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• (1100)

[English]

The Chair: Good morning, everybody. I call this meeting to order.

Welcome to meeting number 15 of the Standing Committee on Science and Research. The committee is meeting to study private sector investment in research and development in Canada.

I would like to make a few comments for the benefit of all witnesses and members.

Please wait until I recognize you by name before speaking. For those participating by video conference, click on the microphone icon to activate your microphone, and please mute yourself when you are not speaking. For those on Zoom, at the bottom of your screen you can select the appropriate channel for interpretation: floor, English or French. I will remind you that all comments should be addressed through the chair.

For today's first panel, I would like to welcome our witnesses.

Thanks a lot to all three witnesses for appearing before the committee today.

We are joined by Mr. Timothy Hannigan, associate professor, strategy and organization, appearing as an individual; Mr. Ken Doyle, executive director, Tech-Access Canada; and, by video conference, Dr. Edward McCauley, president and vice-chancellor, University of Calgary.

Welcome to all our witnesses and thank you. All of you will have five minutes for your opening remarks, and then we will go into our rounds of questioning.

We will begin with Professor Hannigan.

Please go ahead. You have five minutes for your opening remarks.

Timothy Hannigan (Associate Professor, Telfer School of Management, University of Ottawa, As an Individual): Thank you, Chair and members of the committee.

I'm an associate professor and I hold the Thivierge chair in Canadian business at the Telfer School of Management at the University of Ottawa. I was previously at the Alberta School of Business.

Let me start with an important definition: An entrepreneurial ecosystem is a set of interdependent actors and factors coordinated to enable productive entrepreneurship within a particular territory.

To my central point here today, the federal government needs to take high-growth entrepreneurship as seriously as it takes innovation policy. Canada excels at research but struggles to build ecosystems that capture the value we create. This isn't a university failure; our researchers are doing exceptional work. The gap worth addressing here at the federal level is in ecosystem infrastructure and coordination.

Why does this matter for private sector R and D? Companies locate R and D facilities where they see thriving ecosystems—access to talent, acquisition targets and collaborative partners. When our ecosystems weaken, we don't just lose start-ups; we lose the corporate R and D investment that sustains long-term innovation capacity.

I have three core recommendations.

First, create federal oversight of entrepreneurial ecosystem health across regions. Right now, regional ecosystems boom and bust with little federal visibility. Just as the Bank of Canada monitors financial system stability, the federal government should track venture capital flows, start-up survival rates, talent retention and collaborative research between academics and other ecosystem actors. When ecosystems show stress, as we saw in our research in Alberta, coordinate a response before collapse. This isn't top-down management; it's early warning and coordination.

Second, embrace what HIBAR research calls the integration of basic and responsive research, which is investing in research excellence and entrepreneurial ecosystems as mutually reinforcing activities. This means that when we fund AI research, we simultaneously fund the partnerships between university and industry, venture capital capacity and anchor customers. We've seen success with initiatives such as the Creative Destruction Lab, which has expanded from the University of Toronto to Vancouver, Calgary, Montreal and Halifax. A \$25-million federal investment in 2018 has generated billions of dollars in equity value. We need far more parallel-path investments like this.

Third, create a federal scale-up procurement fund. Provide \$500,000 to \$5-million contracts over 18 to 24 months, deployed strategically to regions showing ecosystem stress to address the customer gap that often imperils many promising start-ups.

Let me illustrate these issues with a brief discussion of Alberta's AI ecosystem, which I studied with colleagues.

Canadian AI research has been world leading. Richard Sutton from the University of Alberta won a Turing award. Leading AI researchers chose Canada for its support of research excellence and collaborative university culture. CIFAR and Canada's pan-Canadian AI strategy have been successful policy initiatives.

Around 2017, Alberta appeared to have all the ingredients for success. A 30% investor tax credit attracted capital. The University of Alberta graduates were building and launching AI start-ups. Google's DeepMind chose Edmonton for a research lab. The Alberta Machine Intelligence Institute connected these elements. On paper, this looked like a thriving AI ecosystem.

