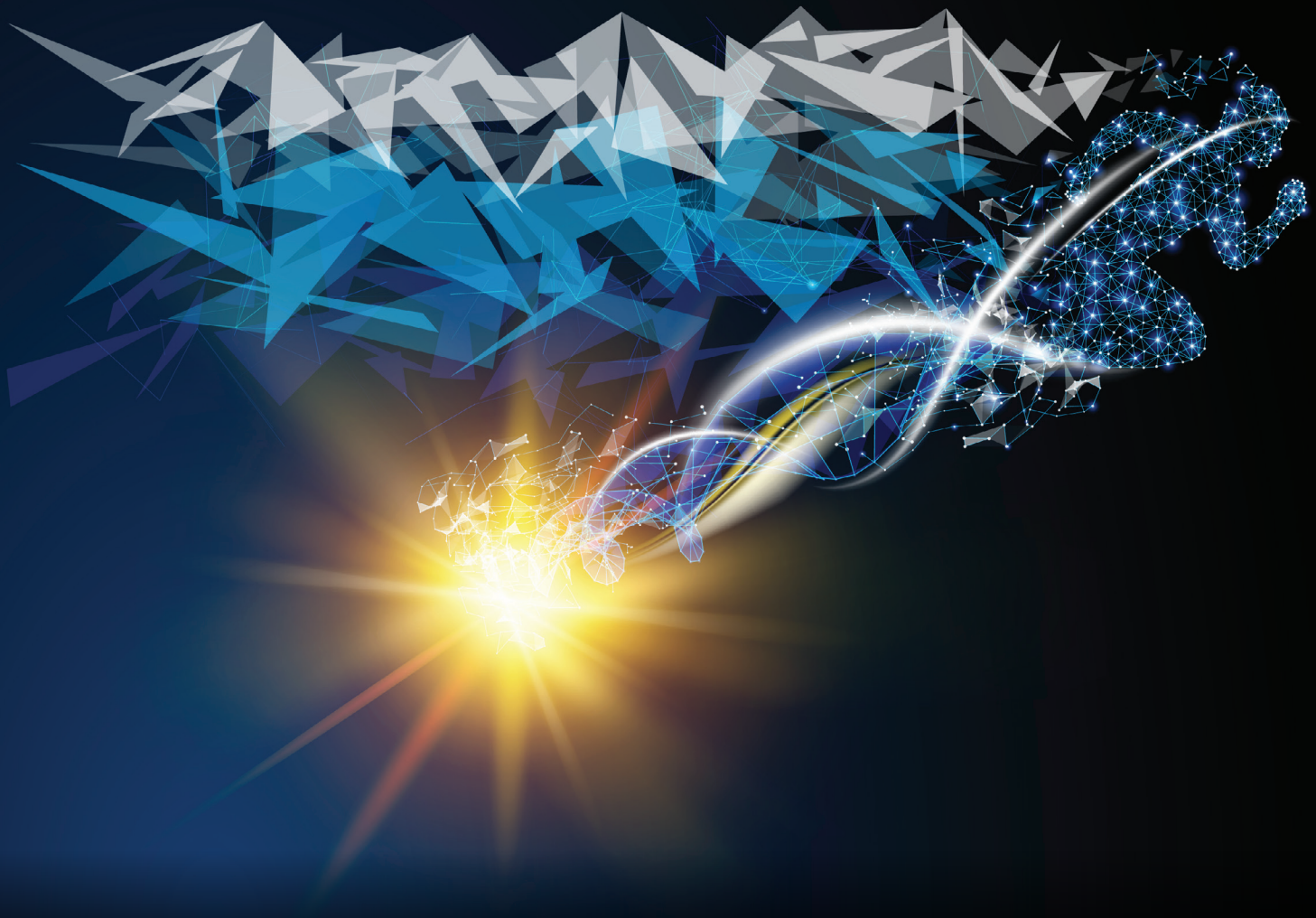
LIFE SCIENCES

2018



PRECISION MEDICINE

B.C.'s life sciences sector: a cluster of global importance

A STRONG ECOSYSTEM ACCELERATES SUCCESS

OFFICIAL PUBLICATION

LifeSciences British Columbia

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MICHAEL SMITH FOUNDATION
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Developing British Columbia's research talent

Moving research into practice

Dr. Heather Gainforth is working in partnership with the spinal cord injury (SCI) community to explore how to improve the use of health promotion research to enhance the health and wellbeing of people living with SCI.

Assistant Professor, UBC Okanagan | Researcher, ICORD | 2017 Scholar

Supporting promising researchers

Dr. Dustin King is examining how the modification of certain proteins in our cells might contribute to diseases such as Alzheimer's disease, Type 2 diabetes, and cancer, to inform and enable more targeted therapies.

Post-Doctoral Fellow, SFU | 2017 Research Trainee co-funded by the Pacific Alzheimer Research Foundation

Driving local innovation

Dr. Richard Lester is developing tools to analyze digital exchanges between care providers and patients (e.g. text messages) and make use of the growing number of health-related digital interactions to improve patient care.

Associate Professor, UBC | Assistant Clinical Professor, Vancouver Coastal Health Research Institute | 2017 Innovation to Commercialization & 2014 Scholar

Moving research into practice

Dr. Seonaid Nolan is investigating the journey people with substance use issues take as they transition from acute care back to the community in order to provide better support, prevent re-hospitalization and improve health outcomes.

Clinical Assistant Professor, UBC | Clinician Scientist, BC Centre on Substance Use | 2017 Health Professional-Investigator

Twenty five years ago BC's Dr. Michael Smith was awarded a Nobel Prize.

A pre-eminent scientist with a long-standing commitment to supporting emerging talent, Dr. Smith's legacy is felt across the province. This year, MSFHR and colleagues from across the BC research community are celebrating his impact and continuing his work to develop scientific excellence and grow capacity in BC now and in the future.

Named in his honour, MSFHR focuses on talent development. We are BC's expert health research funder – optimizing the provincial government's investment in health research to develop, retain and recruit the type of people BC needs to advance health research and the knowledge economy, and improve the health of British Columbians.

MSFHR is proud to continue Dr. Smith's legacy with every funding award we issue.

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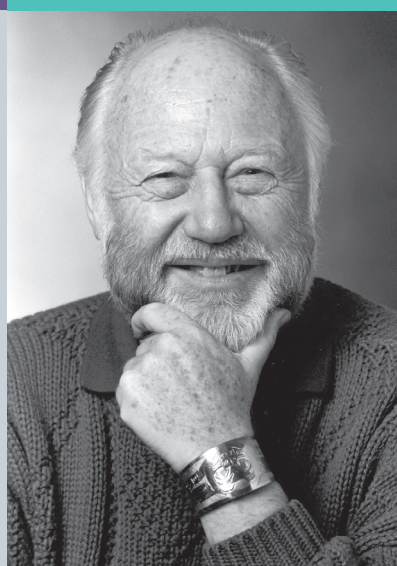

PATENT PROTECTION FOR PRECISION MEDICINE: IS CANADA MISSING THE TARGET?

Precision medicine, in which medical decisions and treatments are undertaken with a view to being tailored to an individual patient based on genetic, environmental and lifestyle factors, is the way of the future. However, the patent system lags behind scientific advances, and securing patent protection for innovations in precision medicine can be challenging, particularly in Canada.

A newly discovered use of a known biomarker to select a particular group of patients for therapy is considered to be an unpatentable diagnostic method under the Canadian Intellectual Property Office's (CIPO) current administrative practice. Although the overall method of assaying for the biomarker and evaluating the significance of the information thereby obtained is tangible, the CIPO considers that because the only new subject matter added by the inventor is a new understanding of the significance of the information obtained by assaying for the biomarker, the invention is a mere abstract idea, and therefore unpatentable.

In theory, an alternative approach to avoid issues of unpatentable subject matter is to claim the use of a therapeutic to treat a specific sub-group of patients identified as having the biomarker. However, if the therapeutic has previously been used to treat the disorder, and was previously used to treat patients having the biomarker, the CIPO will consider that the use is inherently anticipated by the prior treatment of patients and will refuse to grant a patent. This is so even if the significance of the biomarker to successful treatment was not understood, and even if the biomarker was not expressly tested for previously.

Outcomes like this where meritorious advances in precision medicine can be denied patent protection in Canada stem directly from the CIPO's current administrative practice guidelines, which patent examiners are bound to follow. There has been much criticism of the CIPO's administrative guidelines relating to the patentability of diagnostic methods, particularly given that CIPO has no discretion as a matter of policy to refuse patents for specific types of inventions so long as the requirements for patentability imposed by Canadian law are met. Canadian law provides no exclusion to the patentability of diagnostic methods.

In contrast, some jurisdictions, such as Europe, recognize the importance of advances in precision medicine. Correspondingly, the European Patent Office recognizes as a matter of policy the importance of providing patent protection for such inventions, to ensure that further developments in this area are promoted. It may thus be easier to secure patent protection for such inventions in some cases in Europe as compared to Canada.

While technical patent law issues like these are likely esoteric to most, the policy implications of refusing to grant patent protection for certain advances in precision medicine may impact the extent to which further investment and development will occur in this field. Our current federal government is at least open to dialogue on the topic of innovation and what is required to advance innovation in Canada. It is important that those with a direct interest in this particular government policy add their voices to that dialogue.

Precision medicine holds great promise. Our lawyers are ready to help the inventors, entrepreneurs, and scientists working in this field to protect their intellectual property to the fullest extent possible.

Written by Jennifer A. Marles, Partner

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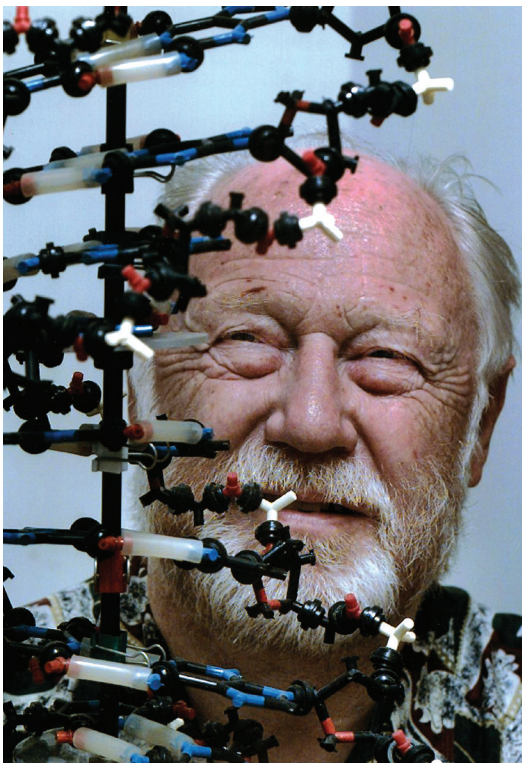

REMEMBERING MICHAEL SMITH

Two and a half decades after the B.C.-based scientist won the Nobel Prize, his legacy keeps on giving

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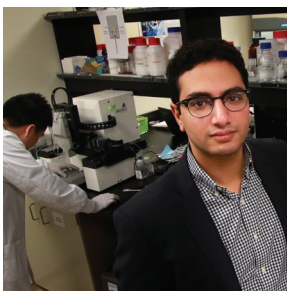

BIOPRINTING THE FUTURE 38

Aspect Biosystems uses groundbreaking science and technology to create living human tissue on demand

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EDITOR: Meg Yamamoto
DESIGN: Randy Pearsall
PRODUCTION: Rob Benac
WRITERS: Marke Andrews, Evan Duggan, Peter Mitham, Tyler Nyquvest, Brigitte Petersen, Jan-Christian Sorensen, Alan Winter
PROOFREADER: Christine Rowlands
INTEGRATED SALES MANAGERS: Pia Huynh, Laura Torrance, Chris Wilson
ADVERTISING SALES: Benita Bajwa, Dean Hargrave, Blair Johnston, Corinne Tkachuk
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ADMINISTRATORS: Katherine Butler, Marie Pearsall
RESEARCH: Anna Liczmanska, Carrie Schmidt

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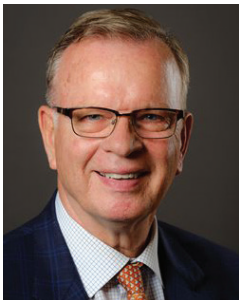
Message from the Minister of Jobs, Trade and Technology



Hon. Bruce Ralston, Minister of Jobs, Trade and Technology

As your Minister of Jobs, Trade and Technology, I am proud to support B.C.'s life sciences sector as it attracts highly skilled talent from around the globe and generates good jobs for a strong, sustainable economy.

British Columbia has a remarkable story to tell when it comes to innovation in the life sciences sector. We're home to world-leading companies and post-secondary institutions that are doing cutting-edge research and creating innovative products that will improve the lives of British Columbians and people around the globe.

It's a story that has its best chapters still to come. We know that the knowledge economy is our path to a prosperous future, which is why we are placing our innovation agenda at the centre of B.C.'s economic strategy. Already, B.C.'s tech sector is a top performer, with more than 10,200 companies employing more than 106,000 people and counting. Tech salaries are around 85 per cent higher than B.C.'s average wage – and life sciences, with its highly skilled workforce, is certainly no exception.

Tech and life science entrepreneurs tell me that they need access to capital to scale up and succeed in the global marketplace. To get a fair share of federal funding and attract private-sector investment, we have recently appointed Dr. Alan Winter as B.C.'s first Innovation Commissioner. As the past president and CEO of Genome BC, his tremendous experience in life sciences makes him the ideal ambassador for B.C. tech and innovation in Ottawa, the Cascadia Innovation Corridor and overseas. Dr. Winter will work to strengthen B.C.'s national and cross-border relationships, secure federal funding and help to further establish the province as a preferred location for new and emerging technologies.

British Columbia's innovation sector is growing. In February, it received a huge boost when a B.C.-based digital supercluster consortium was named one of five superclusters to get a share of $950 million in federal funding designed to stimulate innovation. The supercluster will help fund collaborative projects in the precision health sector, among others, over the next 10 years. Its health and genomic platform project will enable advanced cancer treatment through personalized onco-genomics, which will use a patient's genetic makeup to inform treatment planning. This work will not only improve lives, but also generate good jobs for British Columbians.

We recognize that research and innovation are central to sustainable, long-term growth and a competitive economy. Growth in these areas requires investment and collaboration from both the private and public sectors. Over the last 10 years, the province has committed nearly $1.3 billion for research and innovation through programs and targeted investments, including Genome BC and the B.C. Knowledge Development Fund. We expect to see further investment and partnerships to support the continued growth of our tech and innovation sector through the Innovation Commissioner's efforts.

Last year, my ministry's Crown agency responsible for tech and innovation in the province, the BC Innovation Council, launched the province's first health technology accelerator, Innovation Boulevard, to help tech developers commercialize medical devices, software and processes more quickly. The accelerator brings together industry, innovation, health workers and investors to solve major health industry challenges.

These opportunities are not just for big business. We know that a majority of life sciences companies are small businesses. To help these companies succeed, the province is launching the Small Business Task Force to understand the needs of entrepreneurs in every part of the province and build on actions already taken, including a reduction to the small-business corporate income tax by 20 per cent – from 2.5 to 2 per cent.

We also recognize that life sciences companies need access to skilled workers in order to grow. To help meet demand for new talent, we are expanding tech-related post-secondary programs by adding 2,900 seats by 2023 in post-secondary schools throughout the province. This investment will mean hundreds more graduates in computer science, biomedical engineering and related fields entering the workforce. Increasing the number of tech graduates is a key part of the #BCTECH Strategy and we will release an updated plan this spring. I hope you'll join me in Vancouver May 14-16 at the #BCTECH Summit to discover B.C.'s most cutting-edge innovations first-hand.

There are many exciting developments happening in B.C.'s life sciences sector. Thanks to world-class companies, highly skilled talent and enhanced government and private-sector support for research and innovation, I am confident that B.C.'s innovators will continue to develop new technologies that will revolutionize the life sciences industry here and around the world.

LifeLabs is a proud member of the Digital Technology Supercluster

As a member of the Precision Health Group of the Digital Technology Supercluster, LifeLabs is excited to leverage digital technology to build a healthier Canada.

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Message from the chair

Nancy Harrison, chair, board of directors, LifeSciences BC

The life sciences community in British Columbia has seen tremendous success for all our membership – industry, academia and institutions. The next step is for all these constituents to focus on developing the key ingredient – B.C. cornerstone companies that can establish a permanent presence in our ecosystem allowing for people/talent, technology/products and funding/money to remain in B.C.

The year started with LifeSciences BC (LSBC) rallying the life sciences community around the federal government's supercluster initiative. The initial leadership from LSBC came from key leaders in our community such as Alan Winter, recently named B.C.'s first Innovation Commissioner, and was furthered by LSBC's new president and CEO, Lesley Esford. Through their efforts and those of other sector leaders in our community, a group of companies and academic and provincial institutions all collaborated to develop the proposal. Our focus was on building a secure health and genomic platform enabling advanced treatments through precision health. The collaboration included Telus, LifeLabs, Change Healthcare, St. Paul's Foundation, Stemcell Technologies, the University of British Columbia (UBC), Simon Fraser University, Genome BC, the BC Cancer Agency and several others.

On February 15, 2018, B.C.'s Digital Technology Supercluster was announced as one of Canada's five superclusters. On February 27, the federal budget showed its support of our community by announcing continued investment in both the Centre for Drug Research and Development (CDRD) and the Rick Hansen Institute by extending funding to both. These announcements demonstrated the federal government's recognition of B.C.'s expertise in the life sciences sector.

2017 was a strong year for companies within our membership. Close to $500 million worth of investment and partnership dollars were announced in B.C. companies. A few highlights include: Aurinia Pharmaceuticals raising approximately US$150 million in a public offering; Zymeworks announcing a key new partnership with Johnson & Johnson worth up to US$1.45 billion, including a US$50 million upfront payment; and AbCellera Biologics announcing its 25th partnered discovery program on its antibody platform. Additionally, firms in B.C. had great success with expansion and mergers and acquisitions. Some key highlights: Stemcell Technologies, now employing over 1,000 people globally, was recently named Company of the Year at the BC Tech Association's annual Technology Impact Awards; StarFish Medical acquired Toronto medical device designer Kangaroo Group and won the EY Entrepreneur of the Year 2017 Pacific Awards; Novadaq Technologies was acquired by Stryker Corp. for US$700 million; and BioLytical Laboratories' INSTI HIV test received Global Fund classification for procurement.

Not only are these accomplishments significant for the firms themselves, but they represent the continued development of clusters in precision health expertise that have been historically present in B.C.: a focus on regenerative medicine and stem cells; specific disease treatments, such as Aurinia's focus on lupus; and antibody expertise with companies such as Zymeworks, AbCellera and BioLytical.

Leadership and people in B.C. continued to play a significant role in the life sciences ecosystem with key new leadership appointments at UBC (Santa Ono), CDRD (Gordon McCauley), St. Paul's Hospital (Fiona Dalton), Michael Smith Foundation for Health Research (Bev Holmes) and the Government of Canada Health and Biosciences Economic Strategy Table (chair Karimah Es Sabar). The next generation of companies and entrepreneurs is aided by such mentoring programs as Creative Destruction Lab – West, an organization led by UBC's Sauder School of Business, which initiated the first BioMedTech cohort in Canada, as well as others run by BC Tech and entrepreneurship@UBC.

The critical success factors for our community exist in the people, technology and funding within B.C. and show a core expertise in precision health. The long-term stability and success of our ecosystem rest on the ability to grow our companies and develop B.C. cornerstone companies. In order to accomplish this goal, all components of government – local, provincial and federal – industry and academia must work in concert. Together, we will get there.

WE HELP INNOVATION TAKE FLIGHT IN BC

I²

Closing the gap between **innovation** and **commercialization**

Genome BC's Industry Innovation Program (I²) provides commercialization support for companies developing innovative life science technology-based products, processes or services in British Columbia.

We help early stage companies move from seed to Series A or other significant financing events by offering repayable growth capital on favourable terms at a critical stage of business development.

- Funding allocation: $100K to $1M per company
- Matching funds required (1:1)
- Non-dilutive, repayable funding and success oriented service fees
- Access to Genome BC's network and expertise

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genomebc.ca/industry-innovation-program

Message from the president

Dr. Lesley Esford, president and CEO, LifeSciences BC

April 2018 marks the 20th anniversary of the annual LifeSciences BC Awards. As we reflect on how far we have come as a young ecosystem over the last 20 years, it is evident to see how much the life sciences sector in B.C. has grown.

Our strong progress has stemmed from consistent capital investment and strategic partnerships that have helped many of our B.C. companies. We are also extremely fortunate to have excellent academic and research institutions supporting key collaborations that generate great science and medical technology. We have a wealth of both private sector and government-supported organizations reinforcing company creation and expansion. B.C. is one of the most entrepreneur-rich jurisdictions in North America, with a pipeline of world-class scientists generating big ideas, important medical solutions and valuable research. These key ingredients create a B.C. life sciences sector that not only is a significant contributor to the economy, but also plays a valuable role in bettering health and patient care outcomes for all Canadians.

