

PLATFORM POTENTIAL

Platform technology and partnerships can increase investment, innovation and research odds



David Main is CEO of Notch Therapeutics, which developed technology to mass-produce immune cells from pluripotent stem cells to treat cancer

SUBMITTED

NELSON BENNETT

Investing in biotech can be a bit like playing roulette. You can bet a single number – i.e. a bespoke biopharma company focused on a single drug candidate or class of drugs – and hope your number comes up for a 35-to-one payout.

Or you can bet a dozen numbers at a time. The payout is only two-to-one, but the odds of the ball landing on one of 12 numbers out of 38 is a lot higher than landing on one.

From an investor's perspective, life sciences companies with

technology platforms or discovery engines are a bit like betting dozens: The range of possibilities for successful new discoveries and treatments is so much broader.

That may explain why B.C. biotechs that are built around a

WE DO TEND TO PREFER, AND REALLY HONE OUR STRATEGY AROUND, INVESTING IN PLATFORM COMPANIES



Nancy Harrison

Venture partner
Amplitude Ventures

technology platform or discovery engine of some sort have attracted so much attention and capital in recent years.

In 2020, AbCellera Biologics Inc. put its antibody discovery technology into emergency mode, created a “rapid pandemic response platform” and quickly developed monoclonal antibody therapeutics for treating COVID-19, underscoring just how versatile – and nimble – platform technologies can be.

Governments, pharmaceutical companies and investors started throwing money at AbCellera, which raised \$550 million through an initial public offering in 2020 – a significant chunk of the \$2 billion raised on capital markets by B.C. life sciences companies that year. AbCellera is now a \$3 billion company.

Notch Therapeutics, a B.C. biotech with technology that mass-produces immune cells from pluripotent stem cells, last year raised \$85 million in venture capital. Amplitude Ventures, a B.C.-based life sciences-focused venture capital company, was one of the investors.

Nancy Harrison, venture partner at Amplitude Ventures, admits the firm tends to look for biotechs that have technology platforms, like Notch Therapeutics and Zymeworks, another B.C. company in Amplitude’s portfolio.

“We do tend to prefer, and really hone our strategy around, investing in platform companies,” she says. “That’s in order to diversify risk, because they tend to

be game-changing, pivotal investment companies. You can implement a lot of strategies within those.”

Twenty years ago, when Zymeworks was still a startup trying to catch the attention of venture capitalists, one of the things that set it apart was its platform. Zymeworks used molecular modeling to zero-in on proteins and enzymes that could be used to treat a variety of diseases, from cancer to inflammatory diseases.

Ali Tehrani, founder and former CEO of Zymeworks, is now a partner at Amplitude Ventures. He says new technology approaches, like computer modeling, big data and machine learning, opened up whole new avenues for drug discovery.

Many B.C. biotechs today are platform companies, and are as likely to have a founder with a background in computer science, engineering, materials sciences or physics as in biology or medicine.

“We’ve always produced great engineers,” Harrison says. “We’re now at the level of understanding where the engineering approach – with physics, biology and chemistry all coming together – is something we know and can do really well.

“Examples of that are AbCellera, Carl Hansen – engineering physics guy, not a biologist. Precision Nano – engineering physics guy. They were solving a biological problem with physics.”

The platform approach has changed the model for companies looking for partnerships, collaborations and licensing deals, Tehrani says.

“The value proposition has changed,” he says. “Before, it was, ‘Give me a molecule.’ Now it says, ‘Give me access to your engine.’”

A collaboration agreement between Notch Therapeutics and Allogene Therapeutics is a good example. Allogene, a larger company, has complementary technology. Partnering, rather than competing, with Allogene is expected to be mutually beneficial.

“They believe that our platform can help them create a product of interest that they have,” says Notch Therapeutics CEO David Main.

“The vast majority of companies realize that what they’re trying to tackle, they can’t do it all themselves. Allogene’s bringing capital, but also they’re



Nancy Harrison is a venture partner at Amplitude Ventures •

SUBMITTED



BRITISH COLUMBIA
CENTRE for EXCELLENCE
in HIV/AIDS

CELEBRATING 30 YEARS YEARS OF EXCELLENCE

Join us in looking back on 30 years of innovation as we translate our success in HIV/AIDS towards healthcare sustainability.



@bccentreforexcellence
 @bccfe
 @bccfe
 @bccfe

PLATFORM POTENTIAL



“The vast majority of companies realize that what they’re trying to tackle, they can’t do it all themselves,” says David Main, CEO of Notch

Therapeutics • SUBMITTED

contributing some of their technology that marries together with our platform very well to make products.”

Notch’s innovation is technology that can mass-produce immune cells – T cells – from pluripotent stem cells for the treatment of cancer. Currently, creating immune cells from stem cells for cell therapy requires taking cells from a patient or donors, and growing them – something that is time consuming and can sometimes require multiple donors.

“Notch’s breakthrough is how to do all of this at a large scale and really dramatically reduce the cost of producing these cells,” Main explains.

Some B.C. life sciences companies have merged scientific disciplines that, in the past, might never have crossed paths – cell biology and 3D printing, for example.

Aspect Biosystems uses 3D bioprinting to grow human cells into specialized tissue. Aspect CEO Tamer Mohamed, who has a master’s of science degree in electrical and computer engineering, confesses he was a *Star Trek* fan who was inspired by the show’s “replicator” which could make things out of thin air.

A pre-clinical stage company, Aspect employs 45 PhD scientists with backgrounds ranging from machine learning and materials science to cell biology.

The company’s bioprinting technology can engineer a wide variety of specialized organ tissue – from heart and brain, to liver and pancreas. This diversity has led to numerous collaborations and partnerships, and about \$50 million in funding to date.

“We have over 30 collaborations with research organizations and biopharmas that cover a multitude of different tissues,” Mohamed says. “So we’re covering almost every tissue of the body through partnership. We know we can’t do that ourselves alone.”

One of the more promising applications Aspect is developing is the production of specialized pancreas cells – islets – to restore the ability of people with Type 1 diabetes to produce insulin.

It’s not a case of growing a new pancreas – just the pancreatic islets, which sense glucose to trigger the release of insulin. The manufactured tissue does not have to be implanted in the pancreas itself – it can be placed elsewhere in the body.

Aspects’ ability to bioengineer pancreatic tissue led to a major partnership agreement with Juvenile Diabetes Research Foundation, which is providing funding and research expertise.

“We’re working closely with them to accelerate our development at Aspect in terms of creating a functional cure for diabetes,” Mohamed says. ↩