How virtual models are driving innovations in drug discovery

Panel: **Economic Impact of Innovative Financing Models**
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Panelists: **Dr Cynthia Lavoie**, General Partner, TVM Capital Life Science; *Panelists*: **Marc Rivière**, General Partner, TVM Capital; **Cedric Bisson**, Partner, Teralys Capital and Head, Life Sciences Practice; **Daniel Biuthillier**, President and CEO, Kaneq Bioscience; **Jeff Courtney**, Chief Commercial Officer, Fight Against Cancer Innovation Trust

Takeaways and recommendations

- ✓ Rebalance innovation policies to incent emerging virtual model for drug development
- ✓ Virtual model maximizes impact of top talent, regardless of location or sector
- ✓ Public-private investment in venture capital enhances commercialization potential for university-based drug discovery
- ✓ Virtual model helps to build large, multi-institutional, multi-year projects

The policy issue: The pharmaceutical industry's shift toward virtual models for drug development and commercialization is compelling all players in the innovation ecosystem to adapt. Government, industry and academia must explore new collaborative approaches to ensure these activities remain in Canada and have sufficient financing to grow companies and deliver effective new patient outcomes.

The options: The stakes are high in this global economic battle to attract pharmaceutical financing and expertise. Bisson said strong policy support for venture capital is required to ensure Canada's major pharma hubs thrive and prosper.

"It's important to emphasize the need for strong support for venture capital and whatever is done in terms of public policy should emphasize the model," said Bisson. "Canada could be stronger than it is right now. We have big life sciences hubs in in Ontario, Quebec, British Columbia and Western Canada so we should reinforce those and make a difference."

The high cost of drug development and commercialization is prompting the shift to virtual company models. Kaneq Biosciences is an example of a company with no infrastructure, internal resources or wet labs. Yet Biuthillier described this lack of internal resources as an advantage that he hopes will translate into new commercially successful drugs. The secret to success: good project management.

"Everything is contracted out and it gives us access to the best resources from consultants and CROs (contract research organizations) and shorter development time for drug development," said Biuthillier. "We can count on a sound team of experts for any challenge that comes up which is a cheaper approach than anything else I've seen or been involved with."

The virtual approach also extends beyond companies to the research institutions that work with them. The Ontario Institute for Cancer Research (OICR) is a 10-year-old translational research institute takes a collaborative approach to cancer treatment and prevention. Its commercialization arm—the Fight Against Cancer Innovation Trust (FACIT)—bridges the gap between academia and the market.

"It's a different model … We have 300 people inside the institute but we also support about 1,700 scientists across the province so we outsource as much as we do internally," said Courtney. "We build teams around very large multi-institutional, multi-year projects or themes and move it to a place where we can attract support from VCs or collaborate with strategic partners. We provide $10-12 million over four years and the teams have to be into clinical trials at the end of that period."

A recent FACIT-supported project for leukemia attracted additional funding from Johnson & Johnson. If subsequent R&D proves successful, J&J has an option to acquire the product for $450 million. Courtney says the proceeds from this and other successful projects will be recycled back into research, allowing it to attract the best available scientific and entrepreneurial minds to bolster its R&D and commercialization capacity.

Public and private support for bridging the commercialization gap is essential for investors like Teralys and TVM Capital. The latter is a US$200-million fund which has already committed $90 million to six projects.

Rivière said that, as a "downstream" partner, he seeks out promising drug development candidates close to the clinical stage and funds development to phase III by creating virtual companies. Of the six established to date, five are headquartered in Canada and TVM has spent $25 million domestically on toxicology studies and clinical research.

"Geography is not important but these companies were created here … We're an international group based in Canada which makes it easier to do things here and gain access to international expertise," said Rivière, adding that TVM has strong collaborative ties to the Montreal Neurological Institute. "We use a whole series of experts from industry and academia who help us figure out the value of assets. When it comes to clinical trials, we support a number of collaborative groups which also follow the virtual model."