In February, the government of Canada announced that the B.C.-led Digital Technology Supercluster was one of five winning bids from across the country. The Digital Technology Supercluster consortium is a cross-industry initiative dedicated to ensuring that B.C. and Canada are innovative and world-class leaders in the digital economy. LifeSciences British Columbia was involved in the supercluster discussions from the outset, particularly in promoting the use of advanced data collection, analytics and visualization to produce innovations in the field of precision health. The single-payer medical system, globally recognized scientists and clinicians, a growing cluster of companies and our repository of health data are resources that can be leveraged for B.C. to become a leader in precision health. During the course of this supercluster undertaking, key industry leaders working collaboratively recognized that the challenges facing our companies as they grow are similar, regardless of sector. The extended networks, new relationships and collaborations that have resulted from this initiative will benefit the entire innovation ecosystem well into the future.

Our entire community will play an essential role in accelerating the success of our sector by:

- Optimizing and aligning the life sciences ecosystem to support the translation of our world-class science into new innovations and commercial products. This includes strengthening the network and connection of key players in the ecosystem within B.C., Canada and the world. Aligning our efforts with the pan-Canadian life sciences industry and strengthening our ties with the Cascadia corridor can take the B.C. life sciences sector to the next level.
- Assisting our companies in accessing smart capital by introducing and promoting B.C. companies to investors and strategic partners from around the world.
- Continuing to train, retain and develop our local talent, as well as attracting talent from around the world. It's all about the people, and it's all about strengthening our life science ecosystem to ensure we continue to support the fundamentals of company creation and growth. This is critical.

To meet the next year with a vision that matches our past and fuels our future, we believe "a strong ecosystem accelerates success." This will be our theme for the year ahead. British Columbia has cultivated a vibrant and diverse life sciences community that positions us to succeed not only here on our own soil, but globally. The time is now.

British Columbia is one of the most entrepreneur-rich jurisdictions in North America, with a pipeline of world-class scientists generating big ideas, important medical solutions and valuable research

LifeSciences British Columbia

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- Xenon Pharmaceuticals

REMEMBERING MICHAEL SMITH

Two and a half decades after the B.C.-based scientist won the Nobel Prize, his legacy keeps on giving

ALAN WINTER

B.C. INNOVATION COMMISSIONER

Our whole understanding of biology today is because we understand the molecular level of biology, which is genomics. That's Michael Smith's legacy

MARKE ANDREWS

It's been 25 years since University of British Columbia scientist Michael Smith (1932-2000) won the Nobel Prize in chemistry for his development of site-directed mutagenesis, allowing the DNA sequence of any gene to be altered. At the time, research into the Human Genome Project was just three years old, and the average person knew nothing about it.

What a difference a prize makes.

Today in British Columbia, at least 40 companies have been funded through Genome BC and Genome Canada. Since 2001, the Michael Smith Foundation for Health Research has funded more than 1,700 researchers in the province, 1,270 of them trainees, to the tune of $450 million in provincial government money.

Smith, a modest, practical man, exploited his superstar status. He got governments to pay attention to genomics, attracted some of the brightest minds to attend school or work here, and lay the groundwork for what has become a hub of scientific activity.

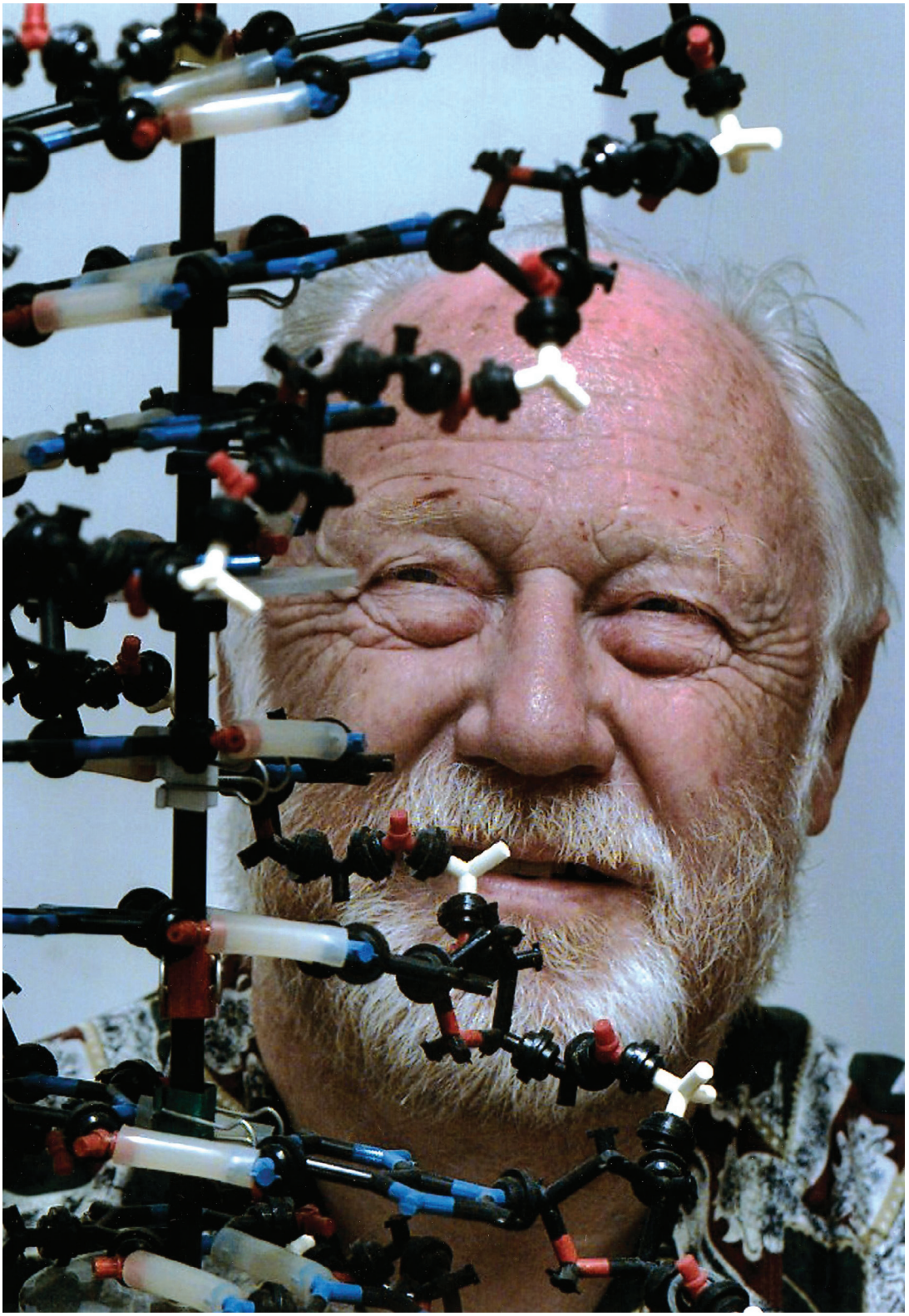
"I remember 1994 Science Week," says Alan Winter, a former CEO of Genome BC who was recently named the province's first innovation commissioner. "Busloads of high school students came to Simon Fraser University to hear speakers. Michael spoke about genomics and explained to the kids that *Jurassic Park* [the popular 1993 movie about the cloning of dinosaurs] was possible with DNA knowledge.

"He would carry with him a vial of DNA, and explain to the students how this DNA would have all the instructions to creating a tyrannosaurus."

In an act that speaks volumes about his character, Smith donated all $500,000 he received for the Nobel Prize, half going to schizophrenia researchers, the other half going to the Vancouver Foundation to distribute to Science World and to the Society for Canadian Women in Science and Technology.

"He was certainly very progressive," says David Ng, director and senior instructor at the Advanced Molecular Biology Laboratory, the educational arm of the Michael Smith Laboratories at the University of British Columbia (UBC). "He really thought about social justice and equity issues. He really wanted people to think about science ... and to think critically."

"Often you think of Nobel winners as being intimidating, but Michael was very engaging," says Winter.



After winning the Nobel Prize in chemistry in 1993, Michael Smith used his superstar status to get governments to pay attention to genomics, attract some of the brightest minds to attend school or work in B.C., and lay the groundwork for what has become a hub of scientific activity | MICHAEL SMITH FOUNDATION FOR HEALTH RESEARCH

Remembering Michael Smith

David Ng, director of the Advanced Molecular Biology Laboratory at Michael Smith Laboratories at UBC, in front of a photo of Michael Smith receiving the Nobel Prize in Stockholm in 1993 | CHUNG CHOW

"People liked to work with him. He was collaborative."

Microbiologist Brett Finlay, an Order of Canada recipient, agrees. He chose Smith's offer to work at the biotech laboratory at UBC over job offers from the Massachusetts Institute of Technology and Harvard University.

"He was warm, caring, down-to-earth," says Finlay. "He was always leaving me journal articles of things related to my work."

During the 1980s and '90s, money was scarce for post-secondary school education, and often university departments suffered cutbacks from government bodies. But Smith used the attention from the Nobel Prize win, to alert Canada to the importance of genomic science.

"Michael Smith was a visionary who could clearly see where things were going," says Tony Brooks, CFO and vice-president of entrepreneurship and commercialization for Genome BC. "Back in the late '80s and the '90s, he realized Canada was behind in genomics and genomics research, and he went to various governments and said, 'We need to do something about this.'"

"I never met Michael, but I know he was instrumental in getting Genome Canada and the regional centres set up," adds Brooks. "He saw the value in having the regional centres on the ground, because they would understand the strengths and the needs of the researchers in those regions."

Brooks explains that Genome Canada receives funding from the federal government for specific projects and disburses them to regional centres, which can then expand that investment with financing from provincial governments and industry.

"That model is unique, and has worked very well for 17 years," says Brooks. "I don't think you will find it in any other industry in Canada, and as far as we know, it doesn't exist anywhere else in the world."

Bev Holmes, CEO of the Michael Smith Foundation for Health Research, says Smith created a model that the foundation still follows today.

"When we fund people here, we want them to pursue solutions to health and health system challenges, we want them to train the next generation of health researchers through their work and we want them to bring money into the province," says Holmes. "And that's what Dr. Smith was all about."

Holmes cites Marco Marra and Steven Jones, two researchers Smith recruited, as individuals who received foundation funding, trained people and have since garnered $700 million in research funding.

Smith also set up the Genome Sciences Centre (now Canada's Michael Smith Genome Sciences Centre) at the BC Cancer Agency, attracting Toronto scientist Victor Ling, a former student of Smith's, to work there in 1995.

Ling originally told Don Carlow, then president of the BC Cancer Agency, that he wouldn't leave Toronto to

come to Vancouver. Then Smith got involved, calling Ling and offering whatever help Smith could give.

"I told Michael, 'If I come to the cancer agency, would you join me there?' I thought that would send him away," recalls Ling, founding president and scientific director of the Terry Fox Research Institute.

Smith assured him that once he retired from UBC he would work with Ling, and he did.

What was the best advice Smith gave?

"There are a lot of politics in health science research, and Michael told me that integrity is the most important thing," says Ling. "Good science and high integrity will win the day."

Ng carries on Smith's belief in social issues with the Terry Project, which encourages science students and those in other faculties to apply their discipline to global issues: climate change, social inequity, life-altering disease.

Winter says not a week goes by that you don't hear about genes affecting a disease, or genotyping pest-resistant trees, and often it's a B.C. lab or company coming up with these findings.

"Our whole understanding of biology today is because we understand the molecular level of biology, which is genomics," says Winter. "That's Michael Smith's legacy."

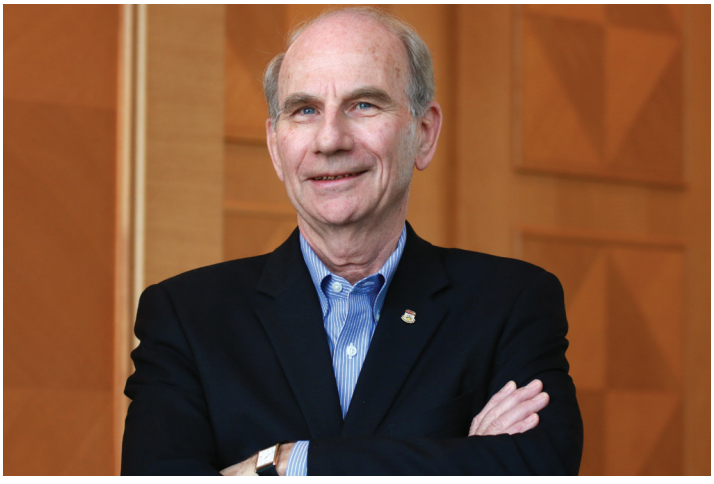
Ling feels Smith's legacy is twofold: scientists here can be leaders in their field, and "a nice guy can be a winner."

Bev Holmes, CEO, Michael Smith Foundation for Health Research: "When we fund people here, we want them to pursue solutions to health and health system challenges, we want them to train the next generation of health researchers through their work and we want them to bring money into the province. And that's what Dr. Smith was all about" | MICHAEL SMITH FOUNDATION FOR HEALTH RESEARCH

THE TECH SECTOR HAS A NEW ADVOCATE: B.C.'S FIRST INNOVATION COMMISSIONER

ALAN WINTER | Life sciences are key to the future of B.C.

British Columbia's already thriving tech sector scored twice early this year after being awarded a portion of the $950 million in federal funding for Canada's Digital Technology Supercluster, directly following the appointment of B.C.'s first innovation commissioner, Dr. Alan Winter. LifeSciences BC asked Dr. Winter to tell us about his new position and how he will help the innovation and tech sector in B.C. stay competitive on the global stage.



Alan Winter's new role as B.C. innovation commissioner will include acting as an ambassador for B.C.'s innovation and technology sector, promoting B.C. as a valuable investment opportunity and helping connect companies with national and international partners | Rob Kruyt

This work will encourage and enable national and international investment in people, research and technology in B.C.

Accepting the invitation to become B.C.'s first Innovation Commissioner is a real honour for me. Having spent a large part of my professional career in the innovation and technology fields, I have always maintained how important they are to our future. I am committed to promoting the excellence of our sector here in British Columbia.

In my role, I will help facilitate strategic partnerships across Canada and in other parts of the world that focus on B.C.'s innovation priorities, and proactively respond to opportunities of the emerging economy. I will act as an ambassador for B.C.'s innovation and technology sector, promote B.C. as a valuable investment opportunity and help connect companies with national and international partners to expand their market opportunities. Working on behalf of B.C. in Ottawa and abroad, this work will encourage and enable national and international investment in people, research and technology in B.C. This will in turn fuel innovation across many sectors, including advances in such areas as personalized medicine and genomics; clean tech; virtual, mixed and augmented reality; quantum computing; the internet of things; and data analytics.

B.C. already has the fastest-growing tech sector in Canada, is the largest per capita startup cluster in Canada and leads the nation in tech-sector GDP growth and job creation. The tech sector employs over 106,000 people in B.C., and it won't be long before specialized and newly emerged tech skills will cease to stand on their own in a distinct sector and rather be needed for all industries to flourish. These expected changes come with the need to ensure B.C.'s current and future workers are equipped with the tools and skills to succeed in the new economy, whether that be new or revised post-secondary or training programs, or re-skilling or up-skilling the existing workforce.

Life sciences are key to the future of B.C. My experience as CEO of Genome BC – and as a board member of LifeSciences BC, the BC Centre for Disease Control Foundation, and Providence Health Care Research Institute – emphasized for me the importance of partnerships with government, academia and industry.

By actively forming these strong partnerships, including the region's tech accelerators and industry associations, we will be able to help position the province to become more sustainable with the development of existing strengths within the tech sector. In a globalized world, local and global competition necessitates rapid innovation and investment in cutting-edge technology, research and development. With these investments taken together, we will strengthen our ability to grow, attract and retain top talent – all needed in order to stay ahead of the game.

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ENTREPRENEUR DEVELOPMENT

IT'S IN THE GENOMICS

B.C. leads the way in genome research and development

PIETER CULLIS

BIOCHEMISTRY AND MOLECULAR BIOLOGY PROFESSOR, UNIVERSITY OF BRITISH COLUMBIA

In 50 years we will look back and say, 'You mean you actually used to give a drug that would go everywhere in the body except where it's particularly needed?'

MARKE ANDREWS

When Genome Canada announced in January the 15 genomic and precision health projects that would receive $162 million in funding, six of those projects came from British Columbia. Ontario and Quebec each had four, and Alberta one. "This province is a real centre for genome research and development," says Alan Winter, former president and CEO of Genome British Columbia, recently named the province's first innovation commissioner.

Those six genomic projects include improving diagnosis of disease for Indigenous children, preventing childhood asthma, improving the outlook for recipients of kidney transplants, battling adverse drug reactions in children with cancer, preventing relapses of lymphoid cancers and improving access to genetic counselling.

"Genome BC tends to get 30 or 40 per cent of all federal dollars based on the quality of the work done here, and the people talk to each other and know how to use each other's knowledge," says Winter.

The genomic field has had some major successes, one of the most recent being B.C. nanomedicine expert Pieter Cullis' Stage 3 clinical trial success of the drug

Martin Gleave, executive director of the Vancouver Prostate Centre, is a leader in prostate cancer research and surgery | ROB KRUYT

BELOW: Nanomedicine expert Pieter Cullis' Stage 3 clinical trials have shown that the drug patisiran can check the spread of hereditary amyloid transthyretin amyloidosis and even reverse its effects | ROB KRUYT

patisiran, which can be used to combat a debilitating and fatal disease called hereditary amyloid transthyretin amyloidosis. The trials have shown patisiran can check the spread of the disease and even reverse its effects.

With all going well, that drug should be available this summer.

"This will probably be the first RNA interference gene therapy drug approved by the FDA [U.S. Food and Drug Administration]," says Cullis. "They are predicting sales in the order of $1 billion by 2023."

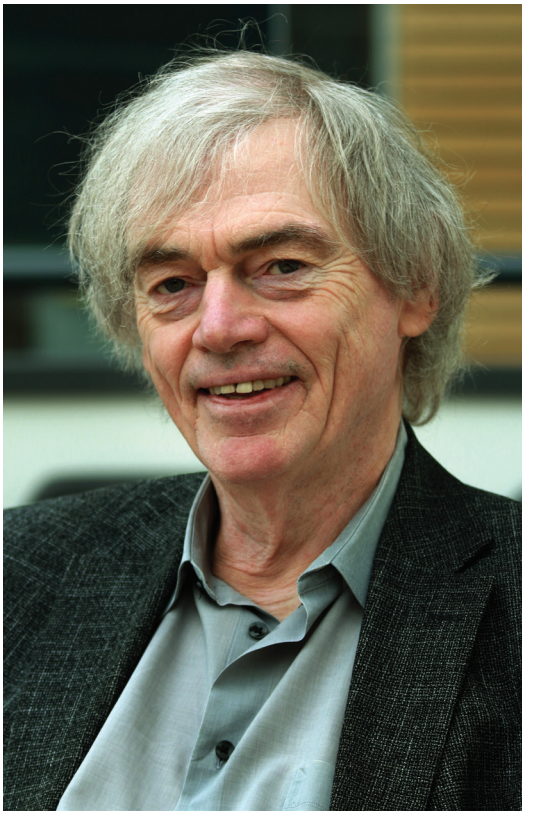
A term Cullis uses for what his research seeks is "silencing pathological genes," finding ways to better target the villains within the body. He points out that anti-cancer drugs that affect the entire body reach only 0.01 per cent of a tumour.

"What we're working on are ways of delivering a drug to reach, say, five per cent of the cancer," says Cullis. "If you can do that, you could cure most solid tumours."

Genomic medicine can be very complicated. A leading figure in health research says learning the human genome is only part of the way to better health through precision medicine.

"The past 10, 15 years have been about genomics," says Martin Gleave, executive director of the Vancouver Prostate Centre and a leader in prostate cancer research and surgery. "It's been sequence, sequence, sequence to understand DNA alterations. In my field, the next 10, 15 years' advances will be about [cancer] protein structure resolution. There is so much that DNA sequence doesn't tell us about biology."

"This coming century's advances will be



It's in the genomics

Alan Winter, B.C. innovation commissioner and former head of Genome BC, says, "Genomics is not magic; it's just understanding biology at the molecular level" | ROB KRUYT

understanding and exploiting biology," continues Gleave, named a recipient of the Order of Canada in January. "In order to do that we need the convergent advances of computer sciences, genomics and molecular biology."

Winter agrees, stating that "proteins are the next workhorse after DNA."

Cullis has specialized in finding nanoparticle delivery systems to reach disease sites. Prior to his most recent success with patisiran, Cullis' research teams came up with three drugs that gained approval from either the FDA or the European Union, or both: Abelcet, an antifungal agent; Myocet, for use in metastatic breast cancer; and Marqibo, used for the treatment of adult leukemia.

It can be a long road to a breakthrough, as Gleave learned when he and his research team worked on the inhibitor OGX-011, which targeted clusterin, the protein that resists treatment. The preclinical work began in 1999. Research and raising capital for Phase 1 trials took four or five years, then more years and fundraising went into Phase 2 trials. Early results were very promising, showing that OGX-011 could extend the lifespan of a patient with terminal cancer by seven months. But at the Phase 3 trials level, the drug was not robust enough and failed. Now, OGX-011 is no more.

"Patients responded and did well, but not enough patients benefited," says Gleave, who attributed the failure to landscape shifts in tumour treatment and the fact that the drug was not potent enough.