However, by 2023, this ecosystem was bruised. Google folded the DeepMind lab. The province rescinded the tax credit. While start-ups like AltaML, DrugBank and Granify showed some traction, there were no clear scale-ups like Shopify. Local initiatives like Startup TNT briefly thrived, becoming one of Canada's largest pre-seed investors by 2023, but without sustained federal support, investment activity has fallen dramatically. Alberta's access to venture capital was severely limited by Canada's small VC sector and geographic concentration in Toronto and Vancouver.

What happened? Human capital proved necessary but was not sufficient. Shifting provincial policy undermined foundations. The critical failure was the lack of local customers. Alberta businesses wouldn't take risks on local AI start-ups and limited venture capital meant companies couldn't bridge to larger markets.

This ecosystem weakness directly deterred corporate R and D investment. When Google's DeepMind closed its Edmonton lab, there was a loss of private sector R and D spending. Established companies locate R and D facilities where they see thriving ecosystems. By letting ecosystems collapse, we signal to the private sector that R and D investment in Canada carries too much risk. There is a pattern of technological strength not taking root and scaling as it could. This is what my three recommendations aim to address.

- (1105)

In closing, Canada's pattern of technological strength failing to scale is not inevitable. With federal oversight of ecosystem health, parallel investment in research and commercialization infrastructure and strategic procurement that creates anchor customers, we can build the conditions for sustained private sector R and D investment. The question isn't whether Canada can produce world-class research; we do. The question is whether we'll build what HIBAR research calls integrative structures—ecosystems enabling academia and industry to pursue knowledge creation and societal impact simultaneously.

Thank you.

The Chair: Thank you, Professor Hannigan.

Now, we will proceed to Mr. Doyle.

Please go ahead. You will have five minutes for your opening remarks.

Ken Doyle (Executive Director, Tech-Access Canada): Thank you, Madam Chair, and thank you to the members of the committee for inviting me to appear.

Throughout this study, you've heard a lot about the journey from invention to innovation, but I'd like to gently suggest that the journey doesn't end there. The real challenge and the real opportunity is transforming innovations into commercially viable products, processes and services. One way I like to frame it is that people innovate and companies commercialize. People in labs, shops, garages and classrooms create new ideas, but the small and medium-sized enterprises that make up 99% of Canadian businesses are the ones that turn those ideas into something a customer will pay for. That final step is where Canada has struggled for a long time, and that's where we come in.

I serve as executive director of Tech-Access Canada, the national network of 70 technology access centres, or TACs, located at colleges and CEGEPs across the country. Each of these business innovation and commercialization support centres was selected through a rigorous merit-based process. They are the best of the best in Canada, embedded in local communities and trusted by industry.

Collectively, TACs help 6,000 Canadian companies every year adopt new technologies, solve technical problems and accelerate commercialization. If there's a French word I wish I had a clean English equivalent for, it would be *accompagnement*. That's what the TACs do: We walk with companies and we guide, de-risk and accelerate their commercialization journey, whether that's developing a prototype, validating a process, integrating automation or AI, or figuring out how to scale for production.

I want to highlight something SMEs tell us over and over: Canada doesn't lack ideas; it lacks capacity. Most companies don't have in-house R and D teams. When they innovate, they're trying to solve a problem, fix something, improve something, test something or adopt something. They don't think in terms of doing R and D. They think in terms of getting something done, and there's a message we hear from companies everywhere we go: The process is too complex. When an entrepreneur has to decide between working on their business or spending hours trying to understand a federally funded R and D support program, it's pretty clear what they'll choose. One company told us they spent more time trying to understand the federal program than it took to solve the original technical problem. I don't think that's the kind of R and D the committee had in mind.

This is why TACs resonate so strongly. We provide a single door, local expertise and fast turnaround. That's why our hallmark interactive visits program, a simple, low-bureaucracy 20-hour business innovation engagement, has consistently been oversubscribed for half a decade. Companies line up because it's simple, it meets them at their level and it delivers results.

That brings me to a scene from an unexpected place—the movie *8 Mile*. There's a line where Eminem's character asks a friend, “Do you ever wonder at what point you just got to say [forget] it, man? Like when you gotta stop living up here, and start living down here?” Canada has big, ambitious ideas about innovation, and those matter, but if those big ideas don't reach the companies trying to commercialize them, that brilliance stays up here. We need programs and support mechanisms that live down here, close to the ground where companies actually operate.

