretty funny that I still study farming," she laughs, noting that it was her departure from farming as a vocation that enabled her to see it more clearly, and develop a desire to conduct research that supports the protection, independence, and viability of small-scale and diverse family farming operations around the world.

After her college years at the University of Washington in Seattle – where she earned a dual degree in international and environmental studies – Wittman joined the Peace Corps and went to Paraguay to support sustainable farming and agroforestry practices. She discovered that the struggles faced by small farms there mirrored the struggles her family's farm had endured for decades.

The steady consolidation of agribusiness contributed to high levels of volatility in the global price of food, making it challenging for small farmers to compete in global markets. "The dynamics of the agricultural economy in Paraguay were the same," says Wittman. "People were suffering the pain of commodity markets in the same way that my own family was."

FARMERS FEEL THE SQUEEZE

Over the past 50 years, many farms have experienced reduced autonomy over what they grow, where they sell, and what they can charge, especially when growing crops oriented towards global commodity markets such as corn, soybeans, and wheat. To survive the ever-tightening margins driven by large agribusiness, many farmers have become locked into a tight funnel of agricultural inputs – seeds, pesticides, animal feed, plants, chemical fertilizers, equipment and technology – controlled by just a few large corporations.

To appreciate how large agribusiness dominates the food market, consider the consolidation of the seed industry. For thousands of years, seeds were freely shared by neighbours

and distributed by governments to maintain a healthy and diverse stock of crops for local and regional markets. But today, according to a 2020 special report by Hendrickson *et al* for the Family Farm Action Alliance, half of the global seed market is controlled by four multinational biotechnology corporations, and according to the U.S. Food and Drug Administration (2020), more than 90 per cent of all soybeans and corn planted in the U.S. is genetically engineered. Farmers are left with little choice but to buy the inputs the market affords them.

On the other end of the food chain, the consolidation of food processors and distributors have forced farmers to accept lower prices for their crops. On top of this, events well beyond their control – for example, a war or unfavourable weather – could suddenly reduce yields, and therefore income, below survivable thresholds, meaning small farms that have survived for generations could be wiped out overnight.

Because large agribusiness has such a large influence over both the price of food and the availability of inputs, even a favourable market doesn't guarantee a profit for farmers. "We have record high grain prices right now," says Wittman, "but many farmers still are not making a profit because they're locked into an industrial input system where prices are also rising rapidly."

When the global agribusiness sector shifts focus from growing food to growing profits, the quality and variety of the food supply inevitably suffers. An emphasis on short-term profit rather than long-term stability, and agricultural technology that is oriented towards the most common commodity crops and large-scale precision agriculture, is not fertile ground for diverse farms that can sustain themselves for generations

PATHS TO DIVERSITY

Wittman's research group works with farming organizations, social movements, and urban-rural food networks across the globe to develop tools and policies that bring diversity back to the food system. These networks aim to support small farmers make a sustainable living through agroecological transitions that improve soil conservation, democratize access to technology, and support local market development for healthy and sustainably produced food.

At the UBC Farm, Wittman and her colleagues research soil health and organic management practices. “If farmers can rely less on chemical inputs they have to buy from an external party, and more on soil fertility practices such as cover crops and diversification, then they’re going to be better off in terms of resilient yields, especially in our changing climate,” Wittman says.

During the early 2000s, when she was doing her master’s thesis fieldwork in Guatemala, Wittman explored the country’s rich history of Indigenous community governance over shared forests, and how new government forest management regulations reduced community control over traditional territories. This governance shift led to an increase in deforestation and contributed to the growth of unsustainable and environmentally harmful farming practices, as well as economic hardship for the local communities that had relied on traditional agroforestry practices for generations.

For her PhD, Wittman conducted research with the Brazilian Landless Rural Workers Movement, who were designing ecological land reform settlements through land redistribution, cooperative land management, and agroecological diversification, including communal forest management. This approach to agriculture is based on the framework of food sovereignty – the basic principle that local people should have control over their own food systems. This means they need access to land, the infrastructure to work the land, and a viable system for locally controlled food distribution and exchange.

It goes beyond subsistence farming; food systems must support people in urban areas, as well. Some cities have publicly owned food hubs that serve as distribution centres for local foods. Beyond farmers’ markets, which sell small amounts of food to urban people who can afford it, cities need large-scale food distribution networks like the Ontario Food Terminal, which transports local produce to larger markets, and where growers have a say in the price of their goods. Initiatives like community-supported agriculture, local food hubs, and institutional procurement work to localize the food system.

Governments and other organizations could do more to promote sustainable practices and food security. British Columbia, for example, has no public food distribution network. Government investments instead support infrastructure for international markets, including deep-water ports and pipelines. These are essentially political choices being made to support international trade over local control.

“Governments are making choices about where to spend their money,” says Wittman, “and where governments have chosen to spend their money in relation to agriculture has tended to benefit certain sectors over others. Those have been political decisions with serious consequences for both people and nature.”

Agriculture is one of the greatest contributors to climate change, agricultural workers are among the more impoverished on the planet, and food insecurity among food workers is rising at an alarming rate. As the global climate

deteriorates, we are committing ourselves to one of the worst humanitarian crises in history if we do not make a seismic shift in how we grow and distribute our food.

THE NEXT GENERATION

Changing the status quo, says Wittman, will take the redistribution of land based on social and ecological criteria for local food production, with particular attention to returning lands stolen from Indigenous people across the globe as part of both historical and contemporary processes of agricultural colonization.

Some governments have sought to reverse the tide of corporate farming by redistributing unused public or private land to small farmers. Wittman cites Brazil in particular, which has been a leader in redistributing land based on need; if land is being held speculatively, the government can expropriate it and redistribute it to landless farmers.

This was part of a broader policy called “Fome Zero” or “Zero Hunger” that the progressive president Luiz Inácio Lula da Silva implemented after he was first elected in 2002. This integrated food systems framework supports sustainable production, ecological restoration, food security for all people, and training for the next generation of farmers. A holistic, locally managed approach to growing food, processing food, and getting food into local markets ensures that people have enough to eat, the environment can continue producing food for tomorrow, and people who participate in the food system can earn a living wage.

Lula also introduced a National Food Policy Council, and expanded a national school lunch program to promote an increase in the share of school meals sourced from local food. Price premiums and knowledge-sharing networks for agroecological certification support farmers in substituting synthetic inputs with cover crops, crop rotations, and crop diversification – using biology instead of chemistry to support agricultural resilience.

Brazil’s systems-oriented approach to food and agriculture is starting to become more common in Canada and other places, says Wittmann. “We now have a national food policy council, and that’s replicating what was proposed by Brazil all those years ago.”

Even though Brazil reverted to a right-wing government that defunded parts of the local-farming infrastructure (before bringing Lula back in the 2022 election), many of the progressive food sovereignty laws remained on the books, including “the right to food” addition to their constitution.

It’s this sharing of sustainable practices that offers the best path to a food-secure future. “That’s what we’re doing with our food systems programs at UBC,” says Wittman. “We’re trying to take an integrated approach so that students are trained holistically in what it takes to support a sustainable food system. It’s not just about the latest technology, it’s not just about the way to grow food, it’s not just about a more efficient distribution system – you have to take all of those things together, and you have to teach it to the next generation.”

5 Pharmacist-Recommended Cold & Flu Remedies

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It’s that time of year again—cold and flu season is just around the corner. Experts agree that the best way to combat influenza is to start with prevention, which includes getting an annual flu shot.

However, if you do find yourself sniffing and sneezing, here are some pharmacist-recommended ways to ease symptoms, from the Pocketpills pharmacy team.



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Staying well-rested and hydrated is crucial. It will boost your immune system, which helps your body fight off infection.

2. Take Zinc and Vitamin C lozenges

Taking these two nutrients together gives a boost to your immune system.

3. Keep a log of your medication

You can harm your body by taking too much of any one medication, so write down what you took and when.

4. Chicken noodle soup

Seriously, it works! A hearty chicken noodle soup will keep you hydrated, well-nourished, and soothe your sore throat.

5. Saline nasal spray

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Nurses and staff from Guy's Hospital, Central London, tend to their vegetable allotment garden, created as a part of the Dig for Victory war effort campaign on the reclaimed bomb damaged-land of the hospital foundations. 7th July 1942. (Photo by Fred Morley/Fox Photos/Hulton Archive/Getty Images).

OPINION

Dig for Victory: WWII food policy offers lessons for today.

BY ELEANOR BOYLE, PHD'92

MODERN-DAY FOOD systems are implicated in the biggest challenges our planet and people face. They are responsible for one-quarter to one-third of human-made greenhouse gases. And while plenty of food is produced, much of it is wasted, and millions go hungry.

Although a burgeoning food movement is beginning to address some of these climate and inequality issues, the emergency we face requires nothing less than major structural change, some of which will need to be mandated.

The reform of food systems may seem like an idealistic goal, but it's been done before – in wartime Britain.

Nobel economist Joseph Stiglitz has described the climate emergency as our third world war. "Our lives and civilization as we know it are at stake," he wrote, "just as they were in the Second World War."

And in fighting our third world war, we stand to gain insight from studying some of the strategies behind the second.

At a London museum exhibit called "The Ministry of Food," I learned how the British government and citizenry transformed their agriculture and diets to ensure food security through the chaos of World War II (WWII).

Food-system architects decreased food imports and re-localized much of production. They analysed the supply chain to minimize waste. Almost 50 million citizens learned to embrace

simpler meals, grow some food, waste nothing edible, and respect rationing, so everyone could get a fair share of butter, sugar, and other scarcities.

Here was evidence that food systems can change. How did they do it?

YOU CAN'T WIN A WAR IF YOU'RE HUNGRY.

In the late 1930s, when war was imminent, British food security was a priority. A Ministry of Food was empowered to manage the system. Farmers were instructed and incentivized to lower livestock numbers and grow more crops for people. Families were inspired to convert green spaces into vegetable plots, dubbed by a 1941 gardening guide as "Plots Against Hitler."

Motivated by a personable Minister of Food, Lord Woolton, neighbours buddied up to raise pigs or chickens and share the meat. People were informed through radio, newspapers, and public meetings. Shops, factories, and pubs put up posters featuring urgent calls to action: Dig for Victory, Join the Women's Land Army, Don't Waste Food. Citizens felt like home-front warriors.

The project was daring, with little precedent. There were controversies and mistakes. But British wartime food policies and practices did ensure that the domestic population was fed – millions of them better than prewar. That helped narrow the country's socio-economic gaps and

improve public health, especially for women and children. Tuberculosis and diabetes mortality declined. The farm sector was revitalized, and farmers received government-supported prices for their crops. Localized food systems redirected shipping resources to military needs, while ensuring food access and boosting morale. Wartime food programs helped Britain and its Allies win the war.

This history offers four lessons:

I. FOOD SYSTEMS CAN CHANGE.

At the start of the war, two-thirds of the calories consumed in Britain were imported, and local agriculture was depressed. Processed meal items were common, and meat, eggs or other animal-source foods were daily fare. For half the population, however, undernutrition or malnutrition was a reality. But by the end of the war, close to 70 per cent of the food eaten in Britain was locally produced. Virtually everyone was receiving adequate calories and nutrients. Due to wartime shortages, most were eating less sugar, meat, and processed food, but more plant-based dishes. Without ice cream, children were enjoying carrot on a stick! Although fighting climate change was not the motivation for these changes, those wartime meals sound like modern definitions of sustainable diets.

Today, with over half of Canadians overweight, and more than 15 per cent food insecure, we might want to ask ourselves why we perpetuate food systems that are highly industrialized, oligopolistic, livestock-centred, and market-driven.

II. BOLD PUBLIC LEADERSHIP IS ESSENTIAL.

British officials did not wait for widespread hunger during WWII, but acted decisively, and for reasons that were practical, not ideological. Reluctant to intervene in markets, the Conservative government nevertheless remembered British hunger in WWI and knew that war damages food systems. So it moved to manage food and rallied citizens for what Prime Minister Churchill foresaw as "an ordeal of the most grievous kind."

“Victory may well be won by the country with the most food,” warned Woolton, the Minister of Food. They implemented price controls for affordability; school programs that fed millions of children; and publicly run “British Restaurants,” where anyone could get a satisfying meal for the equivalent of about a dollar in today’s money.

Despite the current emergencies we face, we’re short on courageous leadership at high levels of government. We keep building fossil-fuel infrastructure, and lack coordinated plans for citizen action on climate or sustainable food. Where is the inspiration and guidance?

III. SOME CHANGES MUST BE MANDATORY.

As Seth Klein argues in his important book *A Good War*, governments that recognize an emergency shift from voluntary to mandatory measures. In WWII Britain, laws were passed against hoarding and wasting food. Officials didn’t politely ask consumers to take only their fair share of bacon, cheese, or jam – they mandated it through rationing and other measures.

Though some felt resentful, polls soon showed that most citizens supported the food programs, including rationing. They understood that the system limited the amounts of tea they could buy but also assured them access to those amounts.

Today, we should consider mandating some aspects of sustainable food systems. We could strongly sanction food waste and set fair, per-person allocations of emissions-intensive foods that have disproportionate climate impacts, such as meat and dairy.

Mere invitations to participate were not enough in wartime, and will not be enough today. With mandated actions, we know that when we subscribe to new rules, our neighbours will too. There will always be a few anti-social types who refuse to play fair, but most of us want to do the right thing.

Calling for rationing of emission-intensive consumption draws passionate debate. But how else can we quickly lower the types of consumption that fuel the climate crisis? There’s nothing radical about allocating fair shares of things that are (or need to be) limited. Most consumer goods are selectively allocated – usually by price. And we already ration access to limited resources using licenses, and first-come-first-served or triage systems. If you want to hike the West Coast Trail, you’ll need to wait for a reservation permit, so the ecosystem isn’t overburdened.

IV. EVERYONE NEEDS TO BE INVOLVED.

Wartime food programs rallied everyone. Farmers had to plant certain crop species and ramp up yields. Grocers had to work with ration programs. Families dug up yards and parks to plant food. Everyone knew that no food should be wasted.

Community leaders emerged. Home economist Marguerite Patten’s demonstrations of ration cookery helped make her a celebrity. Comic duo Gert and Daisy drew millions of listeners to their BBC radio show for jokes and tips on making banana cream pie without bananas or cream. Cartoon characters Doctor Carrot and Potato Pete delighted children.

WE CAN DO IT TOO.

Today, citizens are already rallying in diverse civil society organizations that promote Indigenous food sovereignty, broader food security, and food policy that mitigates greenhouse gases. Globally, some jurisdictions are making bold moves. Brazil has been visionary on food security, including its modern version of 1940s British Restaurants called “restaurantes populares.”



In wartime Britain, shops, factories, and pubs put up posters featuring urgent calls to action. Image credit: Imperial War Museum, London, U.K.

The story of wartime food is optimistic, but making systems crisis-ready takes commitment. We’ll need to cut back on feast food and eat more simply. We’ll need to spend more time in gardens and kitchens. Resilient food systems require determination, trust in each other, and – dare I say it? – sacrifice. Are we up to it?



Eleanor Boyle researches food and its impacts on environment and public health. She holds degrees in psychology (BA), neuroscience (UBC, PhD’92), and food policy (MSc). Her book Mobilize Food! Wartime Inspiration for Environmental

Victory Today (mobilizefood.org) is published by FriesenPress (2022) and is available at UBC Bookstore, other outlets, and online booksellers. The author invites comment and conversation at eleanorboyle@gmail.com.

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OC, BSc’67, MSc’70, PhD’72

Dr. Pieter Cullis is an international leader in developing and applying lipid nanoparticle drug delivery systems to treat breast cancer, acute lymphocytic leukemia, rare genetic diseases, and more. He earned international acclaim for his revolutionary work that made the COVID-19 mRNA vaccines possible.



FACULTY COMMUNITY SERVICE AWARD
Dr. Ruth Elwood Martin
MD’79

Dr. Ruth Elwood Martin is a renowned researcher, physician, and advocate for individuals in prison, both during their incarceration and after release. She has helped to improve the mental, physical, emotional, and spiritual health of these individuals and their families.



GLOBAL CITIZENSHIP AWARD
Emma Houiellebecq
BASc’13

As an engineer working in international development and humanitarian sectors across Africa and the Middle East, Emma Houiellebecq has helped find innovative ways to bolster infrastructure and services in urban locales that are facing armed conflict, climate risks, and environmental degradation.



HONORARY ALUMNI AWARD
Elaine A. Carty
CM, OBC, BN, MSN, CNM

Nurse and midwife Elaine Carty helped introduce midwifery into the Canadian health care system and spent 50 years lobbying for its recognition. She is a courageous advocate for women’s health and a pioneering practitioner and researcher.



RESEARCH & INNOVATION AWARD
Dr. John L. Spouge
BSc’75, MD’79

Dr. John Spouge’s special interest is formulating and solving difficult mathematical problems that have important biological applications. His contributions range from the evaluation of potential AIDS therapies to his participation in the cataloguing of all plant species across the planet.



VOLUNTEER LEADERSHIP AWARD
Dr. Rosalin M. Miles
MHK’98

Dr. Rosalin Miles of the Lytton First Nation is committed to the promotion of physical activity within Indigenous communities. Her numerous volunteer activities include founding and directing the Indigenous Physical Activity and Cultural Circle and strength coaching the UBC women’s soccer team.



YOUNG ALUMNI AWARD
Kendra Alexia Louise Hefti-Rossier
BA’10

Kendra Hefti-Rossier co-founded Deloitte Canada’s Blockchain Tax practice, co-led the first government digital bank underpinned by blockchain, and was the youngest person to join a Nasdaq board in the field of blockchain. She is executive chair of the Abed Group.

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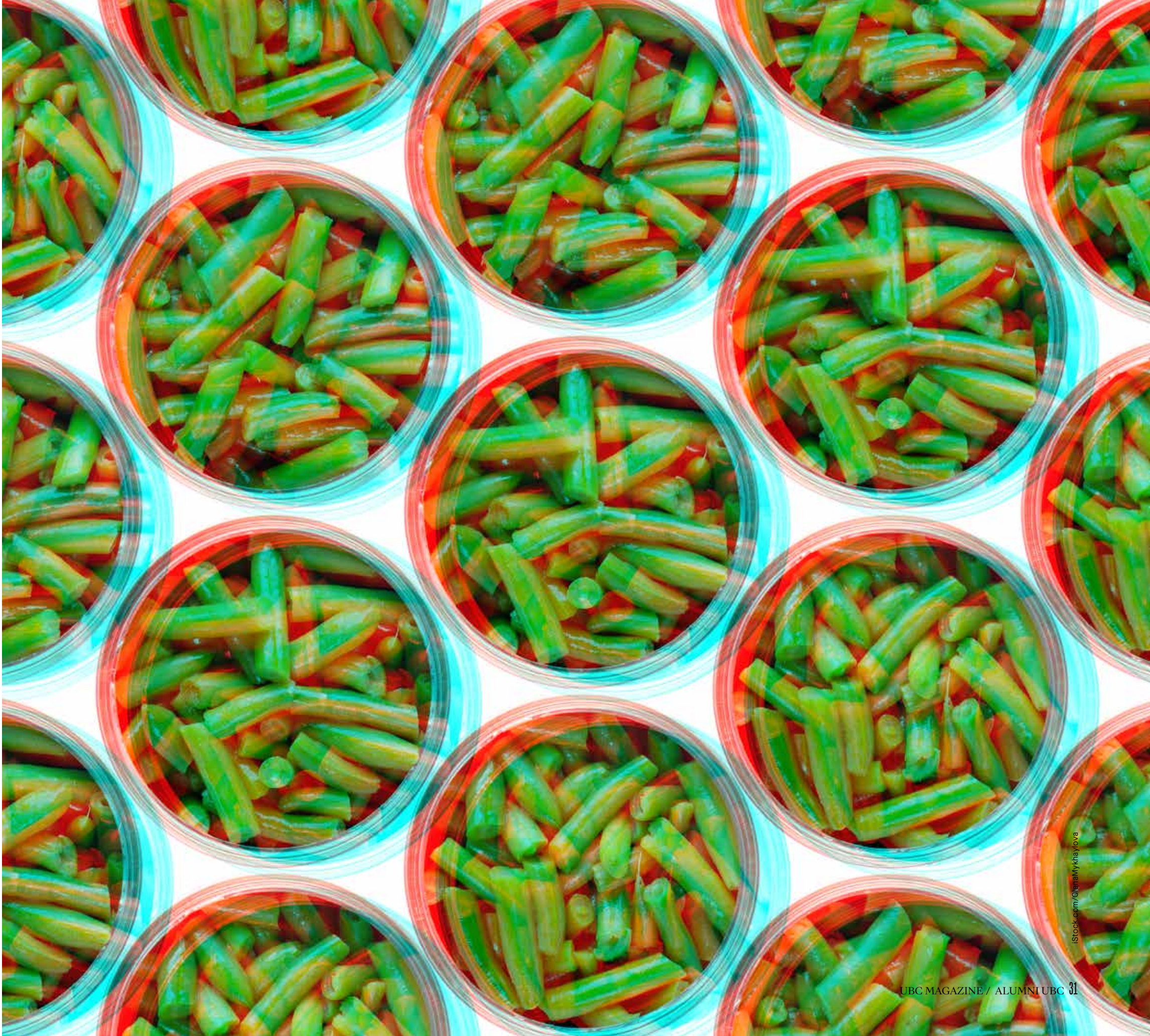
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COOL BEANS

Innovative methods for preserving food are preventing spoilage and waste without sacrificing nutrition and taste.

BY CHRIS PETTY, MFA'86



ONE OF THE greatest challenges facing the world is producing (and distributing) enough nutritious and healthy food to feed, by 2050, an estimated population of 10 billion people. There are no simple solutions in the face of obstacles such as war, famine, drought, flooding, pestilence, and the myriad other things that make this challenge so daunting. High on the list of problems to solve is eliminating spoilage and waste in vegetable, dairy, and meat products. Finding better and more natural ways to preserve them is key.

