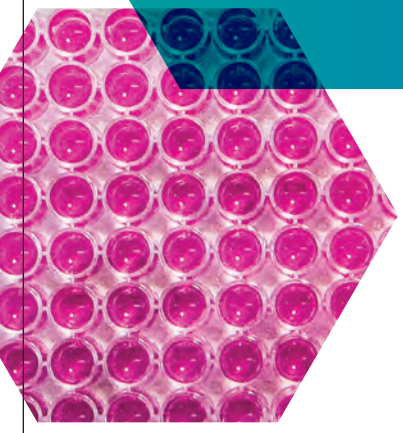
Annual Report 2022



TRUDEAU INSTITUTE


BECKMAN
OLYMPUS

Dear Friends of Trudeau Institute:

In the 10 years I've worked at Trudeau Institute, the driving force that motivates our entire team—a desire to make world-changing discoveries—hasn't changed.

What has changed, however, is the road we must take to achieve those breakthroughs.

Where Trudeau once relied largely on government grants to fund basic research, it is now more challenging for small, independent institutions such as ours to access such resources. Increasingly, we operate in the realm of applied science, translating lab discoveries into clinical results.

In writing to you for the first time as director of Trudeau Institute, I'm proud to say: Our team has leaned into this pivot. Trudeau is evolving toward a new model of sustainability whereby our future is secured through a complement of strategies that you'll see described within these pages.

Foremost among them is our commitment to finding new partners with whom we can leverage our expertise to transform medicine together. That growth is perhaps most evident at TICRO Bioservices, our research-services arm. Over the past few years, the team has nearly tripled to meet rising demand.

The testing done at TICRO gives pharmaceutical companies the confidence to bring their early-stage drug candidates into clinical trials. It's work that has worldwide impact: Six of the top 20 largest pharmaceutical companies are TICRO clients.

TICRO's growth supports the groundbreaking work for which the Institute has long been known, such as the quest to find streamlined TB treatments and combat insect-borne diseases such as Zika and other viral and bacterial threats. This work, too, is thriving, as our expert researchers work with a growing constellation of institutions committed to the same goals as we are.

While it isn't easy to execute change, we have the utmost confidence in our team to deliver. Examples of that abound: From the earliest days of the COVID pandemic, every one of our staff and scientists proved that we could be as nimble as necessary to meet new challenges as they arose.

Your support plays a critical role in our ongoing operations, directly funding Trudeau laboratories and scientists who seek to uncover new landmark discoveries and our work with partners who strive to protect the world from infectious disease threats. We continue to make a significant impact and I'm proud to lead Trudeau as we achieve new successes and hope you will join us.

Sincerely,

William B. Chapin

William B. Chapin
Director

GOING VIRAL:
SHELTON BRADRICK AND TICRO BRING TRUDEAU SAVVY TO THE WORLD

The first life on Earth, microorganisms that emerged near super-hot undersea vents, appeared about 3.5 billion years ago. The first viruses arrived almost immediately after that. By some estimates, there are 10 nonillion viruses on the planet (that's a 1 followed by 31 zeros); we couldn't get away from them, even if we tried.

If he needed a reminder of that, Dr. Shelton Bradrick just has to look down: He's tattooed a virus particle on his left leg, and a diagram of an RNA molecule on his right forearm.

"Lots of viruses co-exist with us. They don't bother us, and we don't bother them," says Bradrick, a molecular virologist who joined Trudeau in March. "They've been around for a long, long time. It's just a natural part of life."

> **"I'm just fascinated by viruses, what they can do, and how they replicate—just really fundamental sort of mechanisms of how they achieve synthesis of their proteins."**

Not all, though, are so harmless. And for Bradrick, who has spent a career learning the intricacies behind the ways that viruses replicate, his new job will give him a chance to combat infectious diseases on a global scale.

Bradrick is the new senior study director at TICRO, Trudeau's contract research arm, and a principal investigator at the Institute. There, he works with pharmaceutical and biotechnology companies, government and academic laboratories, and health-oriented philanthropic organizations as they seek breakthroughs against viral, bacterial and other infectious diseases. For those organizations, the ultimate goal is to bring new vaccines and treatments to market. But the critical early-stage testing done in cultured cells and animal models at TICRO can give clients the confidence to send their drug candidates to clinical trials in humans, or head back to the drawing board.

As important as TICRO is to its clients' goals, it's just as vital to the future of Trudeau itself. TICRO is the linchpin for Trudeau's financial growth: While the Institute's faculty continues to pursue grant-driven research in a highly competitive environment, the revenue generated by TICRO provides a foundation for that work.

With more than than $4 million in signed contracts last year, an increase of 35% from 2021, the strategy is beginning to pay off.

Bradrick is a strong candidate to bridge the worlds of contract and in-house research, as he's had a foot in both worlds. Most recently, he was a scientist at MRIGlobal, a Kansas City-based company that worked with the government to protect troops and others against bioweapons, as well as validate diagnostics for COVID-19.

Prior to that, he held several positions in academia. He studied coxsackievirus, which leads to inflammatory heart disease, while a Ph.D. candidate at the University of Nebraska Medical

Center. From there, he went to Duke University, where he worked on the virus that causes hepatitis C, and later to the University of Texas Medical Branch, where he worked on flaviviruses—insect-borne diseases that cause illnesses such as Zika fever, Dengue fever and West Nile encephalitis.

The common thread in that research: All those maladies are caused by RNA viruses, which use a bit of genetic material to trick the body's cells to make copies of itself. SARS-CoV-2, the virus that caused COVID-19, is an RNA virus, too.

He latched onto the work as an undergraduate, when, after doing well in a molecular biology class, a professor invited him to join his laboratory. There, they studied the process by which cells produce proteins—a process that also plays a critical role in the spread of viruses.

"I'm just fascinated by viruses, what they can do, and how they replicate—those fundamental mechanisms governing how they achieve synthesis of their proteins," he says.

At TICRO, Bradrick works one-on-one with clients to determine their goals, and design tests that confirm their hypotheses. The specialized knowledge needed to carry out this early-stage research has made TICRO an increasingly valuable partner, as government and industry pares their internal capabilities to save on costs.

And while TICRO is small compared to other contract research organizations, it offers a level of service competitors don't. "Some of the competitors out there are very large organizations, and they don't offer the same personal touch or build the same relationships you can get at a place like TICRO," Bradrick says.

The other differentiator between TICRO and other labs are the staff, he says. "The important people on this team are the technicians—and I'm really impressed by the team that's been assembled here," he says.

Eventually, Bradrick hopes to get back into the lab himself. "At Trudeau, we have a hybrid environment, where there are opportunities to go after independent funding for areas that we're personally interested in as well," Bradrick says. "So once I get settled, I plan to pursue those. My primary mission at TICRO today is driving new business relationships. But eventually I'd like to redevelop my own research program as well."

Though he's been here only a few months, he has immersed himself in the Institute's history, dating back to its founding as a research center for tuberculosis. "I'm still learning about that legacy," he says. "I'm looking forward to carrying that forward. And making sure that in another 100 years we're still around and doing this work."

TRUDEAU RESEARCHERS **LEAD KEY ZIKA FINDING**

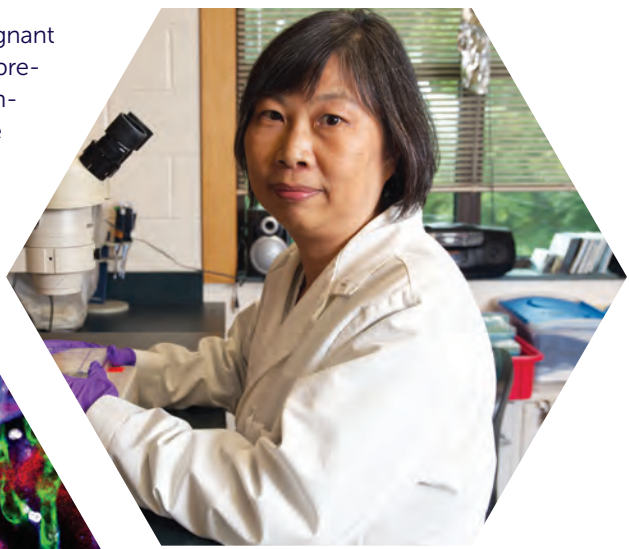
A pair of Trudeau Institute researchers were part of a team whose work may help unravel why the 2015 Zika outbreak led to thousands of miscarriages, stillbirths and cases of permanent birth defects.

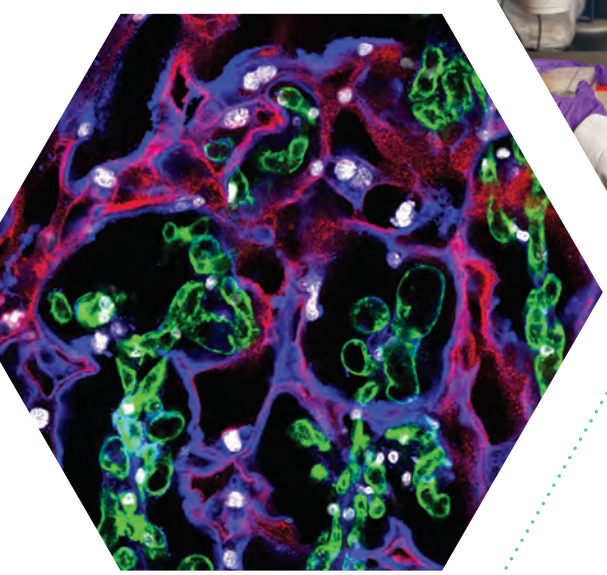
Drs. Marcia Blackman and In-Jeong Kim, along with researchers from the Texas Biomedical Research Institute, published findings in Science Translational Medicine showing that female marmosets are more likely to transmit the Zika virus during pregnancy if they have been previously infected by a different virus, dengue.

The study showed that pregnant marmoset monkeys that had previously been infected with dengue passed 100,000 times the amount of Zika virus to their fetuses than marmosets that had never had dengue.

"We think Zika virus has the ability to exploit the immune system's defense mechanisms," said Dr. Kim, a viral immunologist. "This likely enables the virus to cross the placenta, which normally acts as an immune barrier between mother and fetus, leading to disruption of fetal neuronal development."

It has long been hypothesized that some viruses can use antibodies, typically the body's primary defense, as a means to enter host cells and replicate. This phenomenon, known as "anti-





"We think Zika virus has the ability to exploit the immune system's defense mechanisms," said Kim, a viral immunologist. "This likely enables the virus to cross the placenta, which normally acts as an immune barrier between mother and fetus."

body-dependent enhancement (ADE)," may play a role here.

As the researchers considered which antibodies the Zika virus might exploit to breach the placenta, dengue was an obvious culprit. It is common in tropical regions, infecting over 390 million individuals annually. And in addition to being structurally similar to Zika, both viruses are transmitted by Aedes mosquito bites.

Kim emphasized the importance of the marmoset model for answering critical questions about pregnancy.

"Marmosets exhibit similar consequences as humans following Zika virus infection during pregnancy," she said. "This model can help us to better understand the complex interplay between these viruses and the immune system. The knowledge will be instrumental in developing more effective vaccination and therapeutic strategies to protect pregnant women from the potentially devastating outcomes of Zika virus infection during pregnancy."

Genetic Messenger

DR. NADIA ROSENTHAL, whose work with mouse genetics has led to a deeper understanding of human disease, delivered the 2022 Ralph M. Steinman Memorial Lecture. Rosenthal is scientific director of The Jackson Laboratory in Bar Harbor, Maine, a Trudeau research partner that studies cancer, addiction, aging, Alzheimer's and dementias, rare disease and more. Her talk focused on pandemic preparedness and genetic susceptibility to disease. Rosenthal is an expert on muscle and cardiac developmental genetics and the role of growth factors, stem cells and the immune system in tissue regeneration. She is also chair in cardiovascular science at Imperial College London.

FINDING **NEW CURES**

Of the 4,000 or so genes that make up *Mycobacterium tuberculosis*—the pathogen that causes TB—about 700 or so are vital to keeping it alive. If any of those hundreds of genes are disrupted, the bacterium itself will ultimately die.

For thousands of years, tuberculosis was untreatable, killing most people infected with it. That didn't change until the 1940s, when antibiotics emerged and the first TB drug, streptomycin, was developed. By slowing the rate at which the TB bacteria grew, antibiotics afforded the body's immune system enough time to build an attack and defeat the infection. Since then, scientists have added about three dozen different antibiotics to the roster of drugs that fight TB, sparing millions of lives.

All of those antibiotics, though, target just a handful of the bacterium's critical genes. And after 80 years of facing the same attacks, tuberculosis, an eternally patient foe, has adapted. New strains of the disease have emerged. Some are merely resistant to existing antibiotics, requiring multiple courses of drugs working in concert. Others are entirely immune to current medical treatment.

To find new cures, a small team of researchers at Trudeau Institute spent the past six years probing the tuberculosis bacterium to see if any of the hundreds of unexplored genes could offer a new entry point to fight the disease.

And they're closer than ever to making that happen.

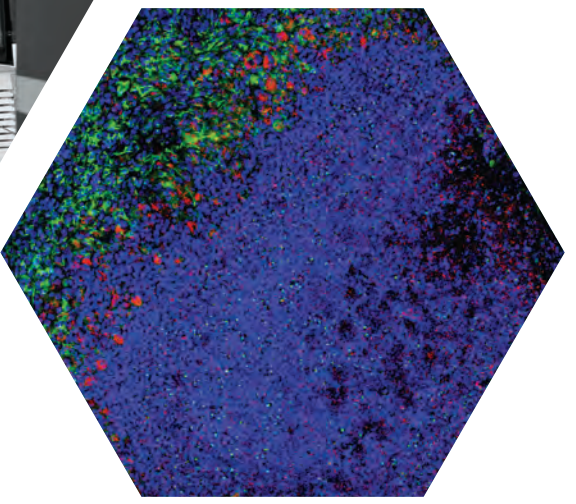
"From the start, we've been trying to find new vulnerabilities, new molecular targets," said Dr. Felix Sheinerman, a principal investigator at Trudeau who heads the Institute's chemogenomics drug discovery efforts. "This year, we've found new targets that can be modulated by small, drug-like molecules. Those molecules aren't really drugs, and still need to be improved by chemists. But they're exciting findings."

The team, led by Sheinerman along with Dr. Michaelle Chojnacki and Dr. Brian Weinrick, has built its work around a database of 70,000 drugs and drug candidates dubbed the "Trudeau Virtual Drug Collection." Unlike a pharmacy, with shelves full of bottles, this collection exists only on a computer, as a collection of 2D and 3D renderings of molecules. Some of those chemical compounds made it through clinical trials, becoming commercial drugs. Others were evaluated in animals or even humans before being abandoned. They've been developed over decades and all around the globe.

While none of the molecules in that vast database were developed to fight tuberculosis, the Trudeau team was hopeful that some of them would prove effective against the disease. That's because drugs often interact with diseases different than the ones they were developed to fight. The anti-COVID drug Paxlovid, for instance, reached market as quickly as it did because its development started from a molecule designed to target a mechanism similar to one found in SARS-CoV-2, the virus that caused the disease.

Trudeau researchers are taking the same approach as they look for new avenues to fight TB. "Our approach is: Out of this large number of genes, are there any that make proteins that look similar to ones that are already addressed by existing drugs?" Sheinerman asked. And in a process that uses data generated in the pharma industry over several decades, computers sorted through those molecular renderings to find matches.

Of course, several existing drugs already target TB. The need to discover a novel cure for a disease most casual observers in the U.S. probably consider long settled is because of



resistance. It's not a new idea; shortly after winning the Nobel Prize for his discovery of penicillin, Alexander Fleming was already wary of this new class of antibiotic superdrugs losing its teeth. In a 1945 interview with The New York Times, he warned of the risk of administering "too-small doses, so that, instead of clearing up the infection, the microbes are educated to resist penicillin and a host of penicillin-fast organisms is bred out which can be passed on to other individuals and perhaps from there to others."

His fear has been borne out over time. In 2021, 10.6 million people were diagnosed with tuberculosis. Half a million of those cases were classified as multi-drug resistant, meaning they bucked standard treatment.

That resistance is exacerbated by tuberculosis' lengthy treatment regimen, and the significant side effects caused by the drugs used to fight it. Because the populations most susceptible to TB are also the ones that have the most difficult time accessing medical care, they often abandon treatment before it is complete—which leads to the "too-small doses" that Fleming warned of. Then, often, the disease returns, inured against the same medicines that have treated them in the past.

That resistance ultimately informs a new, stronger generation of *Mycobacterium tuberculosis*. Imagine a bully repeatedly kicking you in the shins, day in and day out: Eventually, you'd recognize your tormentor and protect yourself. In the case of genetic resistance, though, every kid on every playground everywhere eventually acquires the same defense mechanism. "When it comes to bacterial resistance to drugs, those mechanisms of resistance are genetically encoded," said Weinrick, a Trudeau principal investigator and lead of the TB team. "So all of the descendants of that resistant bacteria will have that resistance."

In searching for new drugs, Trudeau researchers need to overcome that encoded resistance. But they've also discovered that TB isn't like other diseases: For reasons they don't completely understand, it is far hardier, far more resilient, than almost every other bacterial foe they face. While antibiotics take

(L-R): **Dr. Michaelle Chojnacki, Dr. Brian Weinrick and Derek Bernacki stand on the steps of Little Red, where E.L. Trudeau conducted his original tuberculosis experiments in the 19th century.**

care of most infections within days of their first dose, even the quickest course of TB medication takes four months to complete, and usually much longer.

"We can see that when we treat with some TB drugs, in a test tube, we can kill 99.9% of those bacteria within just a few days," Weinrick said. "But if you have a million bacteria in a test tube, and you killed 99.9%, you still have a thousand bacteria in that test tube, and those bacteria are then able to acquire those resistance mutations and even grow in the presence of the drug."

Those remaining cells are known as persisters. Finding a way to kill them—and quickly, to reduce that onerous treatment schedule—is driving the team's research.

"Past antibiotic discovery programs were really based on growth—looking at things that interfere with the growth of the bacteria," Weinrick said. "The way that we are analyzing these molecules focuses more on what is able to actually kill the bacteria. That's a key differentiator of our work."

Understanding that is a question of genetics, says Chojnacki, a Trudeau principal investigator and lead of the Institute's Innovative Therapeutics program.

"With TB, some genes are important for growth," she said. "But then there are other genes that are important just for survival. The cells aren't really growing, they're just hanging out waiting for conditions to improve."

That's a unique approach that makes a hard tack from typical development of antibiotics. In fact, relatively few new antibiotics have come to market since the 1960s—"the golden age of antibiotic discovery," as Chojnacki said. Economics are partly behind that: Pharmaceutical companies make more money developing drugs that address chronic diseases, and need to be administered over and over, rather than ones like antibiotics that actually cure disease.

Now, years into their project, they've lined up several candidates that meet

the dual requirements of killing bacteria while also targeting new vulnerabilities. Some promising findings were discarded after it was discovered they simply retraced already-worn paths; an effective bactericide that goes after existing genetic targets will soon run into the problem of resistance.

But as Trudeau's researchers acknowledge, merely identifying candidates isn't enough. Now, those promising molecules need to be converted into promising drug candidates, and for that, they need to turn to partners with expertise doing that. TB drugs need to be taken in pill form, for example, because most people who need them don't have access to regular transfusions. Some molecules show potential, but are too toxic to be administered to humans in their current form. And still more need to be reformulated to deliver the maximum punch. "So if a drug was optimized for something like a blood cancer, that might not get to the lung, where the TB is," said Derek Bernacki, a Trudeau research scientist.

"A key differentiator for what we're doing is all of the past antibiotic discovery programs were really based on growth—looking at things that interfere with the growth of the bacteria," Weinrick said. "The way that we are analyzing these molecules focuses more on what is able to actually kill the bacteria."

Already, the Trudeau team has entered partnerships with several commercial and university labs to work on refining the product, and, with luck, ultimately get to clinical trials.

At the same time, the team is finding other drug-resistant diseases that can be addressed with the same computer-driven approach it is bringing to TB. In a recent paper, Trudeau researchers found a possible candidate to treat *Mycobacterium abscessus*, which infects more than 200,000 people a year in the U.S. Individuals with cystic fibrosis are especially prone to the disease, which is related to tuberculosis; much like TB, it is inherently immune to many treatments, and can require up to a year of antibiotics to defeat.

For Chojnacki, who has been with Trudeau two years, the last eight months have brought rapid progress in their work. "I think it took some time for all of us to settle in together," she said. "But we're doing a lot. There was a lot of groundwork that needed to be laid, and we've made some pretty big discoveries around how our molecules function. I'm excited."

Weinrick spent much of his career exploring the mechanics of tuberculosis before focusing his attention on drug discovery efforts. The hope of a breakthrough, he said, is fulfilling.

"It's incredibly exciting, I think, when we learn to understand how these compounds that we're identifying are able to work, and to anticipate applying that knowledge to something that could significantly shorten treatment of TB," Weinrick said. "Even the most effective treatments in development now still require four months of treatment for a fully drug-sensitive strain. And that's just entirely too long. It's far longer than any other kind of bacterial infection you can imagine. If we're able to cut that down to even two months, it would be a huge change."

SIBLING **SUPPORT**

For children of a certain age who grew up in Saranac Lake, tuberculosis, and the name "Trudeau," are part of their shared experience.

As late as the 1960s, students received compulsory annual chest X-rays to scan for the dread disease. And until the early 1950s, lunch at the local school lasted 1½ hours in order to allow school-aged "tray boys" to deliver meals to cure cottages in town.

Longtime Trudeau Institute donor Edwina (Win) Cormier remembers those things clearly from her childhood here. But she and her brother, Jack DeMattos, and sister, Andy Gibson, were even closer to the Trudeau legacy than that. Their parents, Jeanne and Jacques DeMattos, were friends with Trudeau Institute founder Francis Trudeau—and may have played a role in the Institute's birth: Francis' wife, Ursula, once gave a speech in which she recognized the couple for telling Frank to "go ahead and live his dream, and bring Trudeau Institute to fruition," Jack says.

All three of the DeMattos siblings continue to give today, supporting a legacy their parents believed in, while also helping Trudeau extend its reach into a third century. Donors like them help the Institute develop better treatments for tuberculosis and confront other infectious diseases as they emerge and threaten global health.

"I believe in science—I believe in healing," says Jack, a retired banker and college administrator. "So that's why I donate."

To Andy, Jack and Win, Trudeau isn't just synonymous with health; it's also synonymous with Saranac Lake itself. As children, they recall meeting out-of-towners who came to the village to take "the cure" for TB. They also knew doctors, scientists and other staff who worked at Trudeau, including their grandfather, a cell biologist at Rockefeller Institute in New York City, who occasionally conducted research out of the Trudeau Laboratory.

All those people contributed to the vitality of Saranac Lake. By giving, they ensure Trudeau Institute can continue to fill a similar role today.

"You're not just bringing scientists to the community. They have wives or husbands, and they contribute as well," says Andy, pointing to the Institute's importance to the local economy. Trudeau's workforce and their families shop locally, participate in local organizations, and help keep the region vibrant.

Preserving that vitality is important to the three, even though they each left their hometown years ago. Win, who once established an early computer-consulting business in the Adirondacks, has now lived in France 30 years; Andy, whose career took her to a state administrative post in Albany, left the region after working for a science center in Lake Placid in the 1970s.

"I believe in science—I believe in healing," says Jack, a retired banker and college administrator. "So that's why I donate."

What, in particular, sets this place apart?

"Donnelly's," quips Andy, referring to the renowned ice cream stand.

Her siblings laugh.

(Top, L-R): **Siblings Jack DeMattos, Andy Gibson and Win Cormier's support of Trudeau continues a family legacy that goes back decades.** (Bottom L, R): **Jeanne and Jacques DeMattos, who encouraged Francis Trudeau to establish the Institute.**

"And neighbors helping neighbors all the time," says Jack, who knows something about that: He once received the Saranac Lake Winter Carnival's Trudeau Award, given to a person who best exemplifies the carnival spirit. "If there's a need, people are there to help out."

"Saranac Lake was always known as the 'Friendly City' of the Adirondacks," says Win. "It's still the friendliest place that I've ever lived."

More than anything, the siblings are striving to follow the example their parents set for them.

"Our parents taught us to be a very civic-oriented family," Andy says. "We go out and we help others."

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Trudeau Institute welcomed two new members to its Board of Trustees in 2023: A seasoned pharmaceutical executive who led the growth of one of the world's most popular allergy medications, and the leader of an academic medical research center that garnered over $250 million in sponsored research.

STEVE ANDRZEJEWSKI is an experienced CEO who has spent more than 30 years in the pharmaceutical industry, working with both small start-ups and large corporations. At Schering-Plough, he increased sales of Claritin from $150 million to $3 billion, and he doubled expected growth at King Pharmaceuticals, helping the company reach $2.4 billion in revenue. His strengths include business development, profit and loss management, fundraising, R&D, shareholder relations and direct manufacturing.

Today, Andrzejewski teaches health economics at the New York University Stern School of Business, and he is an entrepreneur-in-residence at Yale Ventures, which helps Yale University faculty and students bring breakthroughs to market. He holds an MBA from Stern.

DR. KEN BAYLES is vice chancellor for research at University of Nebraska Medical Center (UNMC). A bacterial geneticist by training, Bayles has been at UNMC since 2005, when he became the founding director of the Center for Staphylococcal Research. He has worked closely with the National Strategic Research Institute and was instrumental in creating the Nebraska Drug Discovery and Development Pipeline.

Bayles' research interests, funded by multiple NIH grants, have long focused on the role of bacterial cell death and its role in biofilm development. In recent years, Bayles has added Department of Defense-related research to his portfolio, including work on therapeutics and vaccines to counteract weapons of mass destruction, and compounds to protect against radiation exposure.

Bayles earned his Ph.D. from Kansas State University and completed his post-doctoral research at the University of Maryland, Baltimore County.

The Trudeau Institute acknowledges the National Institutes of Health for its vital ongoing support. As the nation's primary federal agency for conducting and supporting medical research, the NIH shares the Institute's mission to make medical discoveries that improve health and save lives.

We gratefully acknowledge all the federal employees who contributed through the Combined Federal Campaign.

FROM THE CHAIRMAN

I'm sometimes asked: How does an institution like Trudeau—in a beautiful but remote area, with just 65 scientists and other staff—make a lasting contribution to global health on our own?

The short answer is: We don't.

We do it by collaborating with institutions such as Purdue University and Regeneron, as we seek new ways to treat and prevent diseases such as tuberculosis, influenza and cystic fibrosis.

We do it while working with a growing roster of clients through TICRO Bioservices, our contract research arm. As world-class R&D organizations rely on our expertise in immunology, microbiology and virology to bring new drugs to market, we use that revenue to support our own groundbreaking research.

And we do it with the help of generous donors like you.

More than ever, Trudeau depends on relationships with other funding partners, scientific collaborators and donors to advance our mission of safeguarding human health and combatting the global health crises of the 21st century. These enormous responsibilities are, paradoxically, just the right size for an organization like ours: one that is small, nimble and independent, able to pivot to new challenges as they arise and sidestep the parochialism one often finds in government or academia.

Your support allows us to make a significant contribution to these global challenges while also reinforcing the generations-long commitment Trudeau Institute has had to our home in the Adirondacks. In the 19th century, E.L. Trudeau came here to seek a cure for TB, forever associating Saranac Lake with healing. In recent years, we've coordinated with local health authorities to confront the SARS-CoV-2 pandemic, launching initiatives to protect first responders and carry out testing when it was needed most.

Over the decades, we've also played a critical role in the health of the region's economy. That won't change. As we expand our connections to outside organizations, we'll attract even more educated, well-paid workers to a region that has sometimes struggled to maintain its population. Increasingly, we're elevating our efforts to be an anchor for a regional biotech industry as well. By training budding scientists through our Summer Undergraduate Research Program and partnering with other organizations, such as Ampersand Biosciences, we see a bright future on the horizon.

I'm proud to help guide Trudeau into this exciting era, and I'm grateful for your support as we get there.

Sincerely

Kip

Kip Testwuide
Chair, Trudeau Institute Board of Trustees

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FOUND IN TRANSLATION

Asked to describe her work as a consultant to dozens of tech start-ups over the course of her career, Marcene Sonneborn says she was a "translator." Not of language—but ideas.

Sonneborn, who sat on Trudeau Institute's board of directors for 25 years before stepping down last year, says she filled the same role here: Helping explain the significance and impact of the work done in our labs to others.

After all, she says, great science doesn't always speak for itself. Sometimes, discoveries need to be put into context, and complex concepts need to be simplified before audiences can fully appreciate them.

Sonneborn, who studied biology and psychology as an undergraduate before earning her MBA, spent nearly 40 years helping growing companies in fields such as nanotechnology, biotechnology and other emerging fields share their stories with the world. She was also a professor of practice at Syracuse University's School of Information Studies, where she taught classes in entrepreneurship and innovation.

At Trudeau, Sonneborn would approach researchers with a list of basic questions meant to sharpen their own approach to seek grants. Who will use this discovery? Who needs to hear this story? Why is it important?

"If I don't understand it, the people we're approaching for funding won't, either," she says.

Sonneborn says she'll miss the opportunity to interact directly with Trudeau's talented researchers. Even though she didn't become a scientist, her background in the field gave her the ability to understand the broad shape of their work—and the curiosity to delve into it. Helping them craft an approach to bring new knowledge into the world, she said, was especially satisfying.

As new diseases emerge, and unexpected scientific challenges arise, Sonneborn says Trudeau is an ideal place to take them on. "Trudeau is special," she says. "The opportunity to conduct research in a place so close to nature, with small teams, leads to many 'a-ha' moments."

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Grants fuel future researchers

A $100,000 grant from Hearst Foundations will provide more undergraduate students the opportunity to work with Trudeau Institute mentors while burnishing their prospects for graduate training programs and research positions.

Since 2013, more than 30 students have gotten immersive, hands-on experience in Trudeau's labs through our Summer Undergraduate Research Program (SURP). This latest grant, combined with ongoing support from Casella Waste Systems and Stewart's Shops, extends the program through 2024.

Students from institutions such as Clarkson University, Northwestern University, Rochester Institute of Technology, Stony Brook University, University of Arizona, and many others have participated in the program, working directly with our principal investigators on real-world challenges such as tuberculosis, SARS-CoV-2, Zika and other infectious disease threats.

"Several of our SURP alums have gone on to pursue their own doctorates and careers in infectious disease research," says Dr. Deb Brown, a Trudeau PI who leads the program. "In some cases, the students in this program get their first taste of hands-on biomedical research in our labs. We're grateful for the chance to expose even more students to this work."

Statements of Financial Position

FISCAL YEARS ENDED DECEMBER 31

ASSETS	**2022**	**2021**
Cash	$301,431	$921,255
Grants and contracts receivable, net	1,139,771	1,001,011
Investments	6,932,705	12,664,496
Prepaid expenses, supplies inventory and other receivables	739,024	695,122
Property, plant and equipment, net	12,375,398	13,378,267
Funds held in trusts	3,367,638	4,252,470
TOTAL ASSETS	**24,855,967**	**32,912,621**
LIABILITIES		
Accounts payable and accrued expenses	587,162	344,575
Deferred revenue		20,036
TOTAL LIABILITIES	**587,162**	**364,611**
CONTINGENCIES		
NET ASSETS		
Without donor restrictions		
Undesignated	14,272,622	21,503,505
Designated by the Board for the Edward C. Brewster Fund	4,000,000	4,000,000
	18,272,622	**25,503,505**
With donor restrictions		
Endowment		
Perpetual in nature	2,548,927	2,548,927
Time restricted for future periods	79,618	243,108
Funds held in trust	3,367,638	4,252,470
	5,996,183	**7,044,505**
TOTAL NET ASSETS	**24,268,805**	**32,548,010**
TOTAL LIABILITIES AND NET ASSETS	**24,855,967**	**32,912,621**

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