Finally, let me offer an analogy regarding Canada's position in areas such as artificial intelligence and quantum. I often think about the Yukon gold rush from the 1890s. Canada's already investing billions in what we hope will be the big winners—the prospectors, the claims, the mines—and that's important, but when the gold rush settled, there were only a few big winners and an awful lot of losers. Do you know who made the most money during the gold rush? It was the companies that sold shovels, pickaxes, railway tracks and services.

Today, in the AI gold rush, TACs are helping exactly those firms—the Canadian companies building the tools, components and services that everyone relies on—and they're not just in tech. They're in forestry, fishing, livestock production and agriculture—the sectors that have been analog for a long time that are now seeing huge gains from adopting innovation. They may not be flashy, but they create real, durable economic value. The problem is that there are very few reliable programs designed for them.

Whether AI turns out to be transformational or something closer to the dot-com bubble, I think we can all agree that, as Canadians and taxpayers, we don't want to snatch defeat from the jaws of victory again.

Let me close with three simple ideas that would make a real difference.

One, treat the pre-existing pan-Canadian network of technology access centres as innovation infrastructure. Stable, scaled funding

will enable us to meet demand and support many more Canadian firms.

Two, create simple SME-focused pull mechanisms. Our interactive visits model works. Companies want it, and it directly increases private sector R and D. The program was designed to be modular and scalable.

Three, support the shovel sellers. To achieve widespread economic impact from AI, quantum, clean tech and advanced manufacturing, we must support the enabling companies that will make that value a reality.

• (1110)

Canada is rich in ideas, but we need to make it easier for small companies to turn those ideas into commercial success.

Thank you. I look forward to your questions.

The Chair: Thank you. You are exactly on time.

We will now proceed to Dr. McCauley.

Please go ahead. You have five minutes for your opening remarks.

Edward McCauley (President and Vice-Chancellor, University of Calgary): Good morning.

[*Translation*]

I want to thank the committee for inviting me here today.

[*English*]

The topic of your study, how to best promote and grow private sector investment in R and D, is fundamental to who we are at the University of Calgary. We believe that advancing the commercialization of innovation emerging from Canadian universities is a critical driver for building a stronger, more innovative economy for Canada. We are here today not just to agree on the importance of this goal but also to offer our experiences and recommendations from a proven model for achieving it.

The University of Calgary is one of Canada's top entrepreneurial universities. We are now a top five research institution in Canada. Our innovation ecosystem has created more new companies than any other university in the nation over the past six years. This combination of a research-intensive and entrepreneurial university is a powerful combination. We create new knowledge every day, and we mobilize it for the benefit of society as quickly as possible.

To give you a tangible sense of what this model looks like in practice and the scale of the impact, I'd like to share a few brief highlights.

The first is SAGD, or steam-assisted gravity drainage. This technology, developed in partnership between industry and the University of Calgary, is an innovation that has unlocked trillions of dollars, literally, in economic benefit for Canada. Our research has also led to new geothermal energy technologies through our spinoff Borealis GeoPower. We developed the globally adopted concussion assessment tool SCAT, which is now the standard of care for athletes worldwide. We created the neuroArm, the world's first robot capable of performing precise surgery inside an MRI.

Our researchers democratized nuclear magnetic resonance analysis by creating a commercially viable and affordable tool that is now the foundation of the successful public company Nanalysis Corp. We recently attracted Mphasis, one of the world's largest tech companies, to establish a Canadian headquarters, creating 1,000 jobs and partnering with our university on developing quantum applications. Just this past year, we launched the QAI Ventures accelerator, which supports early-stage quantum technology start-ups.

Supporting and accelerating this R and D, our innovation ecosystem also includes the Hunter Hub for Entrepreneurial Thinking, which supports thousands of students and researchers annually; UCeed, one of Canada's most active university-based pre-seed funds with a one-dollar to 30-dollar leverage ratio on investment; and CDL-Rockies, which has helped ventures raise billions in capital. CDL-Rockies alumni companies have created more than 2,500 jobs and raised \$2.9 billion in capital. Then there's Innovate Calgary, our business incubator and lead for innovation hubs in aerospace and so on.