Mass commercial solutions developed in the last century rely heavily on chemical and thermal preservation processes, but these are notorious for degrading both flavour and nutrient availability. It's not surprising that "processed food" has a negative connotation. Professor Anubhav Pratap-Singh and his team at UBC's Food Process Engineering Laboratory (FPEL) want to change its image.

Pratap-Singh holds UBC's first food and beverage innovation professorship and focuses on 21st century technologies that reduce waste and enhance the nutritional value and shelf life of processed foods. "We can achieve similar anti-microbial and anti-oxidation effects from more natural processing methods as we did with chemicals and high heat," he says. "Technology is now eliminating artificial preservatives and chemicals from processed foods, as well as nutrient-destroying procedures such as high-temperature production methods."

Preserving green beans (and other vegetables) is a good example of the use of fresh technologies. Traditionally, green beans are submitted to high heat for 45 minutes in the can to cook them and eliminate microbial issues. The FPEL lab has shown that Agitation Thermal Processing can achieve the same results in 10 to 15 minutes. The cans are routed through an agitation processor as they're heated, which shakes them back and forth and side to side, distributing the heat more quickly and uniformly, and achieving the same level of microbial inactivation, with

significantly less nutritional loss. As a bonus, the beans retain a fresher flavour and their natural colour.

Although producers must pay for additional equipment in their production line, their costs will ultimately go down because of shorter processing time and a smaller fuel bill for heating the vegetables.

"Technology is now eliminating artificial preservatives and chemicals from processed foods, as well as nutrient-destroying procedures such as high-temperature production methods."

– Anubhav Pratap-Singh

Another energy-saving development concerns the pasteurization of dairy products using ultrasonication and pulses of ultraviolet light. This process, referred to in the trade as PL+US (pulse light and ultrasound), subjects dairy products to bursts of UV light and 22 kHz sound frequency to achieve the same level of pasteurization as traditional high temperature processing, which often gives the milk product a cooked flavour. (By comparison, the ultrasound used to view a human fetus is set at 100 kHz sound frequency.)

These processes and others (see next page) are revolutionizing food preservation methods, making food safer, longer-lasting, more flavourful and, most importantly, nutritionally superior to foods processed using traditional methods. As a result, food growers and processors are lining up to investigate these new methods as both cost-saving and product-enhancement opportunities.

Pratap-Singh will head up UBC's Food and Beverage Innovation Centre, due to open in 2024. Working with industrial partners, local growers, the BC Food and Beverage Association, small-scale food processors, and B.C.'s

ministry of agriculture, the centre will test innovative ways to preserve food, eliminate waste, and "upcycle" processing by-products to create new commercial opportunities.

It will provide state-of-the-art equipment to meet these goals. A high-pressure microwave vacuum dehydrator, a dry-freezing tunnel,

a super-critical food extractor, and a fermentation setup will allow partners to process up to 100 kilograms of product per hour to test concepts on a commercial scale, and to use the UBC community to market-test the results.

Pratap-Singh stresses that the overall purpose of the centre and FPEL itself is to develop systems and procedures that ensure the safe and economical preservation of a variety of foodstuffs. And by focusing on the processes of production, he says, we can ensure that safe and healthy food is distributed to even the poorest areas of the globe, where access to quality nutrition can be a debilitating struggle. Once these processes are perfected, and when the technology for accomplishing them is established and easily replicated, they will have a profound effect on food production and distribution, and in turn on nutritional health.



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Projects of the Food Process Engineering Laboratory

TASTIER PLANT-BASED PROTEIN

Incorporated into products like non-dairy yogurt, these proteins help to extend shelf life and increase consumer acceptance of plant-based foods. Traditional methods for incorporating various legumes into consumer products as part of their protein component – such as yogurt, milk, and meat substitutes – often produce off-flavours. High-heat steam processing can reduce the intensity of these off-flavours, but can add a cooked flavour, and many nutrients are simply washed away. The lab's alternative is to use a vacuum microwave along with lactic acid fermentation to dehydrate the legumes without nutrient loss or impact on the flavour, and with increased digestibility due to fermentation. It also destroys harmful microbes.

Incorporated into products like non-dairy yogurt, these proteins help to extend shelf life and increase consumer acceptance of plant-based foods.

FOOD PACKAGING MADE FROM BLUEBERRIES

Blueberries are renowned for their anti-oxidant and anti-microbial properties. During the processing of blueberries for juice and other uses, a pomace is extracted that contains a mixture of skins, seeds, and other by-products. When this pomace is blended and mixed with certain starches, it can be used as a wrapping material for fish and various vegetables, such as cucumbers. The anti-oxidant and anti-microbial

properties of the blueberries remain in the wrapping, helping to protect and preserve the product it's used to wrap. Because the wrapping is made from vegetative matter, it is entirely biodegradable.

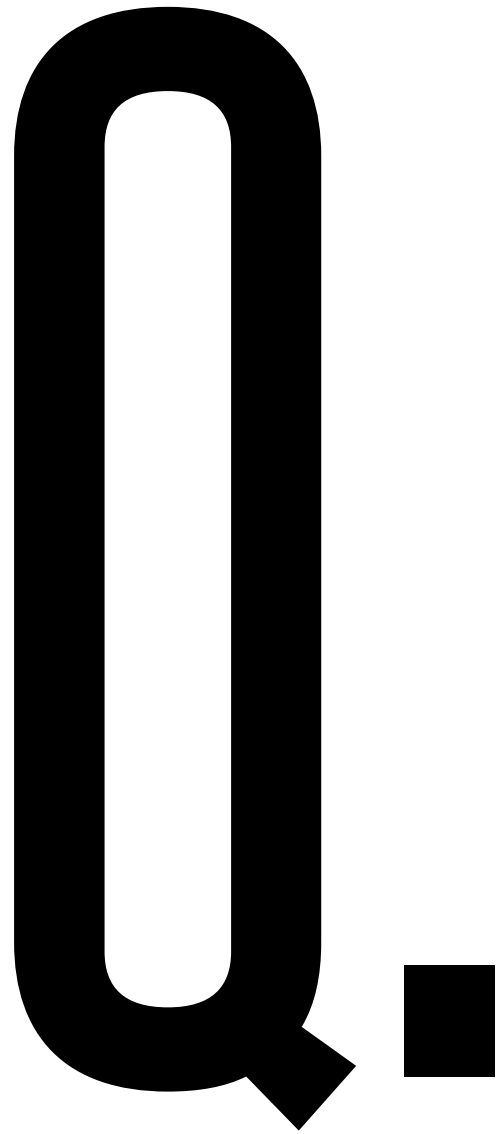
UPCYCLING SPENT GRAIN FROM BREWERIES

Grains used in beer production – oats, wheat, barley, rice – produce a popular product, but once they're used, most end up in the landfill. These "musts" are too microbially active to be used as feed or any other product, unless they can be pasteurized. The lab has developed a process that uses a vacuum microwave to dry out the grain in a low-thermal

treatment that eliminates active microbes. It can then be made into fibre-rich and nutritious food products, such as animal feed – or tasty chips to consume with beer!

NATURALLY FRESH FRUIT JUICE

Fruit juices have traditionally been processed using high heat as an anti-microbial fix, but this notoriously degrades flavour, appearance, and nutritional value. With watermelon juice, for instance, heat tends to flatten its unique flavour and causes it to change colour to an unappetizing grey. The chemical butylated hydroxytoluene (BHT) has been added to juices as an anti-oxidant to mitigate these problems, but that chemical has come under scrutiny as an allergen. Newer processes use natural acidification sources (such as lemon juice) and essential oils to preserve colour, flavour, and nutrition.



COLLECTIVE WISDOM

One pressing question. Multiple expert perspectives.

Can (and should) we remove animals from our food system?



Diversify our food system

DEREK DEE
Assistant Professor, Food Science

As the world population grows and we face sustainability challenges (land and water use, energy consumption, and GHG), we will need to adjust our food system. Given the challenges of meat, particularly beef, we need to adopt other foods that are at least as appealing, affordable, and healthy. It is not an all-or-none situation – animals will continue as part of our food system for the foreseeable future – but the proportion of animals-as-food will need to decrease.

With improved nutritional knowledge, we don't need to eat animal products for optimal health. Food scientists have been working on numerous alternatives to animal-based foods, including plant-based meat/dairy analogues, recombinant proteins and fats, cell-tissue cultured meat, and insects and algae. Food choices are driven mainly by taste, cost, and convenience (and healthfulness), and we have more work to do to meet or excel in these categories. But we now have supercomputers and biotechnology – and the motivations – so it can be done.



Consider the context

NATHAN PELLETIER
Associate Professor, Faculties of Science (Biology) / Management (UBC Okanagan) Egg Farmers of Canada Research Chair in Sustainability

Animals have always been crucial in food systems – whether as stores of exchange value, an assurance of food security or, most importantly, recyclers of biomass not otherwise suitable for human consumption.

Indeed, livestock today comprise the single greatest recycling system in history. Even vegan diets are underpinned by activities that create large streams of biomass for which sufficient human demand simply does not exist (for example, okara, which is a co-product of tofu production). For these reasons, the well-established Food Waste Reduction Hierarchy suggests that the best use of such biomass (i.e., prior to considering waste-to-energy conversion or composting) is to feed it to livestock in order to produce human-palatable products.

Livestock are clearly over-produced and over-consumed in some contexts, resulting in a variety of challenges. In others, food security and health outcomes would be improved by increased availability. The more interesting question is in what contexts, by which means, and at what levels should we produce livestock so as to best meet a variety of important resource efficiency, ecological, socio-economic, and animal welfare objectives.

Illustrations: Monica Hellström



Make diets more sustainable

RACHEL MAZAC, MSC'19
Doctoral Student, University of Helsinki (researching sustainable food systems and dietary change)

It's clear we need to make changes to our diets. Eating fewer animals would be healthier and better for the environment, yet we need to consider the systemic implications of our choices.

Reductions in overall quantity of food consumed are needed in most upper- and middle-income countries, especially reductions in animal-source foods (for example, meats, dairy, and fats). However, there is a high degree of uncertainty around the consequences of removing animals from our diets and, by extension, the food system.

Indeed, even if our diets were entirely vegan, we would still require manure nutrient inputs to fertilize fields and insect/bird pollinators to grow the legumes, grains, and vegetables essential for animal-source food replacement. Terrestrial and aquatic animals still provide nutrient-dense food sources for many people in areas where food supply is unstable and where growing crops for human consumption is difficult or becoming impossible.

So, what now? Non-human animals do have a place in food systems, but it is time to reconsider more sustainable relationships with them in our diets. We need to work up an appetite for sustainable change.



The transition must be just

EVAN BOWNESS, PHD'21
Affiliate, Centre for Climate Justice at UBC; Acting Director, Food and Agriculture Institute (University of the Fraser Valley)

Policy makers, farmers, researchers, community organizers, and industry leaders should lead a transition away from industrial animal agriculture.

Industrial animal agriculture refers to raising livestock in an intensive way at large scale for the lowest possible cost. But it is harmful to ecosystems (through concentrations of emissions and other forms of pollution), to workers (through exploitative and dehumanizing labour practices), to consumers (through diet-related health issues and risk of zoonotic diseases) and to animals (through the terrible conditions in which these animals live and die).

Food systems should minimize these risks and harms. However, many farmers and farmworkers depend on industrial animal agriculture for their livelihoods. And any change that makes food more expensive is not an option for consumers and communities who are already facing the threat of food insecurity.

So, the challenge lies in designing and implementing a transition away from industrial animal agriculture that protects those who face disruption, especially marginalized social groups. In other words, we need a *just transition* for food systems.

FOR MORE RESPONSES, SEE:
magazine.alumni.ubc.ca/food-system

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alumni UBC Study Leader

Cole Burton is an Associate Professor and the Canada Research Chair (Tier 2) in Terrestrial Mammal Conservation at UBC. He is a conservation biologist and wildlife ecologist with broad interests in using science to inform biodiversity conservation and human-wildlife coexistence. He served as a member of the African Lion Working Group and the Hyaena Specialist Group of the International Union for the Conservation of Nature (IUCN).

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INSIDE

FEATURES

42 Strategic Plan

DEPARTMENTS

38 Changemakers

40 Rewind

44 Career Corner

46 Findings

50 Agenda

54 The Scoop

56 In Memoriam

62 The Last Word

Read her story on the next page. >>

Dolma Tsundu, BAsc Integrated Engineering

<<

Founder of a digital health company

<<

Next challenge: Reducing still-birth rates in Canada by at least 30 per cent by 2030

Photo: Emma Tsui

CHANGE/ MAKERS

MOTHER OF INVENTION

Engineer devises a tool to protect pregnant women and their babies.

BY RACHEL GLASSMAN,
BA'18, MA'20

DOLMA TSUNDU'S UNDERSTANDING of the dangers of childbearing stem from her own birth; her mother nearly lost her life delivering Tsundu, and continues to suffer from the impacts of a complicated pregnancy.

Wondering how she could help protect other parents, Tsundu decided to apply her skills as an engineering student to improving maternal healthcare. The need for innovation is urgent. The World Health Organization estimates that every two minutes, a woman dies from pregnancy or childbirth complications, and a stillbirth occurs every 16 seconds. Even in high-income countries, up to 60 per cent of maternal deaths and 30 per cent of stillbirths are preventable. And our healthcare system routinely fails some families more than others: Black and Indigenous women face hugely disproportionate risks of stillbirths and maternal mortality.

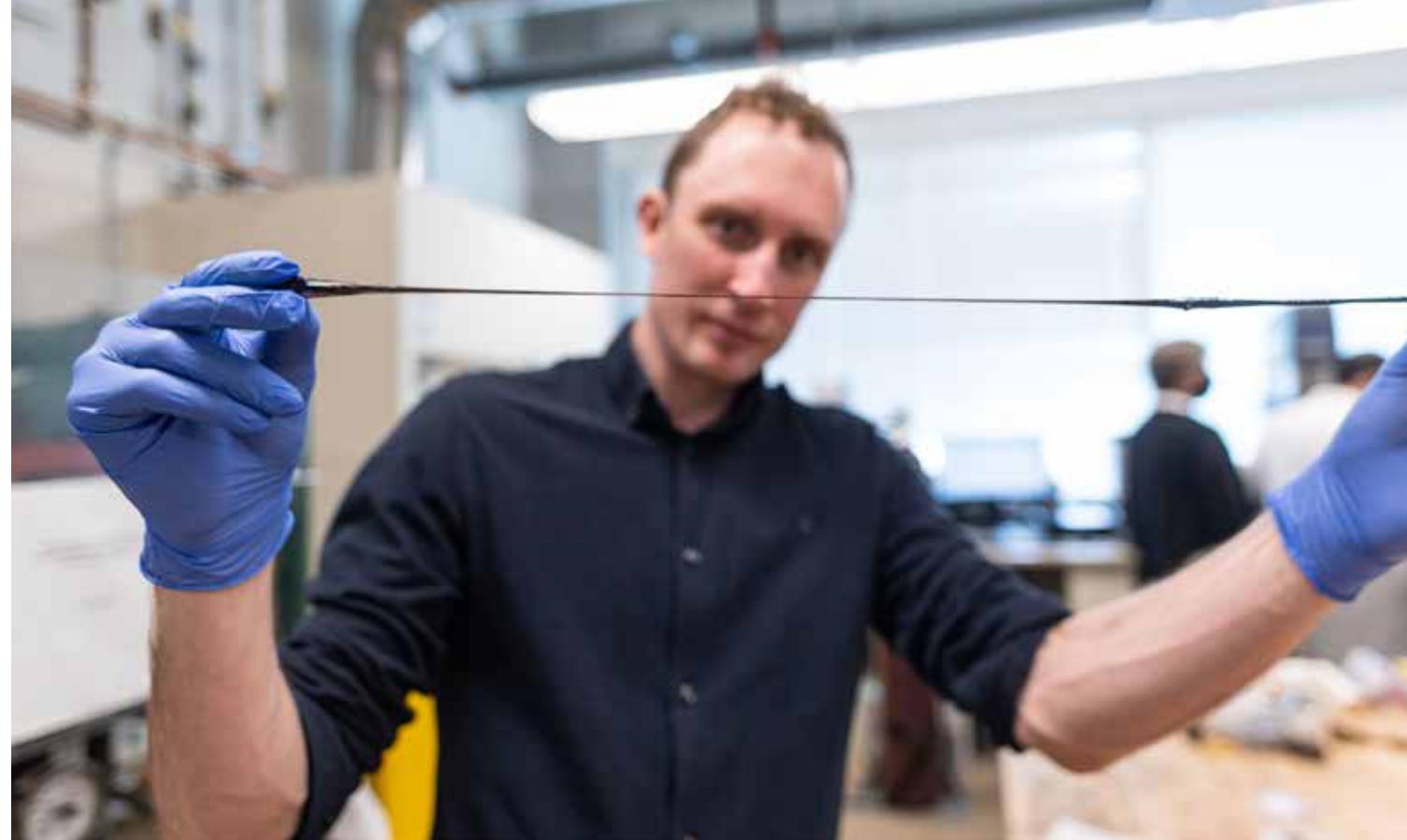
With support from entrepreneurship@UBC, Innovation UBC, and the UBC Faculty of Medicine, Tsundu founded Flutter Care, a digital health company whose app is now used in over 50 countries. It offers an easy way to track fetal movements, such as "rolls," "kicks," and "flutters." The goal? To identify patterns – strong indicators of pregnancy

health – so parents understand their unique baseline and notice any changes that should prompt them to seek help.

Flutter Care's data and education help parents not only to recognize potential danger, but also to self-advocate if they sense something is wrong. Especially for families who face discrimination or who live with trauma from past complications, being able to back their observations with real evidence and data can be powerful and even life-saving, says Tsundu.

Tsundu has received numerous awards for her work, including a 2022 BC Business Women of the Year: Innovator Award. But she says the most meaningful recognition is the trust and encouragement her team receives from families who have faced pregnancy complications and whose collaboration shapes the design: "They transform very difficult experiences into meaningful action, so they can support other people."

Tsundu's investment in her community both informs and stretches beyond her mission as a technology innovator. As a co-founder of the Canadian Collaborative for Stillbirth Prevention, she advocates for a national action plan to prevent stillbirths and strengthen bereavement care. For over a decade, Tsundu has been coaching women with intellectual disabilities through the Special Olympics, and she is a certified doula. She attributes to these experiences a nuanced understanding of how disability, race, gender, and socio-economic status intersect to shape parents' experiences. "Pregnancy is a time in people's lives when they're especially vulnerable," Tsundu says. "All these different aspects of a person's identity are intensified – so it's really important to protect them."



▶ Damon Gilmour, co-founder of A2O Advanced Materials Inc. holding a piece of A2O's self-healing polymer. Photo: Paul Joseph/UBC Applied Science

used in better-performing films, coatings, or adhesives.

What's more, the materials stick to everything – including surfaces with non-stick coatings. Gilmour envisions many potential applications. Paint used on boat hulls, for example, contains a biocide to prevent organisms (such as barnacles and seaweed) from accumulating, a problem known as biofouling. This creates extra drag, which means vessels dramatically increase emissions. Although the paint prevents biofouling, it simultaneously releases toxic chemicals into the oceans.

A2O's new materials offer a more sustainable alternative to toxic paint. They can be used to attach a non-stick layer to hulls that repels ocean organisms. There isn't any need for traditional adhesives – which usually fail underwater, less maintenance is required, and the coating can improve vessel efficiency to reduce emissions.

Although the efficient new coating promises to save money in the long-term, it requires scale-up to compete with the traditional products it seeks to replace. A long-standing emphasis on single-use and inexpensive materials has impeded industry innovation, Gilmour says. "If we don't invest in new materials, we're not going to have all the tools we need for our transition to a renewable energy future."

While the company is working towards scaling up the technology, Gilmour says he has seen the shipping industry start to shift towards high-end products that can deliver both economic and environmental advantages. He hopes to develop more win-win applications for his sticky, self-healing materials. For the rest of us, that may mean better products, less expense, and a smaller environmental footprint.

REFORMING BROKEN BONDS

A new synthetic material could create longer-lasting products that "mend" themselves.

BY CRAIG TAKEUCHI, BA'96, MFA'02

IMAGINE IF THE seams on your rain jacket, the paint on your car, or the coating on your smartphone could mend themselves after being ripped, scratched or chipped. This new reality is nigh – and it's not as bizarre or science-fictional as you might think.

Damon Gilmour (PhD'19) and his company, A2O Advanced Materials, are developing a new class of self-healing materials that will extend the longevity of products and help slow down the damaging cycle of disposal and replacement.

Gilmour completed his doctorate in chemistry at UBC under the supervision of Professor Laurel Schafer. Through a collaboration with Professor Savvas Hatzikiriakos, they discovered new

classes of aminated materials with unique physical properties, including self-healing and adhesion to non-stick materials. Recognizing commercialization as the best development option, they sought mentorship from entrepreneurship@UBC and cofounded A2O Advanced Materials in 2021.

The new materials respond to their environment with "dynamic behaviour." When broken or damaged, they reform their bonds. Much like water, they possess hydrogen bonding, which drives forces of attraction between molecules. This bonding property can be observed when two water droplets, upon contact with one another, form one larger droplet. Gilmour's team has harnessed this property into materials that can be

Damon Gilmour,
PhD'19



Advanced
materials
entrepreneur



Next challenge:
Enabling cleaner
energy and
transportation
by building
better bonds

Fort Camp

Humble huts and grim grub



BY RACHEL GLASSMAN,
BA'18, MA'20

SOME OF UBC'S liveliest shenanigans took place on what is now a serene spot on a cliff overlooking the Pacific, where the Museum of Anthropology stands in all its dignity. Once upon a time, that spot was home to Fort Camp – student housing consisting of former army huts. It was known for its raucous, tight-knit community and its dreadful food.

UBC acquired the army huts to use as temporary housing and classrooms to accommodate the postwar boom in enrolment. As it happened, the Fort Camp huts saw 30 years of study sessions and parties. The army, followed by several generations of rowdy undergraduates, took a toll on the buildings. By 1964, the *Ubyyssey* described Fort Camp as “squalid,” with plumbing that “sometimes work[ed].”

Top photo:
“Bed Races” during Fort
Camp reunion, 1972. *UBC
Archives (UBC 1.1/13425)*
Photo: Bill Cunningham

Bottom photo:
Fort Camp Reunion, 1972.
UBC Archives (UBC 1.1/16397)

Good-humoured students turned the building’s quirks into assets: One 1964 resident proudly showed *Ubyyssey* reporters a crack in his dorm room wall, through which he delivered notes to his neighbour. “An added advantage,” he said. Indeed, the eccentricities of Fort Camp nurtured camaraderie among residents, who staged dramatic complaints about the dorms with tongues firmly in their cheeks. According to a 1964 issue of the *Ubyyssey*, when the heating broke in a men’s hut for four weeks in winter, the lads marched to a nearby women’s residence “and threatened to stay there” until their heating was fixed. On being kicked out, the protesters marched around campus, singing loudly, bearing signs that said, “We Are Not Polar Bears.” The Fort Camp plumbing-and-heating drama was nothing compared to the food, which was so awful it became a running joke. For the duration of the 1960s, the *Ubyyssey* overflowed with Fort Campers’ letters of complaint, despairing over wormy meat and half-cooked liver. Still, as one writer conceded in 1964, “Reports... that three neighbourhood dogs died of food poisoning after being fed by students with official Fort Camp food are highly exaggerated.” Despite – or because of – its bad meals and cracked walls, the boisterous Fort Camp was first and foremost a real community. The ties went beyond the parties and running jokes. In 1966, Fort Camp’s residence clerk of 20 years, A.P. “Mac” Macdowell, announced his retirement. Generations of Fort Campers, past and present, banded together to launch a campaign to raise \$2,000 to send Mac and his wife on vacation to Europe. “Fort Camp has been home to me,” Macdowell told the *Ubyyssey* before his retirement. “I have always found the students to be wonderful.” A few years later, in 1972, Fort Camp was demolished – but not before a reunion of its former residents. Hopefully the food they were served was not too nostalgic.



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STRATEGIC PLAN



From Here Forward

alumni UBC's operations are guided by five-year strategic plans that aim to foster a mutually beneficial relationship between UBC and as many as possible of its almost 400,000 grads.

THE RECENTLY CONCLUDED 2017-2022 plan, *Connecting Forward*, succeeded in engaging close to half of all alumni. Along with broad participation in programming, thousands chose to become more deeply involved with UBC by volunteering their time in service or making a financial contribution to support student success and research that matters. The influence, skills, and capacity of these alumni have been integral to the university's successes.

But all good plans must come to an end, and the 2021-2022 year saw the *alumni UBC* executive and volunteer alumni board immersed in months of planning that culminated in a new five-year plan, *From Here Forward*. The key influencing factors impacting the strategy were as follows:

- **Society has changed and so has *alumni UBC's* constituency.** For instance, alumni are increasingly diverse, and the average age is getting younger; half of them will be under 40 by 2025. *alumni UBC* must demonstrate leadership in equity, diversity, and inclusion practices that respect and acknowledge

all generations, geographies, cultures, and orientations.

- **Advancing technology is enabling high-quality online experiences.** This means that geography is no longer a barrier to alumni engagement, and we have an opportunity to engage our international and exchange students – whether they return home or remain in Canada after they graduate.
- **Universities are perceived by most to be among the few remaining trusted institutions in society.** By communicating the strengths of UBC as a top-ranked research university that today leads the way in climate action and global impact, with a deep commitment to Indigenous reconciliation and a more inclusive and equitable future for all, we can better involve alumni in supporting its vision.
- **Connecting with students before they become alumni makes it easier to build lifetime engagement.** We can benefit from the now well-established Robert H. Lee Alumni Centre at the heart of the Vancouver campus, and the growing impact of student-led councils on both campuses.

ACCESS THE FULL PLAN HERE alumni.ubc.ca/strategic-plan

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Mind Matters

Developing emotional competencies such as self-awareness and impulse control not only improves workplace performance, but also well-being.

BY ROBERTA STALEY

ONCE, NOT TOO long ago, people viewed emotional intelligence (EI) as being little more than New Age touchy-feely woo-woo. What really mattered, surely, was raw intelligence (IQ) – the quality of grey material between your ears that enabled you to fly a jet, perform an appendectomy, or earn a Nobel Prize. Studies in the mid-1990s, however, put that notion to rest.

EI gained respectability when it was proven to improve corporate competitiveness and bottom-line results. While it may seem counter-intuitive, emotions are crucial for problem solving and critical thinking. EI facilitates better stress management and decision-making, and emotionally intelligent leadership boosts employee engagement. This means improved worker morale and well-being, which leads to greater individual and organizational effectiveness. EI also underpins high-performing individuals and collaborative, relationship-based workplaces, supplanting traditional, hierarchical work environments. The World Economic Forum lists EI as one of the Top 10 employment skills for the future.

Today there is a tool available for business and institutions that facilitates the measurement and

assessment of emotional intelligence among employees. Called the Emotional Quotient Inventory (EQ-i 2.0), and published by Multi-Health Systems, it is the first scientifically validated measure for emotional intelligence and a powerful development tool with many applications.

EQ-i 2.0 lists 15 skills that are highly correlated with emotional effectiveness. Developing these competencies will improve workplace performance and well-being. They include:

- **Reality testing** – checking one's perceptions and biases
- **Social responsibility** – the desire to make the workplace and world a better place
- **Empathy** – paying attention to the emotions of others and the impact you have on them
- **Emotional self-awareness** – being aware of your emotions, problem solving by leveraging the emotions involved in the application of logic
- **Impulse control** – understanding when either stability or spontaneity is appropriate

The business world, and increasingly other sectors such as post-secondary education, see

the value of nurturing EI in the workplace. Coaching can give individuals insight into how they impact others, sparking sometimes dramatic changes in behaviour and insight, says David Cory (BEd'92, MA'95), president and founder of The Emotional Intelligence Training Company, based in North Saanich, B.C. Cory has been coaching and training companies on how to enhance EI since the late 1990s.

Even traditionally masculine sectors like engineering, military, and police – associated with the “big boys don't cry” trope of childhood – are embracing coaching in EI. Many men don't learn about emotions, they “ignore and deny them, and, above all else, don't show them to others,” says Cory. However, when given the opportunity in workshops, “participants experience greater levels of trust and deeper connections through sharing their emotions.”

Developing EI can help people in all types of professions learn to work harmoniously in teams, build relationships with customers and clients, and handle stress more effectively. Logic and emotion may be in different regions of the brain but work in concert, says Cory. “The better we know and understand

our own emotions, the more effectively we will navigate our work.”

For anyone who aspires to leadership, emotional intelligence skills, such as empathy or social responsibility, are key. If we keep in mind one basic principle: “nothing great was ever done by a solitary individual,” says Cory, we can understand how critical emotional intelligence is for leaders. Leadership is rooted in community. It involves creating partnerships and “joining with other people who have a similar goal.” He points to the #MeToo movement, which exposed and opposed gender bias in the workplace. The women who supported #MeToo, says Cory, showed high EI. “That's one element of leadership: doing what needs to be done, even though it's difficult.”

Ultimately, those who understand their emotions, and can manage and use them productively, are more effective in the workplace, Cory says. Developing higher levels of emotional intelligence parallels the progress that humans are making as a species – evolving away from rigid, autocratic individualism and hierarchies of rule, he says. It's a social and cultural movement whose time has come.

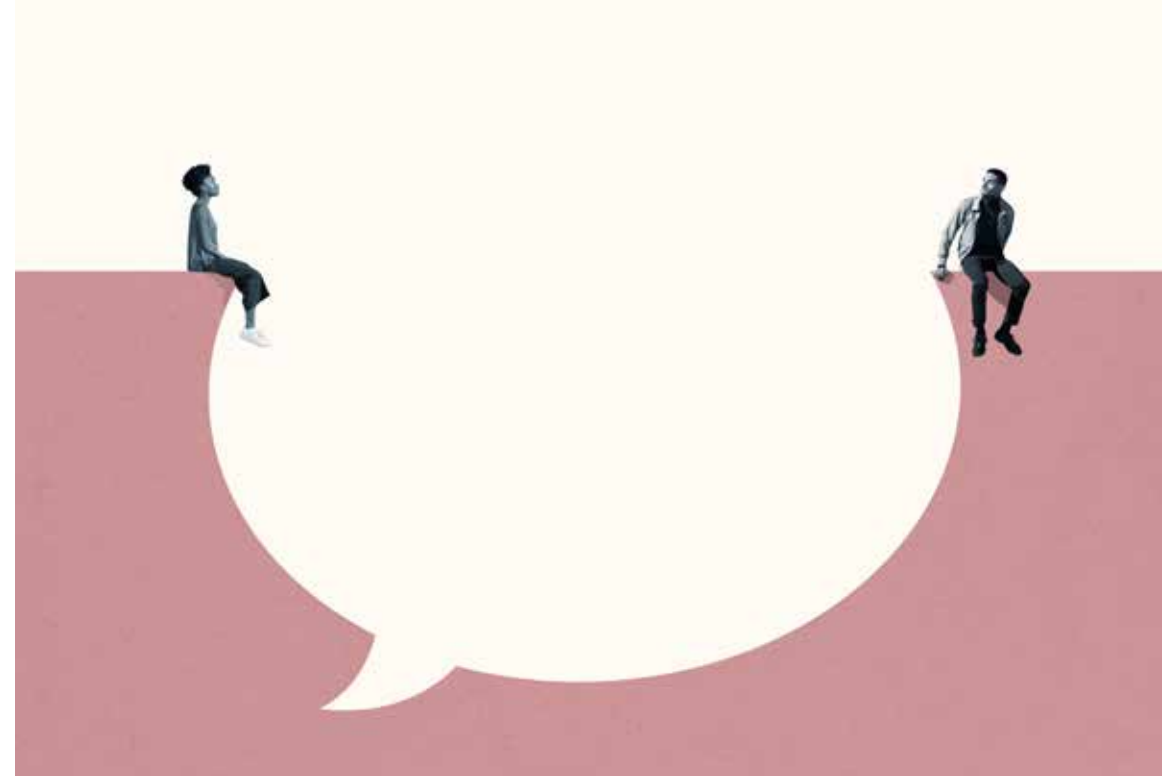
alumni UBC offers programming to support your career and personal development. For more information, visit alumni.ubc.ca/careers

NETWORKING DO'S AND DON'TS

Catherine Ducharme is the co-founder of Fluency, a leadership & team development and coaching company. The following tips were adapted from an *alumni UBC* webinar she presented on how to be a savvy networker.

- **DON'T** randomly show up at events asking strangers for favours. Asking people you don't know for business or a job is not what networking is about. It's like asking someone to marry you on the first date.
- **DO** talk about your strengths, but don't brag. Self-promotion doesn't sit well with a lot of people. Instead, focus on letting people get to know you.
- **DON'T** go into networking situations with fixed outcomes in mind. Networking involves getting to know people as people, without thinking about how they can serve you. It's not transactional, it's relational.
- **DO** reach out to people in your network you haven't spoken to in a while. The benefits of networking are through your existing networks, the people who know you the best.
- **DO** be proactive. Many people make the mistake of only networking when they need something. Dig your well before you're thirsty, as the saying goes. Networking is a continuous long-term proposition.
- **DON'T** ask binary (yes/no) questions in a conversation. Choose open-ended questions that invite dialogue.
- **DO** be curious. Believe everyone has an interesting story to tell and seek to learn from others. To network well we need to practice the art of conversation, and that's where curiosity comes into play.
- **DON'T** forget to follow up! Conversations that create connection and spark collaboration and learning are what you're looking for. If it's there and if it's mutual, suggesting a follow-up chat or a virtual coffee will seem natural.
- **DO** initiate. There are fewer opportunities for informal interaction these days, so we must be intentional to build relationships. That requires us to be courageous and step out of our comfort level. What can you start, and whom can you bring together?

Klaus Vedfelt via Getty Images



WATCH THE
WEBINAR AT
magazine.alumni.ubc.ca/savvy_networker



Space rocket junk could be deadly

As space junk accumulates, we must prevent it re-entering the atmosphere and posing a risk to human life, say researchers.



▼
A United Launch Alliance Atlas V rocket with Boeing's CST-100 Starliner spacecraft aboard launches from Space Launch Complex 41, Thursday, May 19, 2022, at Cape Canaveral Space Force Station in Florida.
Photo Credit: (NASA/Joel Kowsky)

THE RESEARCH
UBC researchers conducted a study to calculate the risk to human life from the uncontrolled re-entry of leftover rocket parts into Earth's atmosphere.

THE BOTTOM LINE
They concluded there is a six to 10 per cent chance that the re-entry of space rocket junk will severely injure or kill a human being in the next decade, and

stress it is something that can and must be avoided.

Parts of the rockets used to launch objects such as satellites into space are often left in orbit. If their orbit is low enough, they can re-enter the atmosphere in an uncontrolled way. Most of the material will burn up in the atmosphere, but potentially lethal pieces can still hurtle towards the ground.

The researchers analysed more than 30 years of data from a public satellite catalogue. Using two different methods, and basing their calculations on re-entries spreading dangerous debris over an average area of 10 square metres, they found that current practices have a six to 10 per cent chance of one or more casualties over the next decade from rocket

bodies alone. They also found that the risk is borne disproportionately by the Global South, due to the distribution of orbits used when launching satellites.

While the risk to any one individual is very low, dangerous debris from space hitting Earth's surface is far from unheard of, and space launches are increasing. "Risks have been evaluated on a per-launch basis so far, giving people the sense that the risk is so small that it can safely be ignored. But the cumulative risk from future launches is not that small," says co-author Aaron Boley, an associate professor in UBC's department of physics and astronomy. Furthermore, the calculations do not take into account worst case scenarios, such as a piece of debris striking an airplane, says lead author Michael Byers, a professor in UBC's department of political science.

The risk could largely be removed – for example by having engines that reignite, as well as extra fuel, to guide the rocket bodies safely to remote areas of ocean. But these measures cost money, and there are currently no multilateral agreements mandating that companies make these changes, says Byers.

He cites examples of international collective action, including the mandated transition from single to double hulls on oil tankers following the Exxon Valdez spill, and the phasing out of chloro-fluorocarbons to protect the ozone layer. "Both required some cost to change practice, but in response to new scientific analysis, there was a collective will to do so, and in both instances they were complete successes. What we're proposing is entirely feasible and there's therefore no excuse for delaying action on this matter."

AN END TO INSULIN INJECTIONS?

THE RESEARCH
A team of UBC researchers is working on developing oral insulin tablets as a replacement for daily insulin injections.

THE BOTTOM LINE:
In a major breakthrough, the researchers have discovered that insulin from the latest version of their oral tablets is absorbed by rats in the same way that injected insulin is. Human trials will begin shortly.

When it comes to insulin delivery, injections are not the most comfortable or convenient for diabetes patients. Oral insulin alternatives are being pursued by various researchers, but the UBC team, led by principal investigator Dr. Anubhav Pratap-Singh, has developed a different kind of tablet that isn't made for swallowing. Instead, it dissolves when placed between the gum and cheek.

Their earlier attempts to develop a drinkable insulin resulted in most of the insulin accumulating in the stomach of the rats. With the new tablet, nearly 100 per cent of the insulin goes straight into the liver, the ideal target for insulin. It's a major breakthrough with many advantages.

For example, there is no wastage or decomposition of the insulin before it reaches the liver. In comparison, swallowed tablets that go to the stomach require five times the insulin used in an injection, because so much of the insulin is wasted. The insulin in the new tablet is also absorbed



© douceffleur / Adobe Stock

UBC researchers have developed an insulin tablet that isn't made for swallowing. Instead, it dissolves when placed between the gum and cheek.

much faster, with a half hour release rate comparable to that of fast-release injections.

"These exciting results show that we are on the right track in developing an insulin formulation that will no longer need to be injected before every meal, improving the quality of life, as well as mental health, of more than nine million Type 1 diabetics around the world," says Pratap-Singh, whose inspiration to search for a non-injectable insulin came from his diabetic father.

Beyond the potential benefits to diabetics, Pratap-Singh says the tablet could also be more sustainable.

"More than 300,000 Canadians have to inject insulin multiple times per day," he says. "That is a lot of environmental waste from the needles and plastic from the syringe that might not be recycled."

The team also hopes to reduce the cost of insulin per dose, since their oral alternative could be cheaper and easier to make. And transporting the tablets would be easier for diabetics, who currently have to think about keeping their doses cool.

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Things to Do



LISTEN

From Here Forward, UBC Podcast Network

If you've had enough negative news, try *From Here Forward*, a new podcast that focuses on the good for a change. It's hosted by UBC journalism grads Carol Eugene Park and Rumneek Johal, who interview guests from the UBC community. Episodes include:

Turning Mining Waste into Climate Gold
Professor Greg Dipple's company received \$1M from XPRIZE and the Musk Foundation to use mining waste for carbon capture.

The Gig Economy: Friend or Foe?
UBC prof and filmmaker Shannon Walsh's film, *The Gig is Up*, explores the digital economy.

Reflections from UBC's 15th President
Santa Ono reflects on his time at UBC and shares his advice for the university moving forward.

LISTEN AT:
magazine.alumni.ubc.ca/podcasts



READ

Ursula
By *Tammy Armstrong, BFA'98, MFA'00* (Winner of the 2022 HarperCollins-PublishersLtd / UBC Prize for Best New Fiction)

Ursula is a young girl growing up in a New Brunswick logging camp in the 1920s. Her "brother" Bruno, is a bear who has been raised by her family and is accepted by the lumberjacks. When their malicious camp supervisor is found dead in a ditch, Bruno is blamed, then kidnapped and sold to an animal trader. Ursula must embark on a hazardous journey to rescue him.

The United States and Canada: How Two Democracies Differ and Why it Matters
Edited by *UBC professor of political science Paul J. Quirk*

In *The United States and Canada*, expert contributors examine the differences between the political systems of both countries, focusing on patterns of governance in a wide range of areas such as economics, climate-change, healthcare, and civil rights.



SOCIALIZE

Host a My Town Meetup

The further away you are from UBC campuses, the harder it can be to meet fellow alumni. So for those who live outside our campus communities in the Lower Mainland and Central Okanagan, we've created My Town Meetups to help alumni find each other and build social networks – anywhere in the world!

Curious who else is out there? Get to know your local UBC community by either attending or hosting a My Town Meetup. Whether you studied linguistics or law, graduated in 1965 or 2022, or live in San Diego, Stockholm, or Seoul, you can gather in person over a meal or coffee, or virtually on Zoom.

DETAILS HERE:
alumni.ubc.ca/my-town-meetups/



Bettina Harvey's *Drift* exhibition runs until August at the Beaty Biodiversity Museum.

Explore an exhibit

DRIFT: FROM THE FOREST TO THE SEA
On now until August 20, 2023, at the Beaty Biodiversity Museum

Have you ever stared at a piece of tangled driftwood and wondered about its life story? Bettina Harvey's exhibition *Drift: from the forest to the sea* dives into the complex journey of driftwood, connecting the cycles of ecological life to the patterns of our personal lives. Harvey's drawings evoke human anatomy and the resilience inherent to ageing, tracing the imprint of the past upon an individual's metamorphosis over a lifetime.

IN A DIFFERENT LIGHT

Ongoing, Museum of Anthropology (MOA)
In a Different Light presents more than 110 historical Indigenous artworks and marks the return of many important works to British Columbia. Through the voices of contemporary First Nations artists and community members, this exhibition reflects on the roles historical artworks have today. Featuring immersive storytelling and innovative design, it explores what we can learn from these works and how they relate to Indigenous peoples' relationships to their lands.

DID YOU MISS THIS?

Happier Cities:

What's the secret?
Now more than ever, cities are undergoing significant changes. After two years of the pandemic, a sense of community has receded in many locations; urban development has altered our access to nature; and calls for greater accessibility, inclusion, and sustainability have grown. So how can we improve our metropolitan experiences?

WATCH THE WEBCAST:
magazine.alumni.ubc.ca/happiercities

UBC Connects: Decolonising Social Theory

Professor Gurminder Bhambra discusses her most recent book, *Colonialism and Modern Social Theory: Decolonising an Absence*. She explains why the significance of postcolonial and decolonial critique is not simply to add colonialism to our repertoire of topics, but to show how that repertoire must change and be transformed in the light of taking colonialism seriously.

WATCH THE VIDEO AT:
events.ubc.ca/gurminder-k-bhambra/

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THE SCOOP

Loudmouths, Linguists, and Leaders

1. THE EARLIEST CHEERLEADERS AT UBC WERE ALL MALE AND KNOWN AS YELL LEADERS. THE CHIEF YELL LEADER WAS CALLED:

- a) Old Yeller
- b) Yell King
- c) Lieutenant Loudmouth
- d) Yeller in Chief



2. THE OUTSIDE OF UBC VANCOUVER'S BIOLOGICAL SCIENCES BUILDING IS COVERED IN:

- a) A living wall of succulents
- b) Solar panels that power the building
- c) Mirrors that bounce sunlight inside to provide lighting
- d) Tiles that change colour with the weather



3. CHRISTINE SCHREYER, AN ASSOCIATE PROFESSOR OF ANTHROPOLOGY AT UBCO, DEVELOPED WHICH FICTIONAL LANGUAGE?

- a) Kryptonian, from *Man of Steel*
- b) Na'vi, from *Avatar*
- c) Dothraki, from *Game of Thrones*
- d) Klingon, from *Star Trek*



4. UBC IS CANADA'S FIRST:

- a) Certified organic university
- b) Vegan-friendly university
- c) Smoke-free university
- d) Fair Trade university

5. AN 18-STOREY STUDENT RESIDENCE IN BROCK COMMONS ON THE VANCOUVER CAMPUS IS ONE OF THE WORLD'S TALLEST BUILDINGS MADE ALMOST ENTIRELY FROM:

- a) rammed earth
- b) old tires
- c) wood
- d) recycled plastic bottles

6. IN 2016 TIMES HIGHER EDUCATION NAMED UBC THE MOST _____ UNIVERSITY IN CANADA.

- a) Affordable
- b) International
- c) Sustainable
- d) Walkable

1: b) Yell King was the title of the chief yell leader in the 1920s. As an AMS official, he was responsible for promoting school spirit and leading varsity chants.

2: c) Tiny mirrors on the south side of the Bio-Science building are a part of a "solar canopy" that collects ambient sunlight, concentrates it into a light beam 10 times brighter, then pipes it through a window to interior ceiling fixtures providing overhead lighting.

3: a) Kryptonian, from *Man of Steel*. When she's not busy teaching, Schreyer has a side-gig creating fictional languages for blockbuster movies.

4: d) UBC is the first university in Canada to commit to buying Fair Trade coffee, tea, chocolate, and tropical fruit from producers who guarantee higher social, environmental, and pay standards for farmers and workers.

5: c) The Tallwood House in Brock Commons is made of laminated timber panels and columns supported by a concrete podium. Wood produces significantly fewer greenhouse gas emissions in its production than other building materials, making it a sustainable choice.

6: b) International. The ranking considers each institution's proportions of international staff, international students, and research papers published with at least one co-author from another country.

Illustrations: Raymond Beisinger

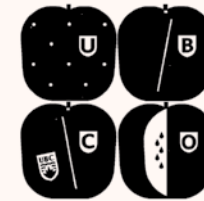
NEWS FLASH



VANCOUVER

HUMAN-ANIMAL INTERACTION LAB

The new Human-Animal Interaction lab at UBC's Vancouver campus has put out a call for furry, four-legged research participants. The lab will be selecting dogs and their owners to participate in research on dog cognition, with the goal of improving animal shelter practices and the welfare of assistance dogs. By selecting pets from the public, the lab can uncover individual and breed differences by looking at variables like how dogs interact with the world or learn something new. The lab takes a non-invasive approach, performing simple cognitive experiments that engage the dog in learning commands and playing games, all in the comfort of a specially designed lab. Canine volunteers will receive a certificate for participating along with a photo of them wearing a graduation cap and sash, while human participants must be satisfied with the fact that they've helped inform rehabilitation practices. Contact hai.lab@ubc.ca to apply.



OKANAGAN

SUSTAINABLE TRANSPORTATION OPTIONS

UBC Okanagan is aiming to reduce its commuting emissions by 40 per cent by the year 2030 as part of the UBCO Climate Action Plan. In September, Rob Einarson, associate vice-president of Finance and Operations, acknowledged current pressures on accessing campus and announced some new initiatives available to the campus community. One of these is a pilot bike valet service, which offers free and secure weekday parking for bicycles, e-bikes, cargo bikes, scooters, skateboards, and more. Another initiative serves UBCO commuters interested in carpooling; the campus is now on Liftango – a free, easy-to-use carpool-matching app – and has a network exclusively made up of UBCO students, faculty and staff. The app even offers tips on how to set up a carpool with colleagues or classmates. A third initiative has introduced e-scooters to campus, via electric vehicle sharing companies Lime and Spin. These initiatives complement existing programs encouraging sustainable commuting, such as discounted transit passes for staff and faculty.

\$2M

The amount UBC spin-off companies Carbin Minerals and Takachar won this year in the \$100M XPRIZE Carbon Removal Competition, funded by Elon Musk and the Musk Foundation.

400+

More than 400 sanitizing copper patches have been added to high-contact areas at UBC Vancouver as part of a collaboration between Teck Resources and UBC to study the antimicrobial properties of copper.

1st

This March, UBC Okanagan became the first university in Canada to offer a bachelor's degree in Indigenous language fluency.

33

UBC typically hosts eight graduations in the fall, but this year the number rose to 33. That's because an extra 25 ceremonies were held for graduates from the classes of 2020 and 2021, who were unable to experience an in-person graduation ceremony due to restrictions necessitated by the COVID-19 pandemic.



Photo: Darren Hull / UBC Brand & Marketing

DR. DEBORAH BUSZARD APPOINTED INTERIM UBC PRESIDENT

After UBC's 15th president, Santa J. Ono, left in mid-October to become president at the University of Michigan, Dr. Deborah Buszard assumed the role of UBC's Interim President and Vice-Chancellor. Dr. Buszard was the deputy vice-chancellor and principal of the UBC Okanagan campus between 2012 and 2020, where she provided leadership as a core member of UBC's executive team. "I enjoyed eight years with the brilliant community there," said Dr. Buszard. "I am delighted to have the opportunity to once again be part of the larger UBC community of students, faculty, and staff."

Originally from the U.K., Dr. Buszard's research background is in plant science, and her current scholarly interests are in global agriculture, food innovation, and sustainability. Prior to joining UBC in 2012, she was a founding member of the College of Sustainability at Dalhousie University and served as dean of Agricultural and Environmental Sciences at McGill University and as associate vice-principal of its Macdonald campus.

Dr. Buszard will continue in her new role until the Board of Governors has completed its search for the university's next president. "We look forward to working with Dr. Buszard to continue progressing the university's core purpose of teaching and research as well as furthering key strategic initiatives," said board chair Nancy McKenzie. "We are confident that in partnership with the UBC executive and deans, Dr. Buszard will build on the success of recent years and continue to grow UBC's reputation as a globally-leading centre of teaching, learning and research."

IN MEMORIAM

50s

MARGARET JOAN LITTLE, BHE'51

It is with love in our hearts that the family of Margaret Joan Little (née Braim, daughter of Mary Edwards and John Gordon Braim) announce that she passed peacefully on Thursday, June 11, 2020, in Sidney, B.C., in the comfort of her home. She departed quietly with a smile. She will be missed deeply by her daughters Donna Little, Sharon Little (Rick Hadash), and all her dear friends and those that she touched throughout her life.

Margaret was born in Vancouver on July 1, 1929, and began her art career very early on, entering shows, winning awards, and finding her form of creative expression. She graduated from UBC with a degree in home economics, enjoyed tennis lessons, art courses, and her favourite thing: chocolate milkshakes. After marrying in 1954, she lived with her family in various cities across Canada and Massachusetts, raised her children in London, ON, and spent one year in Lausanne, Switzerland. She moved to Salt Spring Island, B.C., in 1987, where she immersed herself in the artistic community. Eventually, she settled in the beautiful seaside community of Sidney, B.C., in 2002.

Her life and her purpose were her art, and she was extremely gifted in utilizing its many forms and mediums. She was an amazing mother, a good friend, lived with integrity, and kept to her values. She was honest and kind, compassionate and loving, had a mischievous sense of humour, and yet was quite pragmatic. She was strong-willed, independent, intelligent, and was in many ways born before her time. She loved the quiet and was always grateful for the simple things in life. She was one of a kind and made an impression on those that were lucky enough to know her.



WILLIAM GRANT, BA'56

Col (ret'd) William (Bill) Edward Grant, CD

November 27, 1934 – November 11, 2020

After a life well lived, Bill passed away peacefully at home by his wife's side on Remembrance Day – fitting timing for a veteran who proudly devoted 41 years of service to his country.

Bill was born in Vancouver and graduated from UBC with a degree in history. He had over 37 years of commissioned service in the Canadian Armed Forces in tactical command control, communications, and intelligence. Eighteen of these years were out-of-country: residing in six countries and representing or officially visiting an additional 20 countries on behalf of Canada. His career was highlighted by several notable assignments including serving as second-in-command, 56 Canadian Signal Squadron, United Nations Emergency Force, Egypt, as well as a series of increasingly senior appointments: Commanding Officer, 4th Canadian Mechanized Brigade Group Headquarters & Signal Squadron, Soest and Lahr, Germany; chief, Policy and Requirements Branch, NATO HQ; Canadian Forces attaché, Prague, Czechoslovakia (pre-democracy period); and Canadian Forces attaché in Seoul, Korea. During his five years in Seoul he also served as chief, Canadian Liaison Group to the United Nations Command, and a member of the Military Armistice Commission, Panmunjom. His final posting found him back in Ottawa as director, Foreign Liaison for the Department of National Defence.

Bill then spent five years as the director, Canadian Business Development for TRW Canada. In his retirement years, he viewed every day as an adventure; he again travelled the world.

He was a soldier, a scholar, a true gentleman, kind, and generous. An honourable man indeed.



MICHAEL FRASER, BASc'58, MASc'66

Michael John Fraser, age 83, passed away at home on October 5, 2019.

Mike was born on April 30, 1936, in Nelson, B.C., to James Angus Fraser and Margaret Louise Fraser. He is survived by his wife of 61 years, Eleanor Lindsay Fraser; daughter Carmen Fraser and her son Adagio of Grass Valley, CA; and son Mark Fraser, his wife, Angela, and their children, Grace and Jeremy of Tucson, AZ. He is also survived by brothers Dick Fraser (Kitsy) of Surrey, B.C., and Bill Fraser (Linda) of Parksville, B.C.; sister Deborah Hunt (Patrick) of Victoria, B.C.; and cousin, Grover Sinclair (Carol) of Vancouver, B.C.

Mike studied metallurgical engineering at UBC, where he played basketball with the Thunderbirds and was a member of Beta Theta Pi fraternity. He worked in the steel industry in Canada, and then the international iron ore, copper, and molybdenum industries with Marcona Corporation, Cyprus Minerals Company, and Performance Associates after moving to the U.S. in 1966.

Mike was a fine pianist: music was his passion. He was active in the Sons of Orpheus, Tucson's male choir, serving on their board, holding weekly "note bashing" sessions, and contributing numerous musical arrangements to their repertoire. World traveller, avid reader, book collector, and lover of history and literature, Mike was a life-long learner with an impressive encyclopedic memory bank. He was invincible in Trivial Pursuit and crossword puzzles alike. Mike's enthusiastic, positive outlook and his willingness to help others led him to volunteer building houses for Habitat for Humanity in Tucson. He was a great correspondent and family historian, maintaining connections with family, friends, and colleagues from all phases of his life. Mike had the good fortune of being multi-talented yet remained



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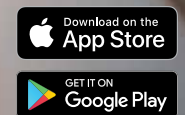
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humble to the core. Mike's kindness, generosity, and graciousness will be truly missed.

60s

PETER ALLARD, BA'68, LLB'71

Peter Andrew Allard, a beloved brother, uncle, great uncle, and friend, passed away on June 11, 2022, in Cabo San Lucas, Mexico.

Son of Dr. Charles Alexander Allard (Edmonton) and Effie (Bettie) Cameron Dallamore (Vancouver), Peter was born in Boston 15 minutes after his twin brother Charles (Chuck) Richard Allard on October 29, 1946, at the Boston Lying-In Hospital. Peter was the fourth of six siblings, including Cam, Judy, Chuck, Cathy, and Tony.

Peter grew up in Vancouver and attended Queen Elizabeth Elementary School and Lord Byng Secondary School in Point Grey. He received an undergraduate degree in arts with a major in history from UBC in 1968. He graduated from UBC Law in 1971 and went on to name UBC's law school in 2015 with the largest gift ever to a Canadian law school. Peter articulated and practiced for the law firm of Barbeau, McKercher, Collingwood and Hanna. In 1976, he formed Allard & Company, where he specialized in property law.

In 1993, Peter established the Highbury Foundation, which has supported educational institutes, universities, and countless charities. He also personally funded the Graeme Hall Nature Sanctuary in Barbados. In 2012, he established the Allard Prize for International Integrity.

Peter was an original. He was a lawyer, benefactor, passionate advocate, news buff, and world traveller. He championed the underdog and fought uphill battles on points of principle, and advocated for free speech and justice, gay rights, and equality.



Peter's generosity reached far and wide. His family always knew they could count on him. He had friends from all over the world who will miss his contagious laugh, giving heart, and quick-witted sense of humour – all true testament to a life well lived and a person well loved.

70s

(ROBERT JOHN) MICHAEL GUNDER, BA'76, MA(Planning)'81

Michael Gunder passed away unexpectedly in his sleep in the early hours of March 14, 2021, just two weeks after his 67th birthday. He had moved to Cyprus in 2019 after retiring from his position as associate professor at the University of Auckland in New Zealand, where he obtained a PhD in Planning in 1994. Throughout his 25 years there, he rose to prominence as a leading theorist in planning philosophy, as the managing editor of the scholarly journal *Planning Theory*, and as the author of numerous influential academic articles and book chapters. With Jean Hillier he co-wrote *Planning in Ten Words or Less: A Lacanian Entanglement with Spatial Planning in 2009*, co-edited *The Routledge Handbook of Planning Theory* in 2017, and at the time of his death, was co-editing the forthcoming *Handbook on Planning and Power*, to be published in 2022.

Share your memories of Mike at UBC with birgitte.jorgensen@alumni.ubc.ca.



80s

WILLIAM LEON CRAIG CAMPBELL, BCom'80

Craig was born in Vancouver on February 14, 1956. He attended Shaughnessy Elementary, Eric

Hamber Secondary, and UBC, where he was a member of the Beta Theta Pi fraternity and a member of the Big Block Club.



His first year of UBC was in science. He then decided to take a year to travel. On returning to Vancouver, he enrolled in the Faculty of Commerce.

Craig played soccer from a young age and continued to do so as a UBC Thunderbirds team member from 1974 to 1978. He was a member of the 1974 team that won UBC's first ever national championship.

Craig started his professional career as an articling student with Price Waterhouse and received his chartered accountant designation in 1981. He worked on forestry industry audits for the firm's larger clients before moving into the consulting practice. Craig was admitted to the firm's partnership in 1995. From 1996 to 1999 he was based in Montreal where he established PWC's eastern forest industry practice.

Craig was a frequent speaker at forest industry events across the country and was often called upon by the media for his views on trends shaping the industry. He retired from his role as a Vancouver consulting leader in 2011.

Craig lived life to the fullest. He knew how to work hard and play hard. He was a true adventure seeker who travelled extensively, enjoying four FIFA World Cup tournaments, three Olympic games, and several Hong Kong and other Rugby Sevens.

Craig showed amazing courage in the way he lived his life and dealt with his aphasia during his later years. He was an inspiration to everyone who knew him. Although Craig's life was shorter than his family and friends wished, it was filled to the brim with joy, fun, kindness, and laughter.

PAUL WALLACE, BArch'86, BEd'00

Paul Gregory Wallace died on March 23, 2021, in Vancouver, B.C., at the age of 65.

Paul was a valued part of the Gladstone Secondary School community for over 20 years and recently a cherished member of the Vancouver Prostate Cancer Support Group.

The medical professionals at BC Cancer provided outstanding care for Paul. The South Community home health program also went above and beyond to provide home support during his final days.

Paul received a Bachelor of Arts in Psychology from the University of Waterloo in 1979. He studied abroad in Hong Kong as a UBC student in 1984, received a Bachelor of Architecture from UBC in 1986, and a Bachelor of Education from UBC and BCIT in 2000. He was a member of MAIBC, the Architectural Institute of BC.

Paul worked for Jo Wai Architects from 1989 to 1996, Hancock Brockner Ing Wright Architects from 1997 to 1999, and the Vancouver School Board (Gladstone Secondary School) from 2000 to 2020. He was the assistant head coach and head coach for the Gladstone robotics team. He was also a board member for the Killarney Recreational Centre.

Paul enjoyed travel, kayaking, hiking, sailing, hockey, biking, swimming, and windsurfing. He loved a good cup of coffee and adored living in Vancouver.

Paul was actively involved with the Vancouver Prostate Cancer Support Group and a team member for the dragon boat team Butts in a Boat.

In his memory, please consider donating to the Canadian Cancer Society, The Prostate Cancer Foundation BC, the BC Cancer Foundation, and the Red Cross Equipment Loan Program.



UBC. He practiced labour law in B.C. for more than 25 years. Greg excelled at law because he had an analytical mind and loved a spirited debate.

Greg served on the board of CH.I.L.D. Foundation for many years. More recently, he served on the parish council of St. Philip Anglican Church. This past year he was awarded the "Courage to Come Back" award by Coast Mental Health Foundation.

Most notably, Greg centered his life around his family. He could be found in the kitchen having lively discussions with his daughter, teaching his son about garden work, or sharing a bag of chips with his dog, Ollie. Greg enjoyed trips to Tofino, walks on the beach, and good food. His quick wit, superior cooking skills, booming voice, huge laugh, and big hugs will be fondly remembered and greatly missed.

A celebration of life took place at 1:00 p.m. on September 28, 2021, at St. Philip Anglican Church in Victoria, B.C. Please consider a donation to CH.I.L.D. Foundation or the Leukemia Research/Hematology Research program via VGH/UBC Hospital Foundation. Please also consider joining the stem cell registry. You could save a life. Our deepest gratitude to Dr. Sujaatha Narayanan.



GREGORY RENE ANCTIL, LLM'92

November 30, 1967 – July 10, 2021

It is with profound sadness that we announce the passing of Greg. He died after a lengthy battle with Crohn's disease and acute myeloid leukemia; he fought so hard with humour and grace.

The memory of Greg is cherished by his wife and best friend of nearly 19 years, Karilyn Walker; his children, Emmett, and Madeleine; his mother, Jeanette; his sister, Carole (Peter); his parents-in-law, Bud, and Vivian Walker; and his extended family and friends. He is predeceased by his father, Rene.

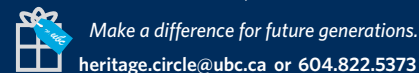
Greg obtained an undergraduate degree in psychology from the University of Calgary and a law degree from



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- CREATE BOLD NEW ARCHITECTURE
- INSPIRE FUTURE GENERATIONS WITH WORDS & ART
- UNLOCK GENOMIC MYSTERIES
- TRANSLATE RESEARCH INTO REAL-LIFE SOLUTIONS
- PRESERVE CULTURAL HERITAGE
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THE LAST WORD



Photo: Jack Alexander

bbno\$ ("baby no money")

Fun, food, and fulfilment.

WHO WAS YOUR CHILDHOOD HERO?
My dad and brother.

DESCRIBE THE PLACE YOU MOST LIKE TO SPEND TIME.
World of Warcraft – Azeroth.

WHAT WAS THE LAST THING YOU READ?
Nonviolent Communication

WHAT OR WHO MAKES YOU LAUGH OUT LOUD?
Friends.

WHAT'S THE MOST IMPORTANT LESSON YOU EVER LEARNED?
Have fun.

WHAT'S YOUR IDEA OF THE PERFECT DAY?
Good food.

WHAT WAS YOUR NICKNAME AT SCHOOL?
Gumuch.

▼
CLAIM TO FAME
bbno\$ (AKA Alexander Leon Gumuchian) is a Canadian rapper and singer from Vancouver.

▼
UBC CONNECTION
He has a degree in kinesiology from UBC Okanagan and used to be a competitive swimmer.

▼
FUN FACT
His breakthrough single "Lalala" was released on June 7, 2019 – the day of his graduation. It has over 850 million plays on Spotify, although many will recognize his songs from TikTok, where they've gone viral.

➔
MORE
Listen to our *From Here Forward* podcast with bbno\$ magazine. [alumni.ubc.ca/bbno\\$](http://alumni.ubc.ca/bbno$)



WHAT IS YOUR MOST PRIZED POSSESSION?
Time I've made time for myself later in life.

WHAT WOULD BE THE TITLE OF YOUR BIOGRAPHY?
Literally No Idea WTF Happened Here

IF A GENIE GRANTED YOU ONE WISH, WHAT WOULD IT BE?
To look like Shawn Mendes. His bone structure is perfect.

WHAT ITEM HAVE YOU OWNED FOR THE LONGEST TIME?
My little blanket ha, ha – still use it as a pillow.... Ladies?

WHAT WOULD YOU LIKE YOUR EPITAPH TO SAY?
"Let's get this money."

IF YOU COULD INVENT SOMETHING, WHAT WOULD IT BE?
A bed that is ergonomically perfect, so you fall asleep immediately.

IN WHICH ERA WOULD YOU MOST LIKE TO HAVE LIVED?
The 1980s.

WHAT ARE YOU AFRAID OF?
Too many things to count.

WHAT IS YOUR LATEST PURCHASE?
Supposedly, I've just spent \$17,000 at 7-Eleven. Yes, I filed a police report.

NAME THE SKILL OR TALENT YOU WOULD MOST LIKE TO HAVE.
The ability to speak every language in the world.

WHICH THREE PIECES OF MUSIC WOULD YOU TAKE TO A DESERT ISLAND?
Lalala, Lalala and... Lalala?

WHICH FAMOUS PERSON (LIVING OR DEAD) DO YOU THINK (OR HAVE YOU BEEN TOLD) YOU MOST RESEMBLE?
Johnny Depp.

WHAT IS YOUR PET PEEVE?
When people chew with their mouth open or show up late.

DO YOU HAVE A PERSONAL MOTTO?
Look above.

WHAT'S THE MOST IMPORTANT THING LEFT ON YOUR BUCKET LIST?
Man, I could die happy right now, in all honesty.



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