As discouraging as it was, his team has pushed ahead. A similar drug, OGX-427, is at the Phase 2 stage, and another, VPC-27, has his team very excited, in part because they now have the 3D structure of the intrinsically disordered (cancer-causing) proteins.

"[VPC-27] hits the same target as OGX-011, but it hits it harder and will do it with an oral pill, rather than using an IV once a week," says Gleave.

Again, it's a long road; VPC-27 currently is in the preclinical stage.

Alan Winter's route to health science and genomics was circuitous, taking him into the space program (a childhood fascination), then into high-tech communications (his work at the federal government's SARSAT program led to developing search-and-rescue software that could trace a beacon-to-satellite signal) and then genomic science.

"My son was studying life sciences at Queen's University, and one night at dinner in Toronto he asked me, 'Do you know about the Human Genome Project?' He pulled out a paper and we went through it, and to me it looked like a code of three billion letters that was being deciphered."

Back in B.C., Winter spoke to scientists who approached the subject as biologists, whereas he saw it from an engineering standpoint. One thing led to another, and in 2001 he became president and CEO of Genome British Columbia, a post he held for 15 years.

Winter says that when B.C.-based scientist Michael Smith won the Nobel Prize in chemistry in 1993, a lot of people interested in health science wanted to be here.

"When the Human Genome Project was being done in the United States, Canada didn't have a big program, and Michael Smith really went after the feds to get a very significant investment in Genome Canada," says Winter.

During his time at Genome BC, Winter stressed putting effort and money not only into research but also into the practical application of that research.

"It doesn't matter if it's the space program or genomics, the investment is not an end to itself – it's 'How do you get that to be used practically?'"

In summary, Winter says genomics is just one piece, albeit an important one, in the precision medicine world.

"Genomics is not magic; it's just understanding biology at the molecular level," says Winter, who believes two areas of precision medicine where genomics will play a big role are infectious diseases and pharmacogenomics – how genes affect a person's response to prescription drugs.

Gleave hopes genomic science can live up to its billing.

"Promise and hype drive activity, but almost always the pendulum over-swings expectations," cautions Gleave. "People thought that by simply decoding [the genome] we would understand the complexity better. There is more to biology than just the DNA sequence."

Still, Cullis feels we have come a long way, and will go a lot further.

"I think in 50 years," says Cullis, "we will look back and say, 'You mean you actually used to give a drug that would go everywhere in the body except where it's particularly needed?'"

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BUSINESS VANCOUVER

IN FULL BOOM

Two Vancouver-based companies are creating industry-leading research tools and technology and helping B.C. stake its claim as a world-class burgeoning biotech hub

ANDREW BOOTH

CHIEF COMMERCIAL OFFICER, STEMCELL TECHNOLOGIES

In Canada we tend to be very good at invention, at taking money and turning it into great ideas, but not so good at taking those ideas and turning them back into money

JAN-CHRISTIAN SORENSEN

Precision NanoSystems Inc. (PNI) and Stemcell Technologies Inc. are just two of a growing field of Vancouver-based biotechnology companies cultivating a reputation for making big strides when it comes to enabling precision medicine.

Founded in 2010, PNI aims to revolutionize health care through technology by creating innovative solutions for the discovery, development and manufacture of nanomedicine for use as medicines and in medical research. The company provides a host of instruments, services and manufacturing capabilities to biopharmaceutical companies and life sciences researchers both here and across the globe.

Key among its technologies is the company's NanoAssemblr platform, a suite of nanomedicine development technology that provides seamless microfluidic mixing and manufacturing of nanoparticles.

"For us, precision medicine means getting the right drug to the right patient at the right time, specifically through molecularly tailored and targeted drugs," says PNI CEO and co-founder James Taylor. "Being able to affect disease at the molecular level is the key, and nanomedicine is a fundamental technology for ushering in the next wave of genetic and molecularly targeted therapeutics. PNI's technology is being used by biopharmaceutical companies worldwide to develop drugs not thought possible just a few years ago."

After studying engineering physics at the University of British Columbia, Taylor earned a PhD in genetics from Seattle's Institute for Systems Biology and then moved back to Vancouver to work at the Centre for Drug Research and Development. At that time, he co-founded PNI with chief operating officer Euan Ramsay, who brought a background in pharmaceutical sciences and a PhD in gene therapy to the fold, as well as professors Carl Hansen, currently director and CEO at Vancouver-based antibody therapeutics developer AbCellera

Precision NanoSystems co-founders James Taylor (right), CEO, and Euan Ramsay, COO, at the biotech company's South Vancouver headquarters | ROB KRUYT

Biologics Inc., and Pieter Cullis, an industry maven and nanomedicine pioneer.

Taylor credits Cullis – who was recently singled out for a BC Innovation Council Ignite Award for his work to develop a new nanoparticle system that can be triggered by X-rays to release anti-cancer drugs at tumours – for having made a significant impact on the field of nanomedicine and the continued growth of the sector in Vancouver.

"He's really helped to foster the whole field of nanomedicine both academically and from an industry perspective," says Taylor. "Vancouver is very well known as one of the leading hubs of nanomedicine and of nanoparticle drug delivery, and a lot of that ecosystem was built by Pieter."

PNI ranks third on *Business in Vancouver*'s 2018 list of the top 100 fastest-growing companies in B.C. The company has over 200 systems deployed in more than 20 countries, with more than 60 companies now using its NanoAssemblr platform, including 11 of the top 15 pharmaceutical companies.

Considering the frenetic pace at which local biotech companies have been making discoveries in recent years, it's an exciting time to be in the industry, not just as a scientist but also as a bioentrepreneur, says Taylor.

"It's an exciting time for the entrepreneurs who want to get into this industry or commercialize their science. The field of medicine continues to innovate at an accelerating pace, and certain areas, like in the treatment of cancer, are seeing progress that we haven't witnessed in a long time, if ever."

It's an auspicious sentiment that is shared by Taylor's industry colleague Andrew Booth, who can speak with a degree of authority on the matter in his role as chief commercial officer at Stemcell Technologies. Founded in Vancouver in 1993 by trail-blazing hematopoietic researcher and CEO Allen Eaves, Stemcell develops specialty cell culture media, cell isolation systems and accessory products for life science research and can lay claim to the title of Canada's largest biotechnology company.

However, that's not to say there isn't still much work to be done in terms of commercial innovation before the Canadian biotechnology sector – and the tech sector in general, for that matter – can command the international stage.

"In Canada we tend to be very good at invention, at taking money and turning it into great ideas, but not so good at taking those ideas and turning them back into money and building companies around them," says

In full boom

Andrew Booth, chief commercial officer at Stemcell Technologies, says Canadian biotech companies "are starting to believe that now 'we can' – we can recruit the talent, we can build the companies and we can develop the infrastructure in biotech to succeed and grow and scale up" | ROB KRUYT

Booth. "We need to take our Canadian technology and sell it to research and health-care institutions around the world."

That notion is at the core of what Stemcell is trying to accomplish and what needs to be the clear focus of Canadian biotech companies engineering the next generation of cellular therapeutics, Booth says. While he applauds government for helping to encourage growth, the industry as a whole needs to mirror the success it has seen in starting up companies with a renewed push on the scale-up side of the ledger.

"I do see a major change in the attitude that entrepreneurs have had, where they may not previously have had that self-confidence of thinking that a Canadian headquartered and operated company can 'make it.' I believe that the sentiment here in Canada is changing and we are starting to believe that now 'we can' – we can recruit the talent, we can build the companies and we can develop the infrastructure in biotech to succeed and grow and scale up."

Stemcell is serving as an example for other companies in that regard. The biotech firm boasts more than 1,100 employees globally – most of whom work in the head office in Vancouver – and a suite of more than 2,500 products with facilities in 11 other countries, as well as a host of collaborations with biotech and pharmaceutical companies in B.C., Canada and abroad.

A very promising potential therapy among the full complement of cell biology research tools in Stemcell's arsenal is CAR T-cell therapy, a rapidly emerging immunotherapy approach that involves isolating and re-engineering a patient's T cells and then injecting them back into the patient to seek out and destroy cancerous cells and more effectively target and treat types of leukemia.

"It's a very exciting field, and the dream of our researcher customers is that they can next figure out how to translate the same or similar mechanism not only to blood-based cancers but also to solid-tissue cancers," says Booth. "It's not lost on any of our employees that the reason we are here is to help researchers around the world find a cure for cancer and other diseases, and that is a highly motivating mission for everybody [at Stemcell]."

DEVISING PRECISION

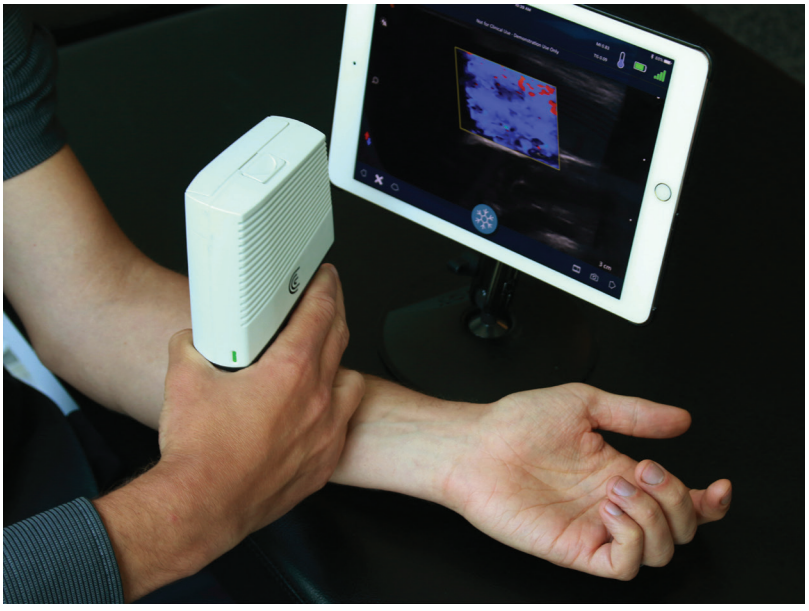
B.C. medical device companies are fundamental to innovation

PETER MITHAM

When the federal government announced this past February that B.C. would receive a portion of nearly $1 billion in funding to support the development of a new digital technologies supercluster, life sciences companies were among those cheering. Precision medicine is an emerging area for the sector, allowing life sciences to target therapies to the specific needs of individuals. While pharmaceuticals aren't what most people think of when "digital technologies" make headlines, a lot of high technology goes into making medicine more precise.

Paul Geyer, CEO of Discovery Parks, has a mandate to spearhead the company's investments in the digital health sector through a new subsidiary, Nimbus Synergies | ROB KRUYT

Devising precision



TOP: Geoffrey Auchinleck is CEO of Claris Healthcare, maker of the Claris Reflex, a device that coaches people recovering from knee replacement surgery | ROB KRUYT

A hand-held ultrasound unit from Clarius Mobile Health | ROB KRUYT/*BIV* ARCHIVES

"I think B.C. is very well positioned from a countrywide standpoint," says Paul Geyer, a well-known entrepreneur in the sector who joined Discovery Parks Inc. as CEO last year with a mandate to spearhead the company's investments in the digital health sector through a new subsidiary, Nimbus Synergies Inc. "The expertise and the science here I don't think can be matched anywhere else in Canada, quite frankly, particularly on precision medicine in relation to cancer therapies."

Geyer, a graduate of the University of British Columbia (UBC), knows the sector well, having founded one of the province's early medical device success stories, Mitroflow International Inc., in 1991. He sold the company in 1999 and subsequently led other companies as CEO and served on the boards of many more.

A former CEO of LightIntegra Technology Inc. and still its executive chair, he points to LightIntegra as one of the new generation of companies leading the sector. Originally spun out of Canadian Blood Services, LightIntegra developed an instrument that measures platelet functionality and allows platelets to be matched with appropriate recipients.

The range of activities encompassed by medical device companies points to both the long history and cutting-edge nature of the sector.

Clarius Mobile Health Corp., a four-year-old Burnaby company founded by Laurent Pelissier, has put old-fashioned ultrasound technology in the hands of physicians.

"It enables ultrasound to be used by a physician himself, whether he's an ultrasound tech or not, so he's able to determine right there what the issues are for that person," Geyer says. "It's enabled ultrasound for the masses, more or less."

A basic hand-held ultrasound system from Clarius costs just shy of $9,000. This compares with the $25,000 starting cost for most hospital units.

Wearable technology to track exercise and athletic performance has become common for those in good health, but Nimbus recently invested in Vancouver-based Claris Healthcare Inc., which has developed what CEO Geoffrey Auchinleck calls a Fitbit for joints.

Known as Claris Reflex, the device coaches people recovering from knee replacement surgery. The system is loaded with customized rehabilitation instructions for each patient. A sensor then tracks their adherence to exercise regimens and other requirements to track their progress. Doctors, physiotherapists and patients can remotely monitor and modify the recovery process and adapt the rehabilitation program for improved outcomes.

"We're trying to make sure we're providing the appropriate kind of care in their own homes as well as delivering care in the first place," Auchinleck says. "We want it to be personalized, customized to each person."

Claris Reflex grew out of previous work on devices that would help families stay in touch with distant seniors and allow professional caregivers to monitor various patient indicators such as blood pressure and weight. Claris also produces a fall-detection device.

Software is at the heart of all the tools, making Claris more of a digital health firm than a device company, but Auchinleck says a device needed to be developed to run its software.

Other companies are using software to engineer novel solutions that not only tailor diagnostics and rehab regimens to patients, but also allow the targeted delivery of pharmaceuticals – the great hope of precision medicine.

Victoria-based StarFish Medical is Canada's largest medical device design consulting company, employing 140 people. It has 20 projects on the go at any one time, providing engineering, regulatory and other design advice.

"We're a high-technology R&D company," says StarFish's CEO, Scott Phillips.

Right now, for example, it's working with a California company that focuses on stem cell therapies for amyotrophic lateral sclerosis, or ALS, commonly known as Lou Gehrig's disease. Devices to locate markers

Scott Phillips, CEO of StarFish Medical, on the manufacturing floor of the company's Victoria facility | HEWITT PHOTOGRAPHIC/STARFISH MEDICAL

attached to cancer cells, which allows for individualized treatment regimens, are another emerging area.

"That's definitely been an area we've seen a rise in," Phillips says. "Sometimes you need to deliver these specialized therapies to a [specific] part of the body."

Precision Nanosystems Inc., a fast-growing Vancouver company spun out of the UBC lab of Pieter Cullis in partnership with co-founders James Taylor, Carl Hansen and Euan Ramsay, highlights the opportunities for local companies.

Precision Nanosystems focuses on nanomedicines, tiny particle structures that deliver drugs to specific sites in the body. With further research, the technology could eventually be used to turn genes on and off or even edit gene sequences to treat disease.

"However, making nanomedicines is very difficult," says Taylor, the company's CEO. "Typically it's really been an artisan approach. What we've invented and developed and commercialized is a new way to make and manufacture nanomedicines which makes it really easy, comparatively."

Precision Nanosystems produces bench-top units about the size of a file box that give drug companies the ability to develop nanomedicine prototypes. Scaled-up units are possible if commercial production proceeds.

"With this they have a turnkey solution to make the best nanomedicine drugs in the world," Taylor says. "It makes the drugs better and allows people who wouldn't typically be able to get into this field to get into the field."

To outsiders, Precision Nanosystems looks "a lot like a high-technology company," Taylor says, a nod to the diverse ecosystem Vancouver provides for innovation.

"We have a unique advantage of being able to pull from a very sophisticated talent pool here in Vancouver," he says. "Vancouver is a centre of excellence for these types of technologies."

Complementing the talent pool are programs that encourage innovation such as federal scientific research and experimental development (SR&ED) credits and the province's venture capital tax credit (VCC).

"We have a big advantage over U.S. competitors because of the attractive SR&ED environment here, the VCC program for eligible business corporation tax credits, and now the Canadian dollar," says Auchinleck, citing the shift in exchange rates that favours foreign investment in Canada. "Quite frankly, it's just cheaper here."

Besides this, medical device companies can draw on a cosmopolitan talent pool familiar with what jurisdictions around the world require.

"We're now developing a community of experts that are able to handle European and American regulatory situations," he says. "We now have that infrastructure of resources to allow medical device companies to get going."

DIAGNOSTICS GETS PERSONAL

Former LifeLabs CEO says technology and precision health are key to the future of health care

SUE PAISH

FORMER CEO, LIFELABS AND PHARMASAVE

The Canadian health-care system should be an economic driver

BRIGITTE PETERSEN

Digital technologies have transformed the medical diagnostics industry and will continue to enable faster, more precise diagnoses well into the future, says the former CEO of LifeLabs Medical Laboratory Services.

When it comes to precision health, Sue Paish says she sees many opportunities to improve diagnostics, and Canada's health-care system in general, by leveraging new technologies to move away from generalized health care to personalized plans.

"The future of our health-care system must be founded on two elements: technology and precision health," says Paish. "Precision medicine is all about defining the wellness plan for you based on the very specific, unique attributes that make you who you are."

The North Vancouver resident, also previously CEO of Pharmasave Drugs (National) Ltd., says diagnostics should not focus solely on demographic data, as in the past.

"Each one of us is a unique organism. With data and the use of advanced technologies, we will move away from generalized health care."

As part of the move toward precision health, LifeLabs recently partnered with GenXys Health Care Systems, based at the University of British Columbia (UBC), to offer pharmacogenetic testing to determine how individuals metabolize more than 700 commonly prescribed medications. The service, to be launched in Canada this year, reduces trial and error to find the right medication for each patient sooner.

"The effectiveness of prescription medication on any individual is impacted at least in part by your genetic makeup," says Paish. "One element of precision health is getting the medication therapy correct for you as an individual."

Excelleris, a LifeLabs subsidiary, demonstrates how the diagnostics industry successfully uses technology. Originally launched in 2000 as PathNet, Excelleris focuses on improving physicians' access to patient results.

"Through Excelleris, some of the most innovative technology has been deployed to Ontarians and British Columbians," says Paish, citing patients' quick access to test results online as an example. "In today's world,

Sue Paish, former CEO of LifeLabs, says diagnostics is a "fundamental cornerstone of health-care delivery" | ROB KRUYT

Canadians expect and are entitled to have access to their health-care information."

Access to test results is especially helpful for patients living with chronic diseases, such as diabetes or hypertension, who are able to see how their health changes over time due to specific behaviours or activities, says Paish.

"It really empowers patients to be informed about the impact of their decisions," she says.

Paish, who recently left LifeLabs after leading the company for five and a half years, is proud of her accomplishments in consolidating the diagnostics industry – under her watch, LifeLabs doubled in size in 2013 by acquiring BC Biomedical, its largest B.C. competitor, and CML HealthCare, a major Ontario-based competitor – as well as improving relations with provincial governments, positioning LifeLabs for growth and elevating its brand.

Calling diagnostics a "fundamental cornerstone of health-care delivery," she says the days of diagnosing blood samples through the use of microscopes are long gone, largely due to automation.

"Consolidating the industry was critically important because the diagnostics industry ... is very much characterized by massive investments in technology and infrastructure," explains the UBC graduate and former lawyer. "To justify the investment in machinery, you need to have the volume of tests, so you need to have big platforms."

While she is considering her next steps, Paish says she plans to continue to help improve health-care delivery, possibly through Canada's Digital Technology Supercluster. The newly formed, B.C.-based consortium of companies, academia and non-profits is focused on boosting Canada's competitiveness through technology and big data.

According to Paish, health care should help drive the economy, not place a burden on it, particularly as Canada's population continues to age.

"Our health outcomes are not good in relation to the amount that we pay," says the winner of *Business in Vancouver*'s 2018 Influential Women in Business Lifetime Achievement Award. "We must get our health-care system sustainable and we must have more effective health outcomes, or it's going to cripple our economy."

And as Canada has "some of the best research in the world," it is well positioned to become a global health-care leader.

"The Canadian health-care system should be an economic driver," Paish says. "We should have people from around the world coming to buy our services, deploy our technologies and learn about our products and devices."

EXPANDING THE ECOSYSTEM

Peter Zandstra sets sights high for the future of biomedical engineering research

PETER ZANDSTRA

FOUNDING DIRECTOR, BIOMEDICAL ENGINEERING PROGRAM, UNIVERSITY OF BRITISH COLUMBIA

It was really the wonder and fascination about how complex biology is and how little we understand about it that motivated me to do what I do

TYLER NYQUVEST

As a new resident of Vancouver, Dr. Peter Zandstra, founding director of the biomedical engineering program at the University of British Columbia (UBC), finds himself ideally placed to contribute to B.C.'s growing life sciences ecosystem.

"Canada has had many programs to invest in both fundamental research and the translation of that research for impact on society," says Zandstra. "I think we really need to continue to maintain that balance and have the strengths in the universities to participate more fully in those research endeavours and institutions."

A UBC alumnus from the department of chemical and biological engineering, Zandstra has spent the recent years of his career at the University of Toronto serving as a university professor and Canada Research Chair in Stem Cell Bioengineering at the Institute of Biomaterials and Biomedical Engineering. He also served as executive director of the university's Medicine by Design initiative.

Zandstra and his team are pioneers in the field of stem cell bioengineering, which applies engineering principles and technology to fundamental and transitional problems in stem cell biology.

"Starting to think about biological systems and engineered systems has really been one of the main aspects of my career, but it was really the wonder and fascination about how complex biology is and how little we understand about it that motivated me to do what I do," says Zandstra, who has co-founded three companies, most recently ExCellThera, which focuses on the use of blood stem cells for treating disease.

Medicine and the ideals surrounding traditional therapeutic remedies are changing. The more scientists understand each individual body type's regenerative power, the more individual needs are becoming paramount to the therapy provider.

Stem cell research has flourished over the last decade, and scientists are researching ways to apply stem cell treatments for neurodegenerative diseases.

Stem cell therapies are largely considered a major candidate for future therapies, and tailoring certain types of stem cell therapies will become an integral part of the future of precision medicine.

"Precision medicine is really the ability to understand how different patient groups and different subsets of disease can be treated more accurately," says Zandstra. "That involves using different technologies or genomic

Peter Zandstra, founding director of the biomedical engineering program at the University of British Columbia, is a pioneer in the field of stem cell bioengineering | PAUL JOSEPH

information or cells to tailor our therapies to groups of patients or groups of individuals in a way that increases the probability that that therapeutic will have a successful outcome."

Zandstra is particularly interested in the process from which tissue and organs form from individual cells and believes the continuation of the theme of precision medicine will support this new mentality on individual-centric research.

"I think there is great opportunity in the stem cell, regenerative medicine space," he says. "Biomedical engineering is an important component of starting to take the fundamental biology which we are learning and developing new technologies and therapies around. That's why I am really excited about starting the new biomedical engineering program at UBC."

At the UBC facility, Zandstra plans to undertake different explorative methods to not only develop his theories on stem cell therapies and bodily systems, but also advance B.C.'s position as an innovation and technology leader in health and life sciences.

"B.C. has a lot of fantastic people in regenerative medicine," he says. "We started the B.C. Regenerative Medicine [Cluster] Initiative and there are more than 40 investigators involved in this area, so it is a great, strong hub."

Led by Dr. Fabio Rossi, a professor in UBC's department of medical genetics and a director of the UBC Biomedical Research Centre, the cluster initiative aims to "establish B.C. as a premier destination for the discovery, development and implementation of cellular and regenerative medicine therapies and technologies," according to its website.

"One of the areas we will be focusing on is cells and molecular systems," Zandstra continues. "Also thinking across to other technology initiatives like imaging and AI [artificial intelligence] and computational biology and complex devices really represent good opportunities for us to build on to develop new therapeutics."

"And of course," he adds, "we are interested in continuing to build the Canadian innovation ecosystem, the number of companies, the number of commercial entities that can create a self-sustaining environment to provide the jobs and the outcomes to the students that we are trying to get."

TAILORED TREATMENTS

Zymeworks CEO envisions a world where medicine isn't 'one size fits all'

ALI TEHRANI
CEO, ZYMEWORKS

Just because you are a male and I am a male does not mean that the same drug is going to work for us

TYLER NYQUVEST

As a child, Ali Tehrani, CEO of Vancouver-based biotechnology company Zymeworks Inc., was enthralled by the body's regenerative capabilities. "I remember the first time I saw DNA replicate in a black-and-white video in a biology class, and I was just in awe," Tehrani says. "I remember thinking, 'This happens, this beautifully, all the time, to this level of perfection? I just need to know how.'"

Tehrani frequently refers to the body this way: as an unstoppable regenerative machine that is capable of incredible self-preservation, whereas others might just see it as the vehicle that transports us through our daily lives.

Tehrani employs a unique vision of the purpose of medicine and recalls how his previous understanding of medicine was distorted – an odd sentiment for the president of a biotherapeutics company.

"I would think a pill or a teaspoon of syrup was this amazing army, but then I realized that in fact it wasn't; it was my own immune system that just needed a bit of help doing its job."

Tehrani earned his doctorate in microbiology and immunology from the University of British Columbia (UBC). As a PhD graduate fresh out of school, Tehrani knew nothing about business until the original investors in Zymeworks took him under their wing.

He quickly learned the trap many pharmaceutical drug companies fall into: rushing to get a product to market to please company investors. If he attempted any shortcuts, he knew his workload would double. There was going to be no fast-forward to reputable success within the scientific community or the business world.

So, Tehrani knew he needed to hone what his core purpose was and what he wanted his company to achieve.

Zymeworks is first and foremost a clinical-stage biopharmaceutical company. The publicly traded company is headquartered in Vancouver's Broadway health corridor and employs over 150 people. Zymeworks has grown exponentially in the past 12 years. Its lead product candidate, ZW25, is a bispecific antibody that has been shown to lead to anti-tumour tendencies in patients expressing breast and gastric cancer.

Initially focused on the treatment of cancer, Zymeworks has evolved to incorporate commercialization of next-generation multi-functional biotheraputics. In a loaded mission, Tehrani aligned his personal and professional goals in medicine with the future of life science in British Columbia: precision medicine.

"We are going to be looking at individuals and we are

Zymeworks CEO Ali Tehrani says, "The future is about understanding the individual and what is tailored for them in addressing their health issues" | ROB KRUYT

going to be looking at how to best treat individuals as opposed to a population," he says. "Today, you can go to Indochino and get a suit that is tailored for you without having to think of the old days of how much that would cost you. And off the rack is going to be gone."

"Just because you are a male and I am a male does not mean that the same drug is going to work for us," Tehrani adds. "The future is about understanding the individual and what is tailored for them in addressing their health issues."

Tehrani envisions a world where medicine is viewed "more as a preventative as opposed to a reactive measure and going forward with that mindset as opposed to 'one size fits all.'"

And B.C. is poised to make great strides, but, Tehrani says, there is still work to be done.

"Some of the smartest people on the face of the earth, especially in sciences, are here in B.C. UBC and SFU [Simon Fraser University], our training has some of the brightest minds. The problem is, as a province, we are very much in love with either cutting it or digging it," he says.

"As a generation, we've been told that the best that this province has to offer is trees and forestry and mining and we should just accept it as opposed to creating a knowledge-based economy around some of our brightest people."

That's not to say B.C. scientists haven't endured to present some of the most groundbreaking advancements in the medical field, Tehrani says. But he has found that the majority of his inspirations have come from the other side of operations.

"In the business world, there's a lot of people I take note from and idealize. For me, the person that has shown me a lot, without a shadow of a doubt, is Haig Farris."

Farris is a founding chairman of D-Wave Systems, the Burnaby-based company that raised $130 million to build the first commercial quantum computer.

"Haig himself was one of the founders of Ventures West Capital Ltd. They have been in business and entrepreneurship for a very long time, and he has taught me a lot about business."

Tehrani exudes the type of confidence that only comes after years of dedicated hard work, a quality he attributes to one all-inspiring motivation: "My aspiration and the reason I get out of bed each day is that I am driven by sending patients back home to their loved ones disease-free. When [patients] get to go back home and have a smile on their face, that to me is the greatest feeling in the world."

TARGET: LOCKED

Innovative Targeting Solutions' revolutionary protein-engineering platform is helping to make personalized medicine more accessible and providing patients with less toxic, more focused treatment options

PAUL KANG

CHIEF SCIENTIFIC OFFICER, INNOVATIVE TARGETING SOLUTIONS

When we started this company I would go to conferences and talk to people and explain I was based out of Vancouver, and they'd say, 'There's biotech out there?'

JAN-CHRISTIAN SORENSEN

Since its inception, Vancouver's Innovative Targeting Solutions Inc. (ITS) has been rapidly charting the next evolutionary step toward engineering and discovering first-in-class biologics and antibody drug candidates, thanks to its revolutionary HuTARG technology.

A proprietary protein-engineering platform designed for the generation of fully human antibody and T-cell-receptor-based therapeutics, HuTARG has quickly earned a reputation in the biotech and pharmaceutical sectors as a versatile tool that allows companies to isolate, engineer and screen billions of antibodies directly for function.

It is the only cell-based technology that can achieve that level of in vitro diversity and for the first time makes mammalian cell display a viable approach for drug discovery, says Paul Kang, chief scientific officer of ITS.

Put simply, ITS has managed to replicate the human immune system in a petri dish to better develop new drugs for previously undruggable proteins.

"For us, precision medicine is really about understanding disease at a deeper level by looking at genetics and things of that nature to try and determine what is causing the underlying pathology of a given patient," says Kang. "When we as a scientific community have a deeper understanding of what that pathology is and which proteins are misregulated, our technology can help make specific inhibitors and provide the patient with less toxic, more focused treatment."

In the past two years the HuTARG technology has spawned a number of research agreements and collaborations with such big-name global pharma firms as Eli Lilly and Co., Janssen Pharmaceutica, Merck & Co., Amgen and Novartis International and helped earn ITS LifeSciences BC's 2017 Growth Stage Life Sciences Company of the Year award.

The seeds of what would form the foundation of the HuTARG platform were first sown in the mid-1990s with the development of XenoMouse, the premier transgenic

Innovative Targeting Solutions president Michael Gallo (left) and chief scientific officer Paul Kang | ROB KRUYT

mouse technology for creating fully human antibodies, which was spearheaded by a team of researchers at California's Cell Genesys that included future ITS president Michael Gallo. Around the same time, Kang was part of Vancouver's ImmGenics Pharmaceuticals Inc., where he was helping to leverage a new antibody isolation and generation platform called the selected lymphocyte antibody method, or SLAM.

After ImmGenics was acquired by Cell Genesys spinoff Abgenix Inc. in 2000, Gallo joined forces with the team at ImmGenics in a Canadian subsidiary of Abgenix called Abgenix Biopharma and helped synergize the SLAM and XenoMouse technologies to pave the way for improved antibody generation platforms.

In 2009, Gallo, Kang and their longtime colleague and ITS director of research Craig Pigott broke ground on a new collaboration, and Innovative Targeting Solutions Inc. was born. What began as a small, three-person company headquartered in an incubator facility in Burnaby has since grown into an industry pioneer with broad patents on its technology, six pharma/biotech collaborations and 11 employees working out of a new research facility off Grandview Highway in Vancouver.

"I can't say enough about how many hours people have put in to get this thing going, and from a business perspective we're still evolving," says Kang, who hails from Merritt, B.C. "We started off with a mission to develop a technology, stay focused on its development and prove to the world that the technology is really good at creating drugs for difficult targets, and we've been able to establish our company as a front-runner."

While Kang credits the growing biotech community within B.C. for helping to create and nurture a nucleus of industry-leading antibody-based therapeutics and protein-engineering companies like Zymeworks Inc. and AbCellera Biologics Inc., he stresses there is still plenty of work to be done to establish an international presence for the local sector.

"When we started this company I would go to conferences and talk to people and explain I was based out of Vancouver, and they'd say, 'There's biotech out there?'" says Kang, laughing. "Sure, we're not as mature as Cambridge or San Francisco or Seattle, but all those areas started out small and built up their biotech companies and expertise. [Growth] spawns from small ideas becoming bigger ones thanks to continued [private and government] investment, and once you build that confidence and momentum, the next thing you know, you're a cluster.

"We still have work to do and we still need continued investment so that these ideas that start small – like HuTARG – get the support they need so they can grow and keep the sector moving. I think we have some great momentum; we just need to make sure we sustain it and have a long-term vision."

A key part of sustaining that momentum involves fostering a continued sense of collaboration and co-operation as opposed to competition between local biotech companies, he adds.

"The end goal is the same for all of us – improving overall human health. There are a lot of diseases out there, and it will require a collaborative effort to move health forward. The more that we work together and synergize our technologies, the better it's going to be."

DELIVERING VALUE

Vancouver biotech AbCellera develops antibody therapeutics for influenza, tuberculosis, Ebola, E. coli and drug-resistant bacteria

CARL HANSEN
CO-FOUNDER AND CEO, ABCELLERA

You have to be good, and you must have the resources to take enough shots on net

MARKE ANDREWS

Inside every life sciences innovator in the health field, there's an idealist striving to make the world better.That's certainly the case with Carl Hansen, co-founder and CEO of AbCellera Biologics Inc., a Vancouver company that tries to find antibodies that can combat viral and bacterial pathogens attacking the body. On the About page of AbCellera's website, it's there in plain type: "Being valuable simply means helping others."

In conversation, Hansen expands on the principle.

"We don't have MBAs, and we haven't gone to business school, but I think a fundamental truth about any business is that you will succeed to the extent that you deliver something valuable to someone," he says.

"We work with pharmaceutical and biotech companies, and we have to be able to deliver to them something that solves a major problem and helps them in their efforts, which, in turn, are ultimately directed to helping patients."

Though the CEO cannot discuss specifics of AbCellera's lab research, the company has worked to find treatments for influenza, tuberculosis, Ebola, E. coli and drug-resistant bacteria.

"If we do our job well, these drugs are moving forward faster or we're advancing programs that have been completely stuck," he says. "Maybe five, 10 years from now, that will make a difference for someone who needs a new therapy."

Like many in the life sciences field, Hansen took a winding path to his career. Born in Edmonton, he came to Vancouver to learn engineering physics at the University of British Columbia (UBC). "I went deep into math and circuits and physics and mechanics," he recalls, "but I didn't really believe I was going to make a huge contribution in physics. I was looking for more fertile ground, and so switched to biophysics."

After four years of grad school at the California Institute

Carl Hansen, co-founder and CEO of AbCellera, believes B.C. is a major centre of talent in health sciences | ROB KRUYT

of Technology, Hansen returned to UBC in 2005 and set up a lab to work on microfluidic technology, the creation of tiny fluidic circuits that allow the researcher to miniaturize biomedical experiments, helping to make research more cost-efficient.

"I became a plumber of very small things for biology," Hansen says.

His lab research program analyzing individual cells made him go into places he "had no business going," he says.

"Within an engineer's lab we were doing genomics, growing cells, doing biochemistry, cloning and expression."

Building a strong team that worked alongside some of the leading biologists in Vancouver – and realizing that in the world of academics things move slowly because individuals use their research to publish papers – Hansen and five others co-founded AbCellera in 2012.

Over its six-year existence, AbCellera has grown from six to 45 employees. It has partnered with major companies, non-profits and institutions. Because drug development can take years of trials, with no guarantee of success, workers in the field must have patience and resources.

"You have to be good, and you must have the resources to take enough shots on net," he says. "The very best science, the very best technology, the very best intent in trial design will not always succeed."

Because antibodies can potentially work in scores of different areas, the company philosophy is to go wide, not devote its time and resources to just one or two areas.

"It makes sense to work broadly with people, because then we can touch a lot of different programs and [potentially] share success across not just one or two but ultimately hundreds of programs," he says. "The binary risk that you typically see in drug development, we've managed to sidestep."

In addition to working with pharmaceutical companies, AbCellera does antibody research for the U.S. Defense Department's Defense Advanced Research Projects Agency, which wants to know how to protect against bioterrorism.

They must be doing something right at AbCellera, because the young company is profitable.

Hansen believes that UBC and the province of B.C. form a major centre of talent in health sciences, and while other centres like San Francisco and Boston are better known, he feels this area has an advantage in gathering the talent to start a company.

"We have world-class universities, certainly within the top 30 in the world," Hansen says, "with particular strength in areas such as genomics, immunology and cell biology. There are 50,000 students at UBC, 20,000 at Simon Fraser University, and people want to stay here but there are no jobs."

"If you're a biotech company that's successful and doing something interesting, there's a huge amount of talent looking for an opportunity," says Hansen, stressing that small companies have a better chance for traction here than in San Francisco and Boston, where they are up against the big multinational biotech companies.

AbCellera is in the right business.

"A quarter of a century ago, pharmaceutical companies didn't think of antibodies as drugs," says Hansen. "Today, it's a $100 billion market."

BIOPRINTING THE FUTURE

Aspect Biosystems uses groundbreaking science and technology to create living human tissue on demand

TAMER MOHAMED
CEO, ASPECT BIOSYSTEMS

This is sort of the holy grail of personalized medicine

EVAN DUGGAN

Consider a made-just-for-you replacement ligament to heal and restore your injured knee – and it's grown and developed from your own body's cells. It doesn't take much imagination to realize there's likely ample demand for such a treatment, and it's one that Vancouver-based Aspect Biosystems is working on.

Aspect Biosystems Ltd. is a privately held biotechnology company working with 3D bioprinting and tissue engineering.

The company makes living human tissue.

Led by CEO Tamer Mohamed, the company created 3D bioprinting technology that is helping it understand and tailor fundamental biology, research diseases and develop new personalized treatments and regenerative medicine.

Mohamed launched his research at the University of British Columbia and then shifted into the commercial arena about five years ago.

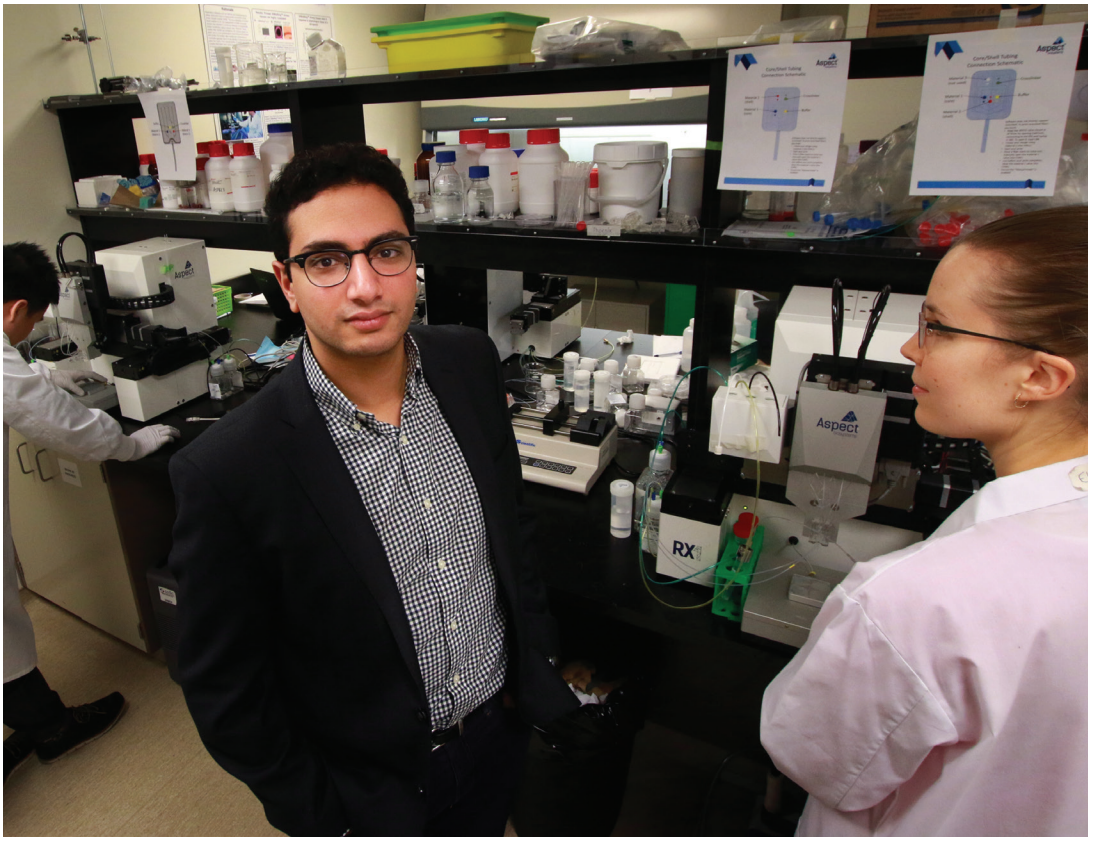
"We spun out our company from the university into the commercial entity so we could actually start to deliver impacts to people," he says.

Aspect Biosystems represents what can happen when groundbreaking science is married to business acumen, but it's a combination that British Columbia needs more of if it aims to challenge the heavyweights of other health science hubs, Mohamed believes.

Three-dimensional bioprinting is essentially the creation of biological structures on demand, Mohamed explains.

"We're at a point in time where we understand cell biology and other key areas to a point where we can take those building blocks and assemble tissue structures," he says. "That has profound implications on several areas in health care through the use of these tissues to understand disease, or using these tissues as replacement parts for diseased parts inside of our body."

Mohamed says his company's 3D-printed tissue could also be used to safely test new medicines or therapies



Tamer Mohamed, CEO of Vancouver-based Aspect Biosystems, says his company is working with Johnson & Johnson on developing personalized, customized knee meniscus tissue that could replace damaged tissue | ROB KRUYT

with more precise results.

"We have active collaborations with global pharmaceutical companies which are using our 3D-printed tissues in a pharmaceutical drug-testing setting, and so that's a near-term opportunity."

The company has an active partnership with Johnson & Johnson in which they are developing 3D-printed knee meniscus tissue.

"That's a cartilage in the knee that is unfortunately commonly damaged through aging and through sport injuries, and once the damage occurs, the problem gets worse and worse as time goes by even after contemporary surgeries," Mohamed says. "Using our technology and working closely with Johnson & Johnson, we're actually looking at developing a personalized, customized knee meniscus tissue that would act as a replacement.

"This is sort of the holy grail of personalized medicine," he adds, "where we're customizing a tissue in terms of the structure by taking, for example, a scan of your damaged knee and also customizing it to what that structure is made of.

"The idea that we can take a sample of cells from your body, print out a structure that we could use to replace a damaged part inside your body, is revolutionary. I think in the future we'll be able to tackle those issues of regenerative medicine and be able to really have a profound impact on medicine."

Some of the best research in the world is coming out of B.C.'s universities, but much of that fails to take the next step into the commercial market, mostly for lack of top business talent here, Mohamed says.

"We have a lot of access to scientific talent here, but there is still a big gap here in terms of executive-level talent," he says. "It's very hard to attract people from the U.S., for example, and bring them to Vancouver where it's very expensive to live."

He says top executives face the decision of moving their families here for a job or company that might not last.

"If the business isn't successful, it's not like they could walk down the street and find another company. It's a big commitment with a lot of risk."

In a health science supercluster like Boston, Mohamed adds, there are tens or even hundreds of competing firms that can absorb talent that's been washed out of the startup ecosystem.

Researchers and companies here need to figure out how to scale up and commercialize their bright ideas.

"It really relies on funnelling all of our efforts into making the best startups here to make B.C. successful, because creating those success stories is what's going to attract people to come, and it's what is going to create that ecosystem."

Aspect Biosystems is an example of that, Mohamed says. "We are taking it to the next level and bringing that innovation outside of the university and looking at commercializing it."

INSTI SUCCESS

BioLytical Laboratories' HIV testing kits will help make big gains in prevention and treatment, CTO says

RICK GALLI

CHIEF TECHNOLOGY OFFICER, BIOLYTICAL LABORATORIES

The global goal is the eradication of transmission by 2030

EVAN DUGGAN

Rick Galli counts himself among those working against HIV-AIDS who believe that human-to-human transmission of the disease will be eradicated within the next 10 to 12 years. Galli's role in that is with Richmond, B.C.'s BioLytical Laboratories, which develops and makes the INSTI kit, the fastest HIV test in the world.

"The global goal is the eradication of transmission by 2030," says Galli, the company's chief technology officer. "This is now seen as actually possible due to all of the innovations and testing, but also more importantly treatment and access to care."

The INSTI kit involves a rapid in vitro test to detect antibodies to HIV Type 1 or Type 2 in human whole blood, finger-stick blood or plasma.

The company set out to make HIV testing more accessible to the public, says Galli, who joined the team full time in 2005 after roles with the Ontario Ministry of Health and the BC Centre for Excellence in HIV/AIDS, where he helped to set up the first accredited HIV molecular lab monitoring program in Canada.

When BioLytical got started, most HIV testing was being done in labs, Galli says.

"That was making it difficult for different groups of populations, not only in the developing world but in Canada as well, to access testing. The lab model would involve going and getting a blood sample collected, having it sent to a lab and then coming back to get your results some time later."

Galli says the company's original goal was to create a test it could bring directly to patients. So, it created

Rick Galli, chief technology officer for BioLytical Laboratories, believes person-to-person transmission of HIV will be eradicated within the next 10 to 12 years | SUBMITTED

BELOW: BioLytical Laboratories' INSTI HIV self-test allows users to test themselves, easily and accurately, at home in 60 seconds | SUBMITTED

INSTI to "bring in a better tool – a more accessible tool into the whole testing landscape," he says.

The company's latest development is the INSTI HIV self-test, which is a single-use test that allows users to test themselves, easily and accurately, at home in 60 seconds.

"INSTI is a tremendous success story," Galli says. "Starting from its concept, aiming to be what's considered the fastest and most accurate HIV test in the world has really taken off over the years. We have grown to be a global innovation-focused company that's providing a solution. Right now, we're in over 60 countries worldwide, and that's growing."

The made-in-B.C. product earned a feather in its cap in 2016 when Prince Harry tried INSTI on a live broadcast to demonstrate its usage.

Within 60 seconds, the test revealed that Prince Harry had tested negative.

When it comes to HIV-AIDS research and treatment, B.C. doesn't take a back seat to anybody, Galli says.

"The Centre for Excellence has always been on the

Insti success

cutting edge of treatment, of policy and certainly in research in populations that are affected by HIV and AIDS," he says.

The centre, led initially by Michael V. O'Shaughnessy and now by Dr. Julio Montaner, created programs and earned support from the government that shows the world the best ways to tackle the disease, Galli says. "I feel really proud to have been part of that."

More work remains to be done, including broadening access to the self-test kit, which is already being used in Europe and Africa. "This is a concept that's really taking off globally," Galli says.

BioLytical must be able to show that the self-tests are safe and easy to use, and that people can get the correct result, he says.

"With INSTI, that has been done and continues to be done in pretty groundbreaking studies in low- and middle-income countries."

He says similar technology can eventually be brought to market for diagnosing hepatitis C and other infectious diseases. "It's a good fit for those types of new unmet needs that are out there."

Widespread testing that's quick and easy will help to make big gains in HIV-AIDS prevention and treatment, Galli says.

"All of those elements are working together to essentially reduce and finally to fully eliminate transmission of HIV from one person to another in the next 10 to 12 years," he says. "There is every reason to believe that this will happen."

CORPORATE PROFILES

2018

GROWING BRITISH COLUMBIA'S BIO-ECONOMY

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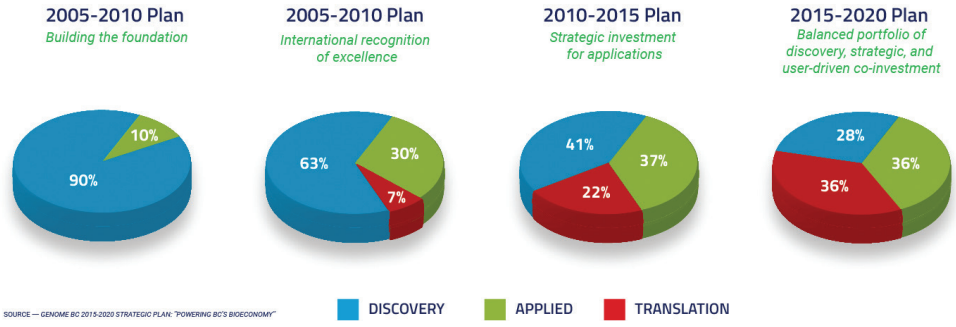

Genomics is at the core of cutting-edge science and technologies that are driving growth, productivity, commercialization and global competitiveness. Since 2000, Genome British Columbia (Genome BC) has invested over $850 million in over 315 research projects and science and technology platforms to establish world-class genome sciences capabilities. These investments are generating jobs, advancing new companies and attracting national and international investments.

Through ongoing dialogue and engagement with industry, Genome BC is identifying where the applications of genomic technologies can solve specific challenges facing key sectors. Our funding programs support the development and translation of genomics research which have attracted a combined investment of more than $646 million to the region.

Bringing industry and academia together has enhanced innovation in BC. As applied and translational research continues to provide useful and beneficial outcomes, Genome BC continues to help realize commercial opportunities through support for entrepreneurship.

Programs such as HyperGrowth:Life, e@UBC and SFU Innovates help breed a culture of innovation by providing resources to accelerate and mobilize ideas that will produce meaningful social and economic impact in BC, Canada, and the world.

However, an entrepreneurial mindset alone is not enough to bring a great idea to commercial success. Securing investment is always challenging and making the leap from seed capital to series A funding or other significant financing events can be one of the most difficult hurdles for most startups. Great ideas can fall to the wayside as a result. Genome BC's Industry Innovation Program (I^2) is a unique program that helps companies make financial transitions at pivotal times during the early stages of commercial development.

The goal of I^2 is successful commercialization, industry growth, jobs, and economic impact for the Province of BC. The fund provides support to companies looking to scale up operations and to boost their competitiveness during a critical time in their evolution. I^2 funding is repayable four years after disbursement; or when the company achieves product, service or licensing revenues, or the company achieves a significant financial milestone.

Even companies who may not qualify for funding through I^2 can benefit through the program's due diligence process. By tapping into the network of expertise, through senior leaders and resources established by the I^2 program, connections are made, knowledge is transferred, weakness is mitigated, and strengths are pursued. The result is a stronger foundation for entrepreneurship and economic development in British Columbia.

Genomics has the potential to offer profound societal and economic benefits. BC has the scientific and technical talent, infrastructure and a strong entrepreneurial base to create new jobs in life sciences and drive the knowledge-based economy. Critical to this is an ecosystem where innovation can flourish, and hard work can be rewarded.

Together with support from the Province of British Columbia, the Government of Canada through Genome Canada and Western Economic Diversification Canada and more than 764 partnerships, we are fueling genomics in BC: a powerful engine for innovation and technology and driving future economic growth in BC's expanding bio-economy.

Recognizing that investment in life science innovation has a long-time horizon, each of Genome BC's five-year strategic plans has progressively dedicated more resources to research aimed at providing solutions through practical applications across each key sector. Today, almost 72% of resources are directed towards applied and translational projects through collaboration with industry.

Contact: Pat Brady
Director,
Industry Innovation Programs
pbrady@genomebc.ca or
604.675.1034

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Leading > Investing > Connecting

INSTI: Introducing the Revolutionary HIV Self-Test from bioLytical Laboratories

Richmond based company pioneering HIV self-test.

Canadian company bioLytical Laboratories' new INSTI HIV self-testing technology is revolutionizing the way people across the globe test themselves for HIV.

The INSTI HIV Self Test is a single-use HIV test that allows people to get results almost instantly from the comfort of their private home. "It is the world's fastest HIV test," says Livleen Veslemes, the CFO and COO of bioLytical Laboratories.

bioLytical describes itself as a "nimble and innovative company" with a forward-thinking research and development department that has developed diagnostics assays for diseases like HIV.

How it works

The INSTI HIV Self Test has only been around for a couple of years, but its popularity is skyrocketing, in part, due to how easy it is to use. It has three easy steps: deliver a single drop of blood into a solution; pour solution into test; and read the result instantly. The user-centered design provides the simplicity and innovation to facilitate a user-friendly experience with a clear, uncomplicated interface for result interpretation. INSTI provides results in less than a minute, making it incredibly quick, reliable, easy and accurate. One dot means negative, while two dots mean positive. INSTI claims to be more than 99% accurate when used correctly.

The test works by detecting HIV-1 and HIV-2 antibodies from the human blood provided. INSTI can determine whether you are positive or not within 21-22 days after infection, however, a negative result may not be accurate up until 3 months after infection.

"INSTI is revolutionizing the way people are being tested for HIV," Veslemes added. She said that the one-minute result is "the number one greatest benefit" as other tests take up to twenty minutes for results, which can increase anxiety. Also, because INSTI is a blood test, it tends to be more accurate than oral fluid tests. Not to mention it's private and is made for in-home use for those who aren't comfortable going to a clinic.

HIV, or the human immunodeficiency virus, attacks the body's immune system. If the virus isn't treated, it can lead to acquired immunodeficiency syndrome (AIDS). Although HIV and AIDS can't be entirely cured, modern technology and medicine have made a diagnosis manageable, with plenty of people living an otherwise normal lifespan.

Global context of HIV and INSTI

Currently, UNAIDS estimates that approximately 36.7-million people worldwide have HIV/AIDS. Currently, only 60% of people with HIV know their status. The remaining 40% (over 14 million people) need to access HIV testing services. Stigma, discrimination, privacy, and confidentiality are barriers to seeking facility-based HIV testing. Hundreds of millions of people likely need to be tested in order to diagnose the 14 million who still are not aware that they are living with HIV. INSTI is filling that gap. To date, an estimated 15,000,000 INSTI HIV Tests have already been used worldwide.

bioLytical's website claims that INSTI's rapid diagnostic test is "regulatory approved in the US, Canada, European Union and other countries that accept the World Health Organization guidelines." Currently, the INSTI HIV Self Test is available in European and African markets, where it is primarily available to purchase online and from pharmacies. At the moment, the self-test is not available in Canada, but the INSTI point of care test is.

"Whether it's point of care or a self test, with HIV it's important to engage women, young people, and men with testing," said Eva Siu, marketing manager at bioLytical Laboratories. Siu states that since the increase of popularity around self-testing, more men and youth are testing themselves than in the past. But more importantly, Siu says that self-testing is changing the conversation around HIV, "It's normalizing the conversation around HIV, it is really crucial that people know HIV is a treatable chronic condition." She also stressed that with the advancement of modern technology and medicine it's completely possible to live a full life with the virus, but you need to know that you are positive in order to get proper treatment.

Ultimately, the INSTI HIV Self Test and bioLytical Laboratories are part of a global movement to eradicate HIV by 2030.

Veslemes says that testing, whether it's self-testing or point of care, is crucial to stopping the spread of HIV, "We want to ensure every single person gets tested, INSTI only takes one minute, and it could impact your life for the rest of your future and save the generations to come."

Contact: Eva Siu
info@biolytical.com
Phone: 604-204-6784

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BRI ...your drug development specialist

"We strive to earn your trust and confidence"

For more than two decades, BRI has assisted hundreds of biotech and pharmaceutical companies on their pre-clinical and clinical development programs.

Being one of the few privately owned CRO with capabilities in bioanalytical, in-vivo and in-vitro DMPK and xenograft animal models in Western Canada, BRI's uncompromising study protocols, stringent quality control measures, and relevant study design allows them to build trusted and long-lasting partnerships with their highly valued clients.

The success stories

In 2004 and 2007, two virtual biotech companies located in San Francisco and Los Angeles engaged BRI for development of bioanalytical assays in support of their IND-enabling and clinical program. In 2009, both companies licensed their drug candidates to big pharmaceutical companies for $700 million and $900 million, respectively.

A Seattle biotech company approached BRI in 2008 for a series of in-vivo and in-vitro DMPK and mechanistic studies. This biotech company was acquired for $600 million in 2011.

BRI's successful track record in providing accurate and quality data while adhering to the strict guidelines of GLP, cGMP, and FDA regulations has played an important role in these companies' success.

GLP accreditation by Standard Council of Canada

BRI is accredited by Standard Council of Canada for its GLP compliance while holding a current GMP Establishment Licence through Health Canada. All IND enabling studies and clinical bioanalytical studies performed at BRI follow the following regulations and guidelines. This allows data generated at BRI to be submitted to USA, Canada, Japan and all OECD countries.

- United States Food & Drug Administration (FDA), 21 CFR Part 58
- Japanese Ministry of Health, Labor, and Welfare (MHLW), Ordinance No. 21
- Organization for Economic Cooperation and Development (OECD), Series on Principles of Good Laboratory Practice and Compliance Monitoring Monograph #1 to 15

^{14}C nuclear substance licence

With ^{14}C nuclear substance licence, BRI can efficiently identify metabolites and determine tissue distribution using ^{14}C-labeled compounds.

In additional to metabolite identification, other in-vitro metabolism studies including metabolic stability, inhibition, induction and ADMET related plasma protein binding studies are often performed at BRI to define drug-like properties.

AAALAC accredited animal facility with cytotoxic drugs handling capability

BRI's rodent facility is accredited by AAALAC and has performed numerous dose range finding, PK, bioavailability, metabolite excretion and mass balance studies. Dried blood spot assay technique is used to allow serial blood collection in small rodents to reduce variability of PK data.

With Specific Pathogen Free (SPF) and cytotoxic compound handling capabilities, cell-based and patient-derived xenograft models for oncology drug efficiency screening are offered at BRI. Their cell repository contains over 100 cancer cell lines, providing a wide selection and flexibility to its clients.

Thermo Watson™ LIMS data management system

To support IND-enabling animal TK/PK or clinical PK, the use of Thermo Watson™ LIMS for sample and data management is a plus. BRI's bar code system enables BRI to store and manage thousands of samples and process its data effectively and efficiently.

To handle multiple site clinical studies, bar-coded labeled sample vials, customized sample collection kits, ultra low temperature freezer, IATA and TDG specified shipping container, pre-filled waybills and commercial invoices are just a few solutions that BRI offers to allow a smooth sailing of their clients' clinical studies.

Stand out from the crowd

The clients of BRI benefit from a wide range of services including LC/MS/MS bioanalytical assay, ELISA assay, hybridization assay, in-vivo and in-vitro DMPK and efficacy xenograft models. These services are delivered by highly experienced scientists with specializations in the development of synthetic small molecules, microRNAs, RNAs, nucleotides and peptides drugs.

BRI is known for providing "fit-for-purpose" research in integrated drug development with competitive pricing. It has an outstanding record of client satisfaction and dedication to meet the highest standards in scientific "best-practices," integrity of data, timeliness and professional service.

Contact: Ms. Clara Faan, VP Business Development
Phone: 604-432-9237 x224

BRI Biopharmaceutical Research Inc.

LifeSciences BC membership directory

ACADEMIC & RESEARCH INSTITUTIONS

BC Cancer Agency
675 West 10th Ave., Vancouver, BC V5Z 1L3
604-877-6000 www.bccancer.bc.ca

BCIT School of Health Sciences
3700 Willingdon Ave., School of Health Sciences, Burnaby, BC V5G 3H2
604-451-7112 www.bcit.ca/health

British Columbia Centre for Excellence in HIV/AIDS
608 – 1081 Burrard St., Vancouver, BC V6Z 1Y6
604-806-8477 www.cfenet.ubc.ca

Centre for Heart Lung Innovation
166 – 1081 Burrard St., St. Paul's Hospital, Vancouver, BC V6Z 1Y6
604-806-8346 www.hli.ubc.ca

entrepreneurship@UBC
604-822-0600 entrepreneurship.ubc.ca

Genome BritishColumbia
Leading ▸ Investing ▸ Connecting

Genome British Columbia
400 – 575 West 8th Ave., Vancouver, BC V5Z 0C4
604-738-8072 www.genomebc.ca

ICORD
Blusson Spinal Cord Centre, 818 West 10th Ave., 3rd floor, Vancouver, BC V5Z 1M9
604-675-8810 www.icord.org

Michael Smith Foundation for Health Research
200 – 1285 West Broadway, Vancouver, BC V6H 3X8
604-730-8322 www.msfhr.org

Providence Health Care Research Institute
1190 Hornby St., 10th floor, Vancouver, BC V6Z 2K5
604-806-9464 www.providenceresearch.ca

Research Universities' Council of British Columbia
400 – 880 Douglas St., Victoria, BC V8W 2B7
250-480-4859 www.rupc.bc.ca

Rick Hansen Institute
Blusson Spinal Cord Centre, 6400 – 818 West 10th Ave., Vancouver, BC V5Z 1M9
604-827-2421 www.rickhanseninstitute.org

Royal Roads University
2005 Sooke Rd., Victoria, BC V9B 5Y2
250-391-2511 www.royalroads.ca

Simon Fraser University
Strand Hall, 3195 – 8888 University Dr., Burnaby, BC V5A 1S6
778-782-4152 www.sfu.ca

Simon Fraser University Innovation Office
8900 Nelson Way, MTF Room 230, Burnaby, BC V5A 4W9 www.sfu.ca/io

CDRD
THE CENTRE FOR DRUG RESEARCH & DEVELOPMENT

The Centre for Drug Research and Development (CDRD)
2405 Wesbrook Mall, 4th floor, Vancouver, BC V6T 1Z3
604-827-1147 www.cdrd.ca

Thompson Rivers University
805 TRU Way, Kamloops, BC V2C 0C8
250-828-5000 www.tru.ca

Trinity Western University, Biotechnology Program
7600 Glover Rd., Langley, BC V2Y 1Y1
604-888-7511 www.twu.ca/academics/faculty-natural-applied-sciences/biotechnology

TRIUMF
4004 Wesbrook Mall, Vancouver, BC V6T 2A3
604-222-1047 www.triumf.ca

University of British Columbia
Old Admin. Building, 103 – 6328 Memorial Rd., Vancouver, BC V6T 1Z2
604-822-4571 www.ubc.ca

University of British Columbia Faculty of Pharmaceutical Sciences
3309 – 2405 Wesbrook Mall, Vancouver, BC V6T 1Z3
604-827-2673 www.pharmsci.ubc.ca

University of British Columbia Pre-Clinical Services
4145 Wesbrook Mall, Vancouver, BC V6T 1W5
604-827-5792 www.bcprc.ca

University of British Columbia Sauder School of Business
2053 Main Mall, Vancouver, BC V6T 1Z2
604-822-8555 www.sauder.ubc.ca

University of British Columbia UILO
103 – 6190 Agronomy Rd., Vancouver, BC V6T 1Z4
604-822-8580 www.uilo.ubc.ca

University of Northern BC
3333 University Way, Prince George, BC V2N 4Z9
250-960-5555 www.unbc.ca

University of Victoria
3800 Finnerty Rd., Victoria, BC V8P 5C2
250-721-7211 www.uvic.ca

Vancouver Coastal Health Research Institute (VCHRI)
3665 – 910 West 10th Ave., Jim Pattison Pavilion North, VGH, Vancouver, BC V5Z 1M9
604-875-4372 www.vchri.ca

ACCOUNTING

KPMG

KPMG LLP
777 Dunsmuir St., PO Box 10426, Vancouver, BC V7Y 1K3
604-691-3000 www.kpmg.ca

pwc

PwC Canada
1400 – 250 Howe St., Vancouver, BC V6C 3S7
604-806-7000 www.pwc.com

ASSOCIATIONS

ACCT Canada
1 – 189 Queen St. East, Toronto, ON M5A 1S2
www.acctcanada.ca

ACETECH
900 – 1188 W Georgia St., Vancouver, BC V6E 4A2
604-683-5852 www.acetech.org

AdvantageBC
3093 – 595 Burrard St., Three Bentall Centre, PO Box 49067, Vancouver, BC V7X 1C4
604-683-6626 www.advantagebc.ca

Ag-West Bio Inc.
101 – 111 Research Dr., Saskatoon, SK S7N 3R2
306-975-1939 www.agwest.sk.ca

BC Tech
101 – 887 Great Northern Way, Vancouver, BC V5T 4T5
604-683-6159 wearebctech.com

BioAlberta
314 Ledgeview Business Centre, 9707 – 110 St. NW, Edmonton, AB T5K 2L9
780-425-3804 www.bioalberta.com

BioTalent Canada
300 – 130 Slater St., Ottawa, ON K1P 6E2
613-235-1402 www.biotalent.ca

BIOTECanada
600 – 1 Nicholas St., Ottawa, ON K1N 7B7
613-230-5585 www.biotech.ca

DigiBC – The Digital Media and Wireless Association of BC
750 – 1333 West Broadway, Vancouver, BC V6H 4C1 www.digibc.org

E-Fund
Vancouver, BC www.e-fund.ca

Greater Vancouver Board of Trade
World Trade Centre, 400 – 999 Canada Pl., Vancouver, BC V6C 3E1
604-681-2111 www.boardoftrade.com

INNOVATIVE MEDICINES CANADA

Innovative Medicines Canada
1220 – 55 Metcalfe St., Ottawa, ON K1P 6L5
613-236-0455 innovativemedicines.ca

Life Science Washington
300 – 1551 Eastlake Ave. East, Seattle, WA 98102-3706
206-456-9567 www.lifesciencewa.org

MEDEC
900 – 405 The West Mall, Toronto, ON M9C 5J1
604-353-5233 www.medec.org

Student Biotechnology Network (SBN)
Box 11, 2386 East Mall, Gerald McGavin Building, Vancouver, BC V6T 1Z3
www.thesbn.ca

VANTEC (Vancouver Angel Technology Network)
Vancouver, BC www.vantec.ca

BIOINFORMATICS

GenomeDx Biosciences Inc.
1038 Homer St., Vancouver, BC V6B 2W9
888-792-1601 www.genomedx.com

Zymeworks Inc.
540 – 1385 West 8th Ave., Vancouver, BC V6H 3V9
604-678-1388 www.zymeworks.com

BIOPHARMACEUTICALS

AbCellera
2215 Yukon St., Vancouver, BC V5Y 0A1
604-827-2128 www.abcellera.com

Acuitas Therapeutics Ltd.
402 – 6190 Agronomy Rd., University of British Columbia, Vancouver, BC V6T 1Z3 acuitastx.com

Aequus PHARMACEUTICALS

Aequus Pharmaceuticals
2820 – 200 Granville St., Vancouver, BC V6C 1S4
604-336-7906 www.aequuspharma.ca

Alectos Therapeutics Inc.
8999 Nelson Way, Burnaby, BC V5A 4B5
604-628-7129 www.alectos.com

Anandia Labs
322 – 2259 Lower Mall, Vancouver, BC V6T 1Z4
778-874-6923 www.anandialabs.com

Aquinox Pharmaceuticals Inc.
450 – 887 Great Northern Way, Vancouver, BC V5T 4T5
604-629-9223 www.aqxpharma.com

Arbutus Biopharma Corp.
100 – 8900 Glenlyon Pky., Burnaby, BC V5J 5J8
604-419-3200 www.arbutusbio.com

Aurinia Pharmaceuticals Inc.
1203 – 4464 Markham St., Victoria, BC V8Z 7X8
250-708-4272 www.auriniapharma.com

Biopep Solutions Inc.
220 – 13071 Vanier Pl., Richmond, BC V6V 2J1
604-276-0020 www.biopeps.com

BlueRock Therapeutics ULC
101 College St., Suite 15-701, Toronto, ON M5G 1L7 bluerocktx.com

Boreal Genomics Inc.
302 – 2386 East Mall, Vancouver, BC V6T 1Z3
604-822-8268 www.borealgenomics.com

Celator Pharmaceuticals Inc.
250 – 887 Great Northern Way, Vancouver, BC V5T 4T5
604-708-5858 www.celatorpharma.com

Cuprous Pharmaceuticals Inc.
PO Box 33814, STN D, Vancouver, BC V6J 4L6 www.cuprous.ca

DelMar Pharmaceuticals Inc.
720 – 999 West Broadway, Vancouver, BC V5Z 1K5
604-629-5989 www.delmarpharma.com

Emerald Health Therapeutics Inc.
PO Box 24076, 4420 West Saanich Rd., Victoria, BC V8Z 7E7
800-757-3536 emeraldhealth.ca

ESSA

ESSA Pharma Inc.
720 – 999 West Broadway, Vancouver, BC V5Z 1K5
778-331-0962 www.essapharma.com

Eupraxia Pharmaceuticals Inc.
201 – 2590 Cadboro Bay Rd., Victoria, BC V8R 5J2
250-590-3968 www.eupraxiapharma.com

ImStar Therapeutics Inc.
600 – 1285 West Broadway, Vancouver, BC V6H 3X8
604-551-6782 www.imstartx.com

Inception Sciences Canada
210 – 887 Great Northern Way, Vancouver, BC V5T 4T5
604-343-1552 www.inceptionsci.com

InMed Pharmaceuticals Inc.
340 – 200 Granville St., Vancouver, BC V6C 1S4
604-669-7207 www.inmedpharma.com

Innovative Targeting Solutions Inc.
290 – 2985 Virtual Way, Vancouver, BC V5M 4X7
604-433-6779 www.innovativetargeting.com

iProgen Biotech Inc.
126 – 11782 River Rd., Richmond, BC V6X 1Z7
415-800-4392 www.iprogen.com

Me Therapeutics Inc.
5520 – 2350 Health Sciences Mall, Vancouver, BC V6T 1Z3
604-505-2083 www.metherapeutics.com

MedGenesis Therapeutix Inc.
730 – 730 View St., Victoria, BC V8W 3Y7
250-386-3000 www.medgenesis.com

Microbion Pharma Corp.
430 – 887 Great Northern Way, Vancouver, BC V5T 4T5 www.micobioncorp.com

MSI Methylation Sciences Inc.
108 – 4475 Wayburne Dr., Burnaby, BC V5G 4X4
604-435-5155 www.methylationsciences.com

LifeSciences BC membership directory

Naegis Pharmaceuticals Inc.
720 – 999 West Broadway,
Vancouver, BC V5Z 1K5
604-235-1682 www.naegispharma.com

Neurodyn Life Sciences Inc.
439 Helmcken St., Vancouver, BC V6B 2E6
604-619-0990 www.neurodyn-inc.com

New B Innovation Ltd.
168 – 8508 Glenlyon Pky., Burnaby, BC V5J 0B6
604-421-7308 www.newbinnovation.ca

Novelogics Biotechnology Inc.
2900 – 550 Burrard St.,
Vancouver, BC V6C 0A3 www.novelogics.com

Ondine Biomedical Inc.
888 – 1100 Melville St., Vancouver, BC V6E 4A6
604-669-0555 www.ondinebio.com

Phoenix Molecular Designs
220 – 887 Great Northern Way, Discovery Parks,
Vancouver, BC V5T 4T5
604-674-1796 ext. 43700 www.phoenixmd.ca

Phyton Biotech LLC
1503 Cliveden Ave., Delta, BC V3M 6P7
604-777-2340 www.phytonbiotech.com

QLT Inc.
250 – 887 Great Northern Way,
Vancouver, BC V5T 4T5
877-764-3131 www.qltinc.com

Qu Biologics Inc.
138 – 887 Great Northern Way,
Vancouver, BC V5T 4T5
604-734-1450 www.qubiologics.com

RepliCel Life Sciences Inc.
900 – 570 Granville St., Vancouver, BC V6C 3P1
604-248-8730 www.replicel.com

Sierra Oncology
2150 – 885 West Georgia St.,
Vancouver, BC V6C 3E8
604-558-6536 www.sierraoncology.com

SignalChem LifeSciences Corp.
110 – 13120 Vanier Pl., Richmond, BC V6V 2J2
604-232-4600 www.signalchemlifesciences.com

Sirona Biochem Corp.
595 Burrard St., Vancouver, BC V7X 1L4
604-282-6067 www.sironabiochem.com

Sitka Biopharma Inc.
2405 Wesbrook Mall, Vancouver, BC V6T 1Z3
www.sitkabiopharma.com

Symvivo Corp.
102 – 4475 Wayburne Dr., Burnaby, BC V5G 4X4
604-428-7474 www.symvivo.com

Vesalius Cardiovascular
4650 Beverly Cres., Vancouver, BC V6J 4E6
778-776-8565 www.vesaliuscardio.com

ViroGin Biotech Canada Ltd.
408 – 3800 Wesbrook Mall,
Vancouver, BC V6S 2L9
604-720-8981 www.virogin.com

Wex Pharmaceuticals Inc.
420 – 1090 West Pender St.,
Vancouver, BC V6E 2N7
604-683-8880 www.wexpharma.com

Xenon Pharmaceuticals Inc.
200 – 3650 Gilmore Way, Burnaby, BC V5G 4W8
604-484-3300 www.xenon-pharma.com

BUSINESS CONSULTANTS

Emergo
205 – 15957 84th Ave., Surrey, BC V4N 0W7
604-909-1265 www.emergogroup.ca

Malachite Management Inc.
301 – 750 West Pender St.,
Vancouver, BC V6C 2T7
604-874-4004 www.malachite-mgmt.com

MotionHall
115 – 887 Great Northern Way,
Vancouver, BC V5T 4T5
604-343-8875 www.motionhall.com

Samuel Mercer Consulting
2218 Bowker Ave., Victoria, BC V8R 2E4
250-884-7774 www.sammercer.com

WestPAR Consultancy Inc.
2613 East 21st Ave., Vancouver, BC V5M 4E8
604-319-9449 www.westpar.ca

COMMUNICATIONS

biofilm MEDIA
604-724-3233 www.biofilmmedia.com

Business in Vancouver
303 West 5th Ave., Vancouver, BC V5Y 1J6
604-688-2398 www.biv.com

PR Associates
600 – 890 West Pender St.,
Vancouver, BC V6C 1J9
604-681-1407 www.prassociates.com

CONTRACT RESEARCH & SCIENTIFIC SERVICES

American Preclinical Services (APS)
8945 Evergreen Blvd. NW,
Minneapolis, MN 55433
763-717-7990 www.americanpreclinical.com

Augurex Life Sciences Corp.
125-1 – 887 Great Northern Way,
Vancouver, BC V5T 4T5
778-839-3319 www.augurex.com

Aurora Biomed Inc.
1001 East Pender St., Vancouver, BC V6A 1W2
800-883-2918 www.aurora-instr.com

Burrard Pharmaceuticals Enterprises Ltd.
1021 West Hastings St., 9th floor,
Vancouver, BC V6E 0C3
604-281-2762 www.burrardpharma.com

CEQAL Inc.
307 – 2083 Alma St., Vancouver, BC V6R 4N6
604-336-3695 www.ceqal.com

Emmes Canada
200 – 4664 Lougheed Hwy.,
Burnaby, BC V5C 5T5
778-806-4626 www.emmes.ca

Fujifilm Diosynth Biotechnologies
101 J. Morris Commons Lane,
Morrisville, NC 27560
919-337-4400 www.fujifilmdiosynth.com

GenomeMe Lab Inc.
1 – 3691 Viking Way, Richmond, BC V6V 2J6
www.genomeme.ca

IonsGate Preclinical Services Inc.
2350 Health Sciences Mall, Room 2.301,
Vancouver, BC V6T 1Z3
604-827-1733 www.ionsgate.com

LifeLabs Medical Laboratory Services
3680 Gilmore Way, Burnaby, BC V5G 4V8
604-412-4539 www.lifelabs.com

Microbiome Insights
2950 Tolmie St., Vancouver, BC V6R 4K6
www.microbiomeinsights.com

National Laboratory Services Inc.
989 Garrow Dr., Port Moody, BC V3H 1H8
778-871-6791 www.nationallaboratoryservices.com

Novateur Ventures Inc.
2100 – 1055 West Georgia St.,
Vancouver, BC V6E 3P3
604-357-5272 www.novateur.org

Pacific Rim Laboratories Inc.
103 – 19575 55A Ave., Surrey, BC V3V 6E3
604-532-8711 www.pacificrimlabs.com

The Clinical Trial Company (Canada) Ltd.
91, Suite 203, 5th Ave., Pincourt, QC J7W 5K8
438-257-1161 www.theclinicaltrialcompany.com

Wax-it Histology Services Inc.
202 – 2386 East Mall, Vancouver, BC V6T 1Z3
604-822-1595 www.waxitinc.com

World Courier, an AmerisourceBergen company
170 – 3751 Shell Rd., Airport Executive Park,
Building B, Richmond, BC V6X 2W2
604-232-9444 www.worldcourier.com

DIGITAL HEALTH

Curatio
1200 – 555 West Hastings St.,
Vancouver, BC V6B 4N4
855-888-2031 www.curatio.me

Equicare Health
201 – 2020 Yukon St., Vancouver, BC V5Y 3N8
604-708-9075 equicarehealth.com

eTreat Medical Diagnostics Inc.
1400 – 1055 West Hastings St.,
Vancouver, BC V6E 2E9
778-373-5731 www.etreatmd.com

Molecular You
5451 – 2350 Health Sciences Mall,
Vancouver, BC V6T 1Z3 molecularyou.com

New Hippo Health
250 25th St., West Vancouver, BC V7V 4K1
www.newhippo.com

FACILITIES & REAL ESTATE

Chernoff Thompson Architects
1340 – 1075 West Georgia St.,
Vancouver, BC V6E 3C9
604-669-9460 www.cta.bc.ca

Discovery Parks Investments Ltd.
610 Main St., 4th floor, Vancouver, BC V6A 2V3
604-734-7275 www.discoveryparks.com

FINANCIAL SERVICES & INSURANCE

AON
1200 – 401 West Georgia St.,
Vancouver, BC V6B 5A1
604-688-4442 www.aon.com

Goulet Associates Inc.
25 – 285 17th St., West Vancouver, BC V7V 3S6
888-477-3373 www.gouletassociates.com

Jardine Lloyd Thompson Canada Inc.
1600 – 1111 West Georgia St.,
Vancouver, BC V6E 4G2
604-682-4211 www.canada.jlt.com

Lumira Capital
770 – 141 Adelaide St. West,
Toronto, ON M5H 3L5
604-558-5156 www.lumiracapital.com

Northview LifeSciences
2820 – 200 Granville St., Vancouver, BC V6C 1S4
604-428-4641 www.northviewventures.ca

Quark Venture
2500 – 1075 West Georgia St.,
Vancouver V6E 3C9
604-262-8818 www.quarkventure.com

Versant Ventures
3630 – 1 Sansome St., San Francisco, CA 94104
415-801-8100 www.versantventures.com

GOVERNMENT

Accel-Rx
301 – 1224 Hamilton St., Vancouver, BC V6B 2S8
604-602-5234 www.accel-rx.com

BC Innovation Council
900 – 1188 West Georgia St.,
Vancouver, BC V6E 4A2
604-683-2724 www.bcic.ca

City of New Westminster
511 Royal Ave., New Westminster, BC V3L 1H9
604-521-3711 www.newwestcity.ca

Innovation Boulevard
295 – 13450 102 Ave., Surrey, BC V3T 0A3
604-591-4011 www.surrey.ca

Ministry of Jobs, Trade and Technology
730 – 999 Canada Pl., Vancouver, BC V6C 3E1
604-660-2421 www.britishcolumbia.ca

National Research Council Canada
650 – 1185 West Georgia St.,
Vancouver, BC V6E 4E6 www.nrc.ca

NSERC Pacific
407 – 1138 Melville St., Vancouver, BC V6E 4S3
604-666-8818 www.nserc-crsng.gc.ca

HUMAN RESOURCES

Lock Search Group
810 – 1040 West Georgia St.,
Vancouver, BC V6E 4H1
604-639-3701 www.locksearchgroup.com

INTERNATIONAL PHARMACEUTICAL

AbbVie Corp.
8401 Trans-Canada Hwy.,
Saint-Laurent, QC H4S 1Z1
514-906-9700 www.abbvie.ca

Amgen British Columbia
7990 Enterprise St., Burnaby, BC V5A 1V7
604-415-1800 www.amgen.ca

AstraZeneca Canada Inc.
1004 Middlegate Rd., Mississauga, ON L4Y 1M4
905-277-7111 www.astrazeneca.ca

Celgene Inc.
600 – 6755 Mississauga Rd.,
Mississauga, ON L5N 7Y2
877-923-5436 www.celgene.ca

GlaxoSmithKline Inc.
7333 Mississauga Rd.,
Mississauga, ON L5N 6L4
905-819-3000 www.gsk.ca

Hoffmann-La Roche Ltd.
7070 Mississauga Rd.,
Mississauga, ON L5N 5M8
800-561-1759 www.rochecanada.com

janssen
PHARMACEUTICAL COMPANIES OF Johnson & Johnson

Janssen Inc.
19 Green Belt Dr., Toronto, ON M3C 1L9
416-449-9444 www.janssen.ca

Merck Canada Inc.
16750 Trans-Canada Hwy.,
Kirkland, QC H9H 4M7
514-428-8600 www.merck.ca

Novartis Pharmaceuticals Canada Inc.
385 Bouchard Blvd., Dorval, QC H9S 1A9
514-631-6775 www.novartis.ca

Novo Nordisk Canada Inc.
101 – 2476 Argentia Rd.,
Mississauga, ON L5N 6M1 www.novonordisk.ca

Pfizer

Pfizer Canada Inc.
17300 Trans-Canada Hwy.,
Kirkland, QC H9J 2M5
514-695-0500 www.pfizer.ca

Sanofi Canada
2905 Place Louis-R.-Renaud, Laval, QC H7V 0A3
514-956-6200 www.sanofi.ca

LEGAL SERVICES

Aqua Mergers + Acquisitons
Vancouver, BC www.aquamna.com

Blake, Cassels & Graydon LLP
2600 – 595 Burrard St., PO Box 49314, Three Bentall Centre, Vancouver, BC V7X 1L3
604-631-3300 www.blakes.com

COJK
CHRISTENSEN | O'CONNOR JOHNSON | KINDNESS

Christensen O'Connor Johnson Kindness
3600 – 1201 Third Ave., Seattle, WA 98101
206-682-8100 www.cojk.com

DUMOULIN BLACK LLP
BARRISTERS & SOLICITORS

DuMoulin Black LLP
595 Howe St., 10th floor, Vancouver, BC V6C 2T5
604-687-1224 www.dumoulinblack.com

FARRIS
FARRIS, VAUGHAN, WILLS & MURPHY LLP

Farris, Vaughan, Wills & Murphy LLP
PO Box 10026, Pacific Centre South, 700 West Georgia St., 25th floor, Vancouver, BC V7Y 1B3
604-684-9151 www.farris.com

Fasken Martineau DuMoulin LLP
2900 – 550 Burrard St., Bentall 5,
Vancouver, BC V6C 0A3
604-631-3131 www.fasken.com

Gowling WLG (Canada) LLP
2300 – 550 Burrard St., Bentall 5,
Vancouver, BC V6C 2B5
604-683-6498 www.gowlingwlg.com

McCarthy Tétrault LLP
2400 – 745 Thurlow St., Vancouver, BC V6E 0C5
604-643-7100 www.mccarthy.ca

Norton Rose Fulbright Canada LLP
1800 – 510 West Georgia St.,
Vancouver, BC V6B 0M3
604-641-4846 www.nortonrosefulbright.com/ca/en

oyen wiggs

Oyen Wiggs Green & Mutala LLP
480 – The Station 601 West Cordova St.,
Vancouver, BC V6B 1G1
604-669-3432 www.patentable.com

Seed IP

Seed Intellectual Property Law Group LLP
5400 – 701 Fifth Ave., Seattle, WA 98104
206-622-4900 www.seedip.com

SMART & BIGGAR
Intellectual Property & Technology Law

Smart & Biggar/Fetherstonhaugh
Box 11115, 2300 – 1055 West Georgia St.,
Vancouver, BC V6E 3P3
604-682-7780 www.smart-biggar.ca

Thomas J. Digby, Attorney, Global IP Asset Management
604-362-9019 www.digbyglobal.com

MEDICAL DEVICES

ARC Medical Devices Inc.
8 – 3071 No. 5 Rd., Richmond, BC V6X 2T4
604-222-9577 www.arcmedicaldevices.com

Biolux Research Ltd.
230 – 825 Powell St., Vancouver, BC V6A 1H7
604-669-0674 www.bioluxresearch.com

bioLytical LABORATORIES

bioLytical Laboratories Inc.
1108 – 13351 Commerce Pky.,
Richmond, BC V6V 2X7
604-204-6784 www.biolytical.com

Claris Healthcare
206 – 1099 West 8th Ave.,
Vancouver, BC V6H 1C3
844-369-9977 clarisreflex.com

Clarius Mobile Health Corp.
350 – 3605 Gilmore Way,
Burnaby, BC V5G 4X5 www.clarius.me

Evasc Medical Systems Corp.
107 – 1099 West 8th Ave.,
Vancouver, BC V6H 1C3
604-742-3811 www.evasc.com

FARABLOC™

Farabloc Development Corp.
211 – 3030 Lincoln Ave., Coquitlam, BC V3B 6B4
604-941-8201 www.farabloc.com

Healthtech Connex Inc.
1500 – 13737 96th Ave., Surrey, BC V3V 0C6
604-576-2935 www.healthtechconnex.com

Innovatek Medical Inc.
3 – 1600 Derwent Way, Delta, BC V3M 6M5
604-522-8303 www.innovatekmed.com

Kardium Inc.
155 – 8518 Glenlyon Pky., Burnaby, BC V5J 0B6
604-248-8891 www.kardium.com

LifeScan Canada Ltd.
210 – 4321 Still Creek Dr., Burnaby, BC V5C 6S7
800-663-5521 www.onetouch.ca

LightIntegra Technology Inc.
330 – 2285 Clark Dr., Vancouver, BC V5N 3G9
604-734-3548 www.lightintegra.com

LivaNova
Health innovation that matters

LivaNova Canada Corp.
5005 North Fraser Way, Burnaby, BC V5J 5M1
604-412-5650 www.livanova.com

Lungpacer Medical Inc.
8602 Commerce Crt., Burnaby, BC V5A 4N6
778-782-3141 www.lungpacer.com

Microdermics Inc.
045 – 2366 Main Mall, Vancouver, BC V6T 1Z4
www.microdermics.com

Neovasc Inc.
5138 – 13562 Maycrest Way,
Richmond, BC V6V 2J7
604-270-4344 www.neovasc.com

Orello Hearing Technologies Inc.
115 – 887 Great Northern Way,
Vancouver, BC V5T 4T5

Predictive Health Analytics
600 – 1090 West Georgia St.,
Vancouver, BC V6E 3V7
866-944-8607 www.lgthealth.com

Response Biomedical Corp.
1781 – West 75th Ave., Vancouver, BC V6P 6P2
604-456-6010 www.responsebio.com

Rostrum Medical Innovations Inc.
3687 East 1st Ave., Vancouver, BC V5M 1C2
604-439-3054 www.rostrummedical.com

SOHO Biotech Inc.
162 – 628 East Kent Ave. South,
Vancouver, BC V5X 0B2
604-325-4609 www.sohobio.com

StarFish MEDICAL

StarFish Medical
455 Boleskine Rd., Victoria, BC V8Z 1E7
250-388-3537 www.starfishmedical.com

Tel-Array Diagnostics Inc.
418 – 3800 Wesbrook Mall,
Vancouver, BC V6S 2L9
604-221-9227 www.telarray.com

Telus Health Solutions
107 – 5550 152 St., Surrey, BC V3S 5J9
866-879-9653 www.telushealth.com

ViewsIQ Inc.
Airport Executive Park, Building 2, 40 – 10551 Shellbridge Way, Richmond, BC V6X 2W9
855-847-7226 www.viewsiq.com

MEDICAL TECHNOLOGIES

Allied BioScience Inc.
31 Marine Dr., Point Roberts, WA
www.alliedbioscience.com

Aspect Biosystems Ltd.
146 – 2259 Lower Mall, Vancouver, BC V6T 1Z4
604-822-8838 www.aspectbiosystems.com

Change Healthcare
10711 Cambie Rd., Richmond, BC V6X 4A6
604-279-5422 www.changehealthcare.com

Contextual Genomics Inc.
204 – 2389 Health Sciences Mall, University of British Columbia, Vancouver, BC V6T 1Z3
778-379-2931 www.contextualgenomics.com

Health and Technology District
1500 – 13737 96th Ave., Surrey, BC V3V 0C6
www.healthandtechnologydistrict.com

Medtronic of Canada Ltd.
99 Hereford St., Brampton, ON L0Y 0R3
778-772-1883 www.medtronic.com/ca-en/

WAT Medical Enterprise Ltd.
170 – 422 Richards St., Vancouver, BC V6B 2Z4
604-385-0656 www.watmedical.com

SCIENTIFIC SUPPLIERS

GE Healthcare Life Sciences
500 Morgan Blvd., Baie d-'Urfé, QC H9X 3V1
800-463-5800 www.gelifesciences.com

MAJnMAR
MEDICAL PRODUCTS

MajnMar Medical Products
203 – 1130 Austin Ave., Coquitlam, BC V3K 3P5
778-872-3876 www.majnmar.com

PI Pharma Inventor Inc.
202-215 – 3800 Wesbrook Mall, University of British Columbia, Vancouver, BC V6S 2L9
604-339-3244 www.pharmainventor.com

Precision NanoSystems Inc.
50 – 655 West Kent Ave.,
North Vancouver, BC V6P 6T7
888-618-0031 www.precisionnanosystems.com

STEMCELL Technologies Inc.
400 – 570 West 7th Ave.,
Vancouver, BC V5Z 1B3
604-877-0713 www.stemcell.com

VWR International Ltd.
2360 Argentia Rd., Mississauga, ON L5N 5Z7
800-932-5000 www.vwrcanlab.com

Life sciences companies at a glance

BIOPHARMACEUTICALS & BIOTECHNOLOGY

PLEASE REFER TO **WWW.LIFESCIENCESBC.CA** FOR FURTHER INFORMATION ON THESE COMPANIES

	Stage of development						Fields of study						Tools							Diseases						
	Drug discovery	Preclinical studies	Phase 1 clinical studies	Phase 2 clinical studies	Phase 3 clinical studies	On market	Bioproducts	Bioinformatics	Diagnostics	Environmental	Therapeutics	Vaccines	Bioprocessing	Drug delivery	Gene therapy	Genomics	High-throughput screening	Lab reagents	Proteomics	Autoimmune diseases	Cancer	Cardiovascular diseases	Infectious diseases	Inflammatory diseases	Metabolic diseases	Neurological diseases
AbbVie			•	•	•	•	•				•			•						•	•		•	•		•
AbCellera	•								•		•	•				•	•									
Aequus Pharmaceuticals		•	•			•					•			•												•
Alectos Therapeutics																										•
Anandia Labs	•						•		•				•			•										
Aquinox Pharmaceuticals Inc.					•						•													•		
Arbutus Biopharma Corp.	•	•	•	•							•			•									•			
Aspect Biosystems	•	•				•	•																			
Augurex Life Sciences Corp.	•								•		•								•	•						
Aurinia Pharmaceuticals Inc.				•							•									•				•		
Boreal Genomics									•							•					•					
Celator Pharmaceuticals				•	•						•			•												
The Centre for Drug Research & Development	•	•							•		•	•		•			•			•	•	•	•	•	•	•
Contextual Genomics Inc.						•		•	•							•					•					
DelMar Pharmaceuticals	•	•	•	•							•										•					
ESSA Pharma Inc.			•								•										•					
Eupraxia Pharmaceuticals Inc.	•	•	•	•							•			•									•	•		
GenomeDx Biosciences Inc.						•		•	•							•					•					
ImStar Therapeutics Inc.	•	•									•															•
Inception Sciences	•	•									•										•			•		
Innovative Targeting Solutions	•	•									•									•	•		•	•	•	
iProgen Biotech Inc.	•										•			•						•	•	•	•	•	•	•
Janssen Inc.																				•	•	•		•	•	•
ME Therapeutics Inc.	•	•									•										•					
MedGenesis Therapeutix Inc.																										•
Methylation Sciences		•	•	•							•															•
Microbiome Insights Inc.									•																	
Microbion Pharma Corp.		•	•	•							•												•			
Microdermics Inc.		•									•	•		•						•	•	•	•	•	•	•
MSI Methylation Sciences Inc.																										•
National Laboratory Services														•					•							
Neurodyn Life Sciences Inc.	•	•	•								•															•
New Innovation Ltd.	•	•	•								•										•	•				•
Novartis Pharmaceuticals Canada Inc.	•	•	•	•	•	•	•				•				•					•	•	•		•	•	•
Novateur Ventures Inc.		•	•	•	•	•	•	•	•		•	•		•	•	•				•	•	•	•	•	•	•
Novelogics Biotechnology Inc.	•	•									•										•					
Ondine Biomedical Inc.		•	•	•	•	•					•												•			
Pfizer																		•	•	•	•	•	•	•	•	•
Phoenix Molecular Designs		•									•										•					
Precision NanoSystems Inc.	•										•			•	•	•		•		•	•	•	•	•	•	•
Qu Biologics Inc.				•							•									•	•		•	•		
RepliCel Life Sciences Inc.			•	•							•															
Response Biomedical Corp.																						•	•			
Sierra Oncology				•							•										•					
Sirona Biochem	•	•					•				•													•	•	
Sitka Biopharma	•	•									•			•							•					
SOHO Biotech Inc.																		•								
StarFish Medical														•			•					•	•	•		
Stemcell Technologies Inc.		•				•	•						•					•		•	•	•	•	•		•
Symvivo Corp.	•	•									•			•	•											
Tel-Array Diagnostics Inc.									•												•	•	•			
ViroGin Biotech Canada Ltd.																					•					
WEX Pharmaceuticals Inc.			•		•						•										•					•
Xenon Pharmaceuticals Inc.	•	•	•	•		•		•	•		•			•	•	•						•			•	•
Zymeworks Inc.	•	•					•	•			•										•			•		•

CONTRACT RESEARCH ORGANIZATIONS & SCIENTIFIC/HEALTH SERVICES

PLEASE REFER TO **WWW.LIFESCIENCESBC.CA** FOR FURTHER INFORMATION ON THESE COMPANIES

	Preclinical sevices						Clinical services						General services							
	Drug discovery	Bioinformatics	Bioanalytical services	Analytical services	Pathology services	Toxicology	Phase 1 clinical studies	Phase 2 clinical studies	Phase 3 clinical studies	Phase 4 clinical studies	Study monitoring and reporting	Data management and statistics	Strategic consulting	Regulatory	Contract manufacturing	Product development	cGMP/GLP compliance	Quality assurance	Teaching and training	Communications
American Preclincal Services	•		•	•	•	•										•				
Anandia Labs				•														•		
BC Innovation Council													•						•	•
Biofilm MEDIA																			•	•
The Clinical Trial Company							•	•	•	•		•	•							
Discovery Parks																				•
Emergo Group													•	•			•	•	•	
Emmes Canada		•		•			•	•	•	•	•	•	•	•			•	•	•	
Fujifilm Diosynth Biotechnoloiges		•	•	•											•	•	•	•		
Health and Technology District							•	•	•	•	•	•						•	•	•
IonsGate Preclinical Services Inc.	•					•							•							
LifeLabs			•	•	•	•														
Microbiome Insights Inc.	•	•					•	•												
MotionHall													•							•
National Laboratory Services				•							•			•	•	•	•	•	•	
Northview Lifesciences													•							
Novateur Ventures Inc.						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Phyton Biotech LLC															•	•				
PI Pharma Inventor Inc.	•			•											•	•	•			
University of British Columbia Pre-Clinical Services	•				•								•						•	•
VWR International Ltd.																				
Wax-it Histology Services Inc.					•	•														

MEDICAL TECHNOLOGIES & DEVICES

PLEASE REFER TO **WWW.LIFESCIENCESBC.CA** FOR FURTHER INFORMATION ON THESE COMPANIES

	Fields of study							Company type		
	Dental device	Medical equipment	Medical supplies	Testing instruments	Imaging	Device design	Other(s)	Manufacturer	Distributor	Developer
ARC Medical Devices Inc.			•					•	•	•
Biolux Research Ltd.										
Boreal Genomics								•		•
Change Healthcare		•			•	•	Imaging, workflow and care solutions	•	•	•
Clarius Mobile Health Corp.		•			•	•		•	•	•
Contextual Genomics Inc.		•					Genomic-based molecular diagnostics			•
Equicare Health							Care co-ordination software			•
Evasc Medical Systems Corp.		•				•	Medical devices for cerebral aneurysms	•		•
Farabloc Development Corp.			•					•	•	•
GenomeMe							Molecular pathology and molecular diagnostic	•	•	•
Health and Technology District		•	•	•	•	•				•
Innovatek Medical Inc.				•				•		
Kardium Inc.		•			•	•		•	•	•
LightIntegra Technology Inc.				•				•		•
LivaNova Canada Corp.		•	•			•		•	•	•
Lungpacer Medical Inc.		•				•		•	•	•
McKesson Medical Imaging Company					•		Medical imaging and clinical information software systems	•	•	•
Microbiome Insights Inc.							Microbiome health testing			•
Microdermics Inc.						•	Intradermal platform for drug delivery	•		•
National Laboratory Services				•					•	
Neovasc Inc.						•	Cardiovascular devices	•		•
Novateur Ventures Inc.	•	•			•	•				•
Ondine Biomedical Inc.	•	•	•					•		•
Phyton Biotech LLC	•	•	•	•	•	•				
Predictive Health Analytics						•	Mobile vital signs, risk assessment			•
RepliCel Life Sciences Inc.		•								•
Response Biomedical Corp.								•		•
Rostrum Medical Innovations Inc.		•				•		•		•
StarFish Medical	•	•		•	•	•	Product and technology development	•		•
Tel-Array Diagnostics Inc.			•			•	Multi-protein biomarker point-of-care platform	•		•
ViewsIQ Inc.					•					•
ViroGin Biotech Canada Ltd.				•					•	
Wellness Lifestyles Inc.							Primary health-care facilities		•	

Biggest life sciences companies in B.C.

RANKED BY | Number of R&D employees in 2017

Rank '18	Company	Top local executive(s)	Areas of research	Ownership	Year founded	No. staff globally '17/'16	No. B.C. staff '17/'16	No. R&D staff '17/'16
1	**Stemcell Technologies Inc** 1618 Station St, Vancouver V6A 1B6 P: 604-877-0713 F: 800-567-2899 **stemcell.com**	**Allen Eaves**, president and CEO	Provides cell culture media, cell separation tools and accessory reagents for cell biology research, including stem cell biology, regenerative medicine, immunology and cancer research	Privately held	1993	1,024 846	786 671	**197** 224
2	**Arbutus Biopharma Corp** 8900 Glenlyon Pky Suite 100, Burnaby V5J 5J8 P: 604-419-3200 F: 604-419-3201 **arbutusbio.com**	**Mark Murray**, president and CEO, **Koert VandenEnden**, interim CFO	Discovering, developing and commercializing a cure for patients suffering from chronic hepatitis B infection with a pipeline consisting of multiple drug candidates with complementary mechanisms of action	Nasdaq:ABUS	1992	NP 122	NP 122	**90** 90
3	**Kardium Inc** 8518 Glenlyon Pky Suite 155, Burnaby V5J 0B6 P: 604-248-8891 F: 604-304-3478 **kardium.com**	**Doug Goertzen**, CEO	Cardiovascular	Privately held	2007	115 104	115 104	**85** 80
4	**Zymeworks Inc** 1385 8th Ave W Suite 540, Vancouver V6H 3V9 P: 604-678-1388 F: 604-737-7077 **zymeworks.com**	**Ali Tehrani**, president and CEO	Antibody and protein therapeutics development with a primary focus in oncology	TSX, NYSE:ZYME	2003	147 115	127 98	**77** 56
5	**Xenon Pharmaceuticals Inc** 3650 Gilmore Way Suite 200, Burnaby V5G 4W8 P: 604-484-3300 F: 604-484-3450 **xenon-pharma.com**	**Simon Pimstone**, president and CEO	Central nervous system, epilepsy, pain	Nasdaq:XENE	1996	NP 100	79 97	**52** 70
6	**Amgen British Columbia Inc** 7990 Enterprise St, Burnaby V5A 1V7 P: 604-415-1800 F: 604-676-8349 **amgen.ca**	**John Delaney**, director of research	Antibody therapeutics for the treatment of cancer, inflammation and infectious diseases	Nasdaq:AMGN	1980	19,000 18,000	NP 65	**50** 50
7	**ABM Applied Biological Materials Inc** 3671 Viking Way Unit 1, Richmond V6V 2J5 P: 604-247-2416 F: 604-247-2414 **abmgood.com**	**Peter Li**, CEO, **Lisa Young**, CFO, **Vivian Gao**, vice-president, corporation development	Products span everything from CRISPR gene editing tools and viral vectors/viruses to the world's largest collection of unique cell lines and the most advanced polymerase chain reaction and next-generation sequencing technologies and services	Privately held	2004	132 150	80 75	**48** 45
8	**AbCellera Biologics Inc** 2215 Yukon St, Vancouver V5Y 1L2 P: 604-559-9005 F: NP **abcellera.com**	**Carl Hansen**, president and CEO	Antibody discovery	Privately held	2012	47 32	43 32	**39** 29
9	**Neovasc Inc** 13562 Maycrest Way Suite 5138, Richmond V6V 2J7 P: 604-270-4344 F: 604-270-4384 **neovasc.com**	**Fred Colen**, president and CEO	Develops, manufactures and markets innovative vascular devices offering pericardial tissue processing, vascular product development and design and manufacturing solutions to industry partners	TSX:NVC; Nasdaq:NVCN	2000	NP 205	NP NP	**25**[1] 25
10	**Aspect Biosystems Ltd** 1781 75th Ave W, Vancouver V6P 6P2 P: 604-263-0502 F: NP **aspectbiosystems.com**	**Tamer Mohamed**, CEO, **Simon Beyer**, chief product officer, **Sam Wadsworth**, chief scientific officer, **Konrad Walus**, chief technology officer	Developing proprietary 3D bioprinting and human cell culture technology	Privately held	2013	NP NP	18 NP	**14** NP
10	**Qu Biologics Inc** 887 Great Northern Way Suite 138, Vancouver V5T 4T5 P: 604-734-1450 F: 604-676-2235 **qubiologics.com**	**Hal Gunn**, CEO	Treatment of cancer and immune-related diseases such as Crohn's disease and ulcerative colitis	Privately held	2007	19 NP	19 NP	**14** 14
12	**Aquinox Pharmaceuticals Inc** 887 Great Northern Way Suite 450, Vancouver V5T 4T5 P: 604-629-9223 F: 778-331-4486 **aqxpharma.com**	**David J. Main**, president and CEO	Discovering and developing targeted therapeutics in disease areas of inflammation and immuno-oncology that target SHIP1, a key regulator of an important cellular signalling pathway in immune cells	Nasdaq:AQXP	2006	50[2] NP	NP NP	**11**[1] 11
13	**Alectos Therapeutics** 8999 Nelson Way, Burnaby V5A 4B5 P: 604-628-7129 F: 604-628-0137 **alectos.com**	**Ernest McEachern**, president and CEO	Neuroscience	Privately held	2007	NP NP	12 NP	**10** 10
13	**BioLytical Laboratories** 13351 Commerce Pky Suite 1108, Richmond V6V 2X7 P: 604-204-6784 F: 604-244-8399 **biolytical.com**	**Robert Mackie**, president and chairman, **Livleen Veslemes**, COO and CFO	NP	Privately held	2002	55 55	50 50	**10** NP
13	**GenomeMe Canada** 3691 Viking Way Unit 1, Richmond V6V 2J6 P: 604-244-9962 F: NP **genomeme.ca**	**Mohammad Tabesh**, CEO	Molecular pathology and molecular diagnostics	Privately held	2015	NP NP	15 NP	**10** 3
13	**Kinexus Bioinformatics Corp** 8755 Ash St Suite 1, Vancouver V6P 6T3 P: 604-323-2547 F: 604-323-2548 **kinexus.ca**	**Steven Pelech**, president and chief scientific officer	Proteomics and bioinformatics products and services	Privately held	1999	13 13	13 13	**10** 10
17	**Biolux Research Ltd** 825 Powell St Suite 220, Vancouver V6A 1H7 P: 604-669-0674 F: 604-608-5558 **orthopulse.com**	**Kevin Strange**, president and CEO	Develops light accelerated orthodontics technology and products for use in orthodontics, implantology and other dentistry markets	Privately held	NP	NP NP	19 NP	**6** NP
18	**DelMar Pharmaceuticals Inc** 999 Broadway W Suite 720, Vancouver V5Z 1K5 P: 604-629-5989 F: NP **delmarpharma.com**	**Jeffrey Bacha**, president and COO	Cancer therapeutics	Nasdaq:DMPI	2010	15 15	5 6	**5** 4
19	**LivaNova Canada Corp** 5005 North Fraser Way, Burnaby V5J 5M1 P: 604-412-5650 F: 604-412-5690 **livanova.com**	**Jennifer Arntorp**, director of operations	Develops and delivers therapeutic solutions; specializes in cardiac surgery, neuromodulation and cardiac rhythm management	Nasdaq:LIVN	2015	4,600 4,600	326 335	**2** 2
19	**ViewsIQ Inc** 10551 Shellbridge Way Suite 40, Richmond V6X 2W9 P: 855-847-7226 F: NP **viewsiq.ca**	**Herman Lo**, CEO	Digital pathology	Privately held	NP	8 NP	8 7	**2** NP

Sources: Interviews with representatives of the above biotech firms and *BIV* research. Other firms may have ranked but did not respond to information requests by deadline. NP Not provided **1 -** *BIV* estimate **2 -** According to corporate report

Business in Vancouver makes every attempt to publish accurate information in the List, but accuracy cannot be guaranteed. Researched by Anna Liczmanska, *lists@biv.com*.

2017

Clinical milestones in British Columbia's life sciences sector

Date	*Company/organization*	*Clinical milestones*
Jan. 3	Contextual Genomics and Sonic Healthcare	Sonic Healthcare and Contextual Genomics broaden access to leading-edge cancer genomic testing
Jan. 5	AbCellera Biologics Inc.	AbCellera announces multi-target research collaboration with Pfizer
Jan. 9	Aequus Pharmaceuticals Inc.	Aequus initiates second proof-of-concept clinical trial of transdermal aripiprazole patch
Jan. 25	DelMar Pharmaceuticals Inc.	DelMar and MD Anderson initiate new Phase 2 clinical trial of VAL-083 for MGMT-unmethylated recurrent glioblastoma multiforme (GBM)
Feb. 25	BioLytical Laboratories Inc.	BioLytical receives innovative technology contract from Vizient for rapid HIV test
March 2	Aequus Pharmaceuticals Inc.	Aequus licenses rights to cannabinoid transdermal patch to treat neurological disorders
March 3	Qu Biologics Inc.	Qu Biologics discovers correlation between patient genetics and response to immunotherapy in inflammatory bowel disease
March 16	Arbutus Biopharma Corp.	Arbutus licenses liquid nanoparticle (LNP) delivery technology to Alexion for use in single messenger RNA product candidate
April 24	BioLytical Laboratories Inc.	Instant HIV home test launched in Belgium
May 11	DelMar Pharmaceuticals Inc.	DelMar formalizes collaboration with PRA Health Sciences for Phase 3 trial of VAL-083 in recurrent GBM
May 23	Qu Biologics Inc.	Qu Biologics publishes proof-of-principle data for promising new treatment for chronic obstructive pulmonary disease
May 24	Innovative Targeting Solutions	Innovative Targeting Solutions collaboration with Janssen Biotech achieves multiple milestones
May 25	Phoenix Molecular Designs	Phoenix Molecular Designs announces new preclinical data for targeted triple-negative breast cancer therapy
June 6	AbCellera Biologics Inc.	AbCellera announces an antibody discovery program in influenza vaccine research
June 15	Aequus Pharmaceuticals Inc.	Aequus advances clinical development of transdermal anti-nausea patch
June 22	DelMar Pharmaceuticals Inc.	DelMar receives institutional review board approval for pivotal Phase 3 clinical trial of VAL-083 in refractory GBM
July 6	BioLytical Laboratories Inc.	INSTI HIV self-test receives Global Fund classification for procurement
July 6	Sirona Biochem Corp.	Sirona Biochem announces positive efficacy results for skin-lightening library
July 24	DelMar Pharmaceuticals Inc.	DelMar receives approval from China's Human Genetic Resources Administration to initiate Phase 2 clinical trial in newly diagnosed GBM
July 28	BioLytical Laboratories Inc.	Instant HIV home test launched in the Netherlands
Sept. 7	RepliCel Life Sciences	Delivery of RepliCel's patented prototypes kick-starts functional testing, matures licensing discussions and confirms commercialization schedule
Sept. 7	Aequus Pharmaceuticals Inc.	Aequus announces positive results for proof-of-concept clinical trial of anti-nausea patch
Sept. 12	AbCellera Biologics Inc.	AbCellera launches antibody discovery collaboration with GSK
Sept. 20	DelMar Pharmaceuticals Inc.	DelMar announces issuance of new patent on first-in-class DNA-targeting agent VAL-083
Sept. 20	Arbutus Biopharma Corp.	Arbutus' LNP licensee Alnylam announces positive Phase 3 results for LNP-enabled patisiran program
Sept. 23	Aspect Biosystems Inc.	Aspect Biosystems partners with InSCREENeX and Fraunhofer ITEM
Sept. 25	Arbutus Biopharma Corp.	Arbutus announces topline results for ARB-1467 Phase 2 Cohort 4
Oct. 17	Xenon Pharmaceuticals	Xenon announces initiation of XEN1101 Phase 1 clinical trial
Oct. 31	DelMar Pharmaceuticals Inc.	DelMar presents data supporting VAL-083 as a component of combination chemotherapy regimens for the treatment of solid tumours, including brain and ovarian cancer
Nov. 10	Zymeworks Inc.	Zymeworks announces licence agreement with Johnson & Johnson Innovation to develop and commercialize next-generation bispecific antibody therapeutics
Nov. 16	Arbutus Biopharma Corp.	Arbutus' LNP licensee Alnylam initiates rolling submission of new drug application to U.S. Food and Drug Administration for patisiran
Nov. 28	Qu Biologics Inc.	Qu Biologics announces discovery of innate immune mechanisms of a novel microbial-based approach for the treatment of lung cancer
Dec. 26	DelMar Pharmaceuticals Inc.	DelMar announces Fast Track designation for VAL-083 in recurrent glioblastoma

2017

Investments into British Columbia's life sciences sector

Date	*Company/organization*	*Type of investment*	*Amount (CAD)*
March	Aurinia Pharmaceuticals Inc.	Aurinia prices US$150.5 million public offering of common shares	$202.9 million
March	Aequus Pharmaceuticals Inc.	Aequus raises US$5.2 million	$6.9 million
April	DelMar Pharmaceuticals Inc.	DelMar announces pricing of US$9 million public offering	$12 million
June	Eloxx Pharmaceuticals Inc.	Eloxx receives US$5 million investment from Quark Venture and GF Securities	$6.8 million
June	PHEMI	PHEMI closes US$10 million venture capital financing	$13.5 million
June	Evasc Neurovascular Enterprises ULC	Evasc Neurovascular announces closing of US$10 million venture financing	$13.5 million
August	Sitka Biopharma Inc.	Sitka Biopharma receives $2.4 million seed investment	$2.4 million
September	DelMar Pharmaceuticals Inc.	DelMar announces closing of US$10 million	$12.4 million
October	RepliCel Life Sciences	RepliCel Life Sciences successfully closes financing	$1.2 million
October	Arbutus Biopharma Corp.	Arbutus to receive US$116 million strategic investment from Roivant Sciences	$144.7 million
November	Zymeworks Inc.	US$50 million upfront licence fee paid to Zymeworks for up to six bispecific programs	$64.3 million
December	Aequus Pharmaceuticals Inc.	Aequus announces issuance of stock options	$500,000
December	ARTMS Products	ARTMS Products raises $3 million to locally produce medical isotopes	$3 million
Total			$480.7 million

LIFESCIENCES BC ANNOUNCES 2018 ANNUAL AWARD WINNERS

DR. LESLEY ESFORD | PRESIDENT, LIFESCIENCES BC

We are living in a dynamic age with health innovation and medical advancements happening at breathtaking speed. In B.C. we are extremely fortunate to be a fertile ground for that advancement

LifeSciences BC is pleased to announce the recipients of the 20th annual LifeSciences BC Awards, presented by Farris. These awards are presented annually in recognition of the significant achievements of talented individuals and organizations that embody the life science community of British Columbia. Our award winners exemplify the full spectrum from discovery to commercialization and underscore the full breadth and depth of knowledge that impacts the B.C. bio-economy.

THE 2018 LIFESCIENCES BC AWARD WINNERS ARE:	
Dr. Sally Aitken	Genome British Columbia Award for Scientific Excellence
Dr. David Huntsman	Michael Smith Foundation for Health Research – Aubrey J. Tingle Prize
Dr. Michael Abrams	Milton Wong Award for Leadership
AbCellera Biologics Inc.	Growth Stage Life Sciences Company of the Year
StarFish Medical Inc.	Strategic Life Sciences Partner of the Year
Zymeworks Inc.	Deal of the Year
Redlen Technologies Inc.	Medtech Company of the Year
BioLytical Laboratories Inc.	Growth Stage Medtech Company of the Year
Aurinia Pharmaceuticals Inc.	LifeSciences Company of the Year
Drs. Allen and Connie Eaves	Dr. Don Rix Award for Lifetime Achievement

GENOME BRITISH COLUMBIA AWARD FOR SCIENTIFIC EXCELLENCE

DR. SALLY AITKEN

Dr. Sally Aitken is a professor and associate dean, research and innovation, in the faculty of forestry at the University of British Columbia (UBC), and director of the Centre for Forest Conservation Genetics. She obtained her undergraduate degree in forest resource management from UBC and her M.Sc. and PhD in forest genetics from the University of California, Berkeley. Prior to returning to UBC as a Natural Sciences and Engineering Research Council of Canada Industry Chair in Population Genetics, she was a research assistant professor in the department of forest science at Oregon State University.

Her team's research integrates genomic, phenotypic and climatic data to understand the processes driving adaptation to climate in trees, and develops tools for reforesting, managing and conserving trees in a changing climate. She has led two multi-institutional, large-scale applied research projects funded by Genome Canada and Genome BC focused on developing genomic approaches, tools and policy recommendations for reforestation and tree breeding for new climates. She works closely with collaborators in the B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development and other government agencies to ensure that these projects produce meaningful applications in forest management as well as scientific advances. In addition to studying common tree species important for forestry, her group has conducted conservation genetics research on ecologically important species including Garry oak and the endangered whitebark pine and has sought to better understand the basic evolutionary dynamics of long-lived conifer species.

Dr. Aitken has authored more than 100 scientific publications and a textbook entitled *Conservation and the Genetics of Populations*. Her team's research has been featured in *Science*, the *New York Times*, *Scientific American* and *The Walrus* magazine, as well as on CBC's *The National* and *Quirks & Quarks*. She received the Canadian Forestry Scientific Achievement Award in 2009, the UBC Killam Teaching Prize in 2010 and the International Union of Forest Research Organizations' Scientific Achievement Award in 2014. She was named a Wall Scholar in the Peter Wall Institute for Advanced Studies in 2014 and was elected a fellow of the Royal Society of Canada in 2017.

About LifeSciences BC
LifeSciences BC is a non-profit industry association that supports and represents the life science community of British Columbia through leadership, investment, advocacy and promotion of our world-class life science community. LifeSciences BC undertakes numerous initiatives including local, national and international partnerships, helping to facilitate investment and global partnering opportunities while nurturing economic development in B.C. through the life sciences industry.

MICHAEL SMITH FOUNDATION FOR HEALTH RESEARCH – AUBREY J. TINGLE PRIZE

DR. DAVID HUNTSMAN

Dr. David Huntsman is a professor of the departments of pathology and laboratory medicine and obstetrics and gynecology at the University of British Columbia, the Dr. Chew Wei Memorial Professor of Gynecologic Oncology and the Canada Research Chair in Molecular and Genomic Pathology. He directs OVCARE, B.C.'s multidisciplinary ovarian cancer research team, and conducts his research at the BC Cancer Agency and Vancouver General Hospital.

In addition to providing most of the data that underpins the management of hereditary gastric cancer, Dr. Huntsman's research has led to the development of predictive and prognostic tissue-based cancer biomarkers for ovarian cancer and a wide variety of other tumour types. His team created a blueprint for subtype-specific ovarian cancer control and have been leaders in the application of novel genomic technologies to better prevent, diagnose and treat ovarian cancer. Specifically, next-generation sequencing was used to discover the key driver mutations in granulosa cell and Sertoli-Leydig cell tumours as well as clear cell, endometrioid and small cell carcinomas. These discoveries are being translated into improved diagnostics and treatment strategies. Based on research into precursor lesions, the OVCARE team has implemented a population-based prevention strategy for ovarian cancer that includes opportunistic salpingectomy and more pervasive genetic screening. Dr. Huntsman's most recent research has focused on the cellular origins of clear cell and endometrioid ovarian carcinomas, the role of somatic mutations in the development of endometriosis and the transformation of endometriosis into these cancers.

Collaboration and entrepreneurship are both critical ingredients of clinically relevant research. To that end, Dr. Huntsman leads several Canadian and international collaborative networks and recently founded a company, Contextual Genomics, to increase the clinical and economic impact of his work.

MILTON WONG AWARD FOR LEADERSHIP

DR. MICHAEL ABRAMS

Dr. Michael Abrams has been active in pharmaceutical discovery and development for over 30 years. He grew up in Long Island, New York, and has a BA in chemistry from Bowdoin College in Brunswick, Maine, and a PhD in chemistry from the Massachusetts Institute of Technology (MIT). While at MIT, he was a co-inventor on three patents that led to the development of the radiopharmaceutical Cardiolite. In recognition of this work, he was a co-recipient of the Society of Nuclear Medicine Georg Charles de Hevesy Nuclear Pioneer Award in 2009.

In 1983 Dr. Abrams received a NATO fellowship to conduct medicinal inorganic chemistry research at McMaster University in Hamilton, Ontario, and afterwards joined the biomedical research group of Johnson Matthey in 1984. Over 12 years he became the worldwide manager of that group, and in 1996 he led the venture-capital-funded spinoff of its biomedical assets to form AnorMED Inc. in Langley, B.C. He led AnorMED as president and CEO for 10 years. The company went public in 1999 and was acquired by Genzyme for $580 million in 2006.

In 2009 Dr. Abrams joined Inimex Pharmaceuticals in Burnaby, B.C., as president and CEO. Under his leadership, Inimex identified a clinical indication (mucositis) for its lead drug candidate, IMX 942, and was acquired by the U.S.-based company Soligenix. In late 2015, Soligenix announced positive Phase 2 results in prevention of mucositis in cancer patients with the Inimex drug, now called SGX942.

More recently, Dr. Abrams served as chief innovation officer for CDRD Ventures Inc. (2012-13) and as chief discovery officer for Tekmira Pharmaceuticals (2014-16), now Arbutus Biopharma. He joined Cuprous Pharmaceuticals, a Vancouver-based startup focused on novel drug formulation technology, in January 2017 as vice-president of research. He is currently chair of the ViDA Therapeutics scientific advisory board, a member of the investment advisory board for Accel-Rx and a director for Anandia Labs, Symvivo and TRIUMF Innovations.

DR. DON RIX AWARD FOR LIFETIME ACHIEVEMENT

DR. CONNIE J. EAVES AND DR. ALLEN C. EAVES

Dr. Connie Eaves, PhD, FRS (Canada) and corresponding FRS (Edinburgh), is a distinguished scientist at the Terry Fox Laboratory and the BC Cancer Agency, and a professor in the departments of medical genetics, medicine, and pathology and laboratory medicine at the University of British Columbia (UBC). She holds a BA in biology and chemistry and an M.Sc. in genetics from Queen's University in Kingston, Ontario, and a PhD in immunology from the University of Manchester in the U.K. Following post-doctoral training in experimental hematology at the Ontario Cancer Institute under Dr. James Till, she joined the faculty of the BC Cancer Agency and UBC.

In 1981, she and her husband, Dr. Allen Eaves, co-founded the Terry Fox Laboratory at the BC Cancer Agency and together built an internationally recognized research program in normal and cancer stem cell biology, human leukemia, and normal and malignant breast stem cell biology. She has published more than 500 papers and has a long track record as a global scientific leader and conscientious mentor of trainees at all levels. She has also been a contributor to science policy and development in Canada and abroad and has received numerous national and international awards for her many accomplishments.

Dr. Allen Eaves, OBC, MD, PhD, FRCPC, was the founding director of the Terry Fox Laboratory for Cancer Research for 25 years (1981-2006) and head of clinical hematology at UBC for 18 years (1985-2003). Currently professor emeritus of hematology at UBC since 2006, he has devoted himself to building Stemcell Technologies Inc., a company he founded in 1993 to provide standardized tissue culture reagents for regenerative medicine and those doing cancer and immunological research. Stemcell is now Canada's largest biotech company, with over 1,000 employees and a global network of sales offices and distribution centres serving thousands of customers.

Dr. Eaves has published over 200 papers in leading peer-reviewed scientific journals. He has been elected president of the International Society for Cellular Therapy; president of the American Society for Blood and Marrow Transplantation; founding treasurer of the Foundation for the Accreditation of Cellular Therapy; and has been a member of Health Canada's Expert Working Group on the Safety of Organs and Tissues for Transplantation. He sits on the boards of the Canadian Stem Cell Network, the Canadian Stem Cell Foundation, the Centre for Commercialization of Regenerative Medicine and the Banff International Research Station for Mathematical Innovation and Discovery.

2018 Annual LifeSciences BC Award Winners

DEAL OF THE YEAR
ZYMEWORKS INC.

Zymeworks is a clinical-stage biopharmaceutical company dedicated to the discovery, development and commercialization of next-generation multifunctional biotherapeutics, initially focused on the treatment of cancer.

Zymeworks' suite of complementary therapeutic platforms and its fully integrated drug development engine provide the flexibility and compatibility to precisely engineer and develop highly differentiated product candidates.

Zymeworks' lead product candidate, ZW25, is a novel bispecific antibody currently being evaluated in an adaptive Phase 1 clinical trial. The company is also advancing a deep pipeline of preclinical product candidates and discovery-stage programs in immuno-oncology and other therapeutic areas. In addition to Zymeworks' wholly owned pipeline, its therapeutic platforms have been further leveraged through multiple strategic partnerships with global biopharmaceutical companies.

GROWTH STAGE LIFE SCIENCES COMPANY OF YEAR
ABCELLERA BIOLOGICS INC.

"We believe that scientific innovation can change the world. Through innovative technology and strong partnerships, our impact is limitless."

With the world's leading technology for screening and mapping of natural immune responses, AbCellera tests antibodies from single B cells at depths of millions of cells per day, unlocking the power of natural immunity to discover the next generation of antibody therapies. Through optimized immunizations and ultra-deep screening with direct cell-binding assays, AbCellera provides industry-leading antibody discovery against G-protein-coupled receptors and ion channels.

By deep mining and functional profiling of human samples, AbCellera discovers rare antibodies against viral and bacterial pathogens and enables rational design of new vaccines. Direct screening of single cells eliminates the need for species-specific fusion partners. This provides access to any natural immune responses to obtain greater diversity and enables the discovery of veterinary biologics therapeutics with matching species.

GROWTH STAGE MEDTECH COMPANY OF THE YEAR
BIOLYTICAL LABORATORIES INC.

BioLytical Laboratories Inc., based in Richmond, B.C., is a privately owned Canadian company that was federally incorporated in 2002. Today, the company sells and markets its INSTI rapid diagnostic test product line, including its unique HIV test supported by worldwide regulatory approvals in the U.S., Canada, European Union and other areas that accept the CE certification.

BioLytical's product line provides highly accurate test results in as little as 60 seconds, which translates into a compelling value proposition for patients, health-care professionals, payers and public health organizations. It has an active R&D program, and its pipeline includes INSTI tests for diseases such as hepatitis C and Ebola. The company also provides contract services to adapt the INSTI platform to meet custom functional and technical diagnostic testing requirements.

STRATEGIC LIFE SCIENCES PARTNER OF THE YEAR AWARD
STARFISH MEDICAL INC.

Over 15 years ago, StarFish Medical set out to build a company dedicated to creating world-class medical devices.

StarFish Medical is Canada's largest medical device design, development and contract manufacturing company. It helps med-tech innovators throughout North America overcome challenging technology obstacles to create breakthrough products that improve health and save lives.

Today's StarFish Medical is a leading service provider and medical device design company with a full complement of design, development and manufacturing services. It successfully partners with innovative companies (both large and small) to create breakthrough products for many medical specialty areas.

LIFESCIENCES COMPANY OF THE YEAR
AURINIA PHARMACEUTICALS INC.

Aurinia is a clinical-stage biopharmaceutical company focused on developing and commercializing therapies in disease areas of high unmet medical need.

It is currently developing voclosporin, an investigational drug, for the treatment of lupus nephritis, focal segmental glomerularsclerosis and minimal change disease. Additionally, it is advancing voclosporin ophthalmic solution, a topic formulation for the treatment of dry eye syndrome.

Aurinia's highly skilled leadership team has a proven track record of success. Together they possess more than 200 years of combined corporate and industry-specific experience. The company's strategy leverages the skills and knowledge of its team's extensive clinical experience in the treatment of renal diseases and autoimmune diseases such as lupus nephritis.

MEDTECH COMPANY OF THE YEAR
REDLEN TECHNOLOGIES INC.

Redlen Technologies is a leading manufacturer of high-resolution cadmium zinc telluride (CZT) semiconductor radiation detectors, which are enabling a new generation of high-performance detection and imaging equipment including in nuclear cardiology, CT scanning, baggage scanning and dirty bomb detection.

Having successfully pioneered a breakthrough production process for manufacturing advanced CZT semiconductor wafers with its proprietary Traveling Heater Method (THM) technology, Redlen is revolutionizing the performance, cost and availability of radiation detection and imaging – enabling the widespread adoption of this technology for the medical and security markets.

With its industry-leading CZT growth technology, pioneered by a management and technical team that is deeply rooted in semiconductor and imaging technology, Redlen is changing the landscape for high-performance, cost-effective radiation-based medical and security imaging equipment.

Dr. Connie Eaves & Dr. Allen Eaves

RECIPIENTS OF THE
2018 LIFESCIENCES BC DR. DON RIX
AWARD FOR LIFETIME ACHIEVEMENT

CONGRATULATIONS

The Terry Fox Lab at BC Cancer, the Division of Hematology at UBC, and STEMCELL Technologies would like to extend heartfelt congratulations to Drs. Connie and Allen Eaves on receiving this prestigious award.

FROM YOUR FRIENDS & COLLEAGUES AT

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