These successes were not accidents. They are the result of a deliberate culture and specific support systems—our commitment to innovation, our researcher-first IP policy and our robust commercialization pipeline. These are systems that we believe can be replicated across the country with the right federal incentives, which I look forward to discussing with you today. Like you, we believe Canada must increase private R and D spending to raise productivity, move up the global value chain and create and retain high-skilled jobs. It's also essential for attracting global investment, enhancing economic resilience and maximizing the return on public research investments.

The federal government's commitment in budget 2025, including talent attraction investments, the exemption of graduate students from study permit caps, the continuation of the elevate IP program and proposed changes to SR and ED policy, are important steps forward. However, more can be done to catalyze private R and D investment and strengthen Canada's innovation capacity.

I offer the following recommendations.

Provide matching funds to incentivize deeper government-university-industry partnerships. These public-private partnerships are essential for scaling innovation and translating research and impact.

Require industry recipients of federal funding to reinvest a portion into university research partnerships. A streamlined model similar to the industrial and technological benefits policy could help align industry incentives with national research goals.

Create dedicated funding for university innovation offices, which are critical for supporting commercialization, IP management and industry engagement.

Directly support university seed funds, such as UCeed, that have demonstrated strong returns and play a vital role in nurturing early-stage ventures.

Include university-based research capacity in the development of BOREALIS and fund it at a meaningful level. Canada has the opportunity to build a model that leverages academic expertise to drive breakthrough innovation.

Canada's universities are ready to lead. We train the next generation of innovators, produce world-class research and increasingly translate that research into solutions that benefit society and the economy, but we need the right policy tools and sustained investment to fully realize this potential.

• (1115)

At the University of Calgary, we are proud of our entrepreneurial culture, our strong industry partnerships and our commitment to impact. We look forward to working with government and industry to build a more innovative and prosperous Canada.

[Translation]

Once again, thank you for the opportunity to address you today.

[English]

I look forward to your questions.

The Chair: Thank you to all the witnesses for your opening remarks.

We will start our first round of questioning, and we will begin with MP Baldinelli for six minutes.

Please go ahead.

Tony Baldinelli (Niagara Falls—Niagara-on-the-Lake, CPC): Thank you, Madam Chair.

Thank you to our witnesses for being with us this morning.

Mr. Doyle, I'm going to begin with you.

On Friday morning, I had the pleasure of being in Niagara-on-the-Lake while Niagara College did a ribbon-cutting ceremony for their fifth innovation centre, the horticultural and environmental sciences innovation centre greenhouse. It's a \$12-million facility. It is one of the five centres that respond to the growing demand from local businesses on the ground to bring forward ideas and consider how we can innovate to provide solutions for those businesses.

You and several other witnesses who have come previously have talked about CEGEPs and colleges punching above their weight in terms of getting results from the government funding that's been provided. Only about 4% of tri-agency funding was provided to colleges and CEGEPs.

Is there a recommendation that you would suggest to the government? You've put three ideas forward, but what is the most critical thing that the government could do to support the tech innovation centres? You say that there are over 70 now. There are five affiliated with Niagara College. How can we work to support them? I would suggest that they're providing more results and quicker results on the ground.

Ken Doyle: They absolutely punch well above their weight, and I've found that the percentage debate—4% versus 96%—can sometimes come across as a bit simplistic or entitled.

I'm more interested in the quantum, where there's probably a right number the sector could absorb to keep on doing what they're doing, and I think the easiest vehicle to get that activity started on the ground would be the college and community innovation program administered by NSERC on behalf of the tri-council. Today that's a \$123-million program that supports centres like the five centres at Niagara and then another 119 eligible colleges across the country.

On April 1, 2026, that program's funding gets cut by 45%, and that'll have a tremendous impact on the colleges, absolutely, but what worries me, frankly, is the students who will be missing out on experiential learning opportunities and the thousands of companies that will not get that support from objective innovation intermediaries like the technology access centres in the wider college sector.

• (1120)

Tony Baldinelli: That goes to my second question. Earlier on, we had both Michael McDonald and Mark Nantel come forward, and they discussed the work that the colleges are doing and the response that they've had to how they're retaining talent and responding to the needs of the business community on the ground.

However, funding was an issue, and they put forward two recommendations to the government prior to the budget. One touched upon the funding that you just mentioned. They talked about looking for baseline funding to 2030 of \$215 million and then working again with the tri-agencies to open up, I guess, a greater share of the envelope.

I was wondering, based on what you saw in the budget, if any of those recommendations were responded to.

Ken Doyle: From my read of the budget, I'd say, no. There was support for the granting councils and the tri-council, but nothing was earmarked for the college sector, which is what raised some flags for us coming towards April 1, when the funding for that program will get cut, effectively, in half, sort of penalizing those small innovative companies that want to scale and make use of some of the other really interesting investments in the federal budget.

Tony Baldinelli: That's interesting.

Again—I mentioned this earlier—as we were preparing for committee, we were looking for background material, and there was a study that was released by Statistics Canada in August 2025. It was the survey on research activities and commercialization of intellectual property in higher education. It was from 2023. In its findings, it stated that colleges and CEGEPs were more likely to provide support to small and medium-sized enterprises. They had one in 10 research partnerships, and, in contracts, 10% were held with colleges and CEGEPs, yet only 4% of the funding was from the tri-councils.

Somehow that was modified by Statistics Canada on October 14, and that study was removed from the website. They were lauding colleges for what they're doing, and then all of a sudden the report disappeared. Would you have any idea why the government pulled that Statistics Canada report?

Ken Doyle: Again, thank you. That's a very nuanced question but it's quite interesting.

I actually feel bad for my colleagues at Industry Canada, ISED, who worked so hard on this product over the last couple of years. It was released with great fanfare and then it disappeared. Luckily the Internet never forgets, so I was able to get a copy.

You're absolutely right. The colleges show quite well in this document. They're really leaning into the core DNA of what they do, supporting small and medium-sized enterprises to the tune of 9,000 compared with 6,500 for the universities. It articulated our role in the innovation ecosystem really well. It was confusing as to why it just disappeared one day off the Internet.

Tony Baldinelli: Yes, just Niagara College, for example, in 2024, was able to bring in \$9 million of funding to support the work that it's doing in support of the community and what the community is bringing forward. It's a model that I think works on the ground, and it's something I think we should be working to foster, encourage and replicate.

Thank you.

The Chair: We will now proceed to MP Rana for six minutes.

Please go ahead.

Aslam Rana (Hamilton Centre, Lib.): Thank you, Madam Chair.

Thank you very much to all the witnesses for spending your time with us on Monday morning.

My question is for Dr. Edward McCauley.

You mentioned earlier during your testimony that the University of Calgary has become one of Canada's top research institutions and a leader in translating research into successful start-ups.

What approaches have worked best to help researchers turn their ideas into businesses, and how can federal programs better support the transition?

Edward McCauley: Thank you.

As I mentioned, we've developed a support system at the University of Calgary involving the Hunter Hub for Entrepreneurial Thinking, CDL-Rockies, Innovate Calgary and so on. These are support systems for our students, faculty and staff who want to take that journey of mobilizing their knowledge for the benefit of society.

In that process, we want to ensure that the various avenues that are open to them can be explained clearly and can actually be operated on, for example, creating a small or medium-sized enterprise or creating a new company, or it might be better to license that technology and work with industry to obtain revenue that way. Those are some of the support systems we put in place.

What's really also very important is the collaboration with industry. The University of Calgary, in essence, receives about 25% to 30% of its funding from collaboration with industry and not-for-profits. These collaborations are really important because we're producing the talent to support those industrial sectors, but we're also working hand in hand with industry to, in essence, pull the technologies and the great ideas out and mobilize that for the benefit of society.

• (1125)

Aslam Rana: How do programs like co-ops or partnerships with companies help students get ready to work in research and innovation?

Edward McCauley: Obviously, they provide essential opportunities for our students. They gauge ideas for their career opportunities as to what it's like to work either in an SME or in a larger corporation. Programs like Mitacs, I think, have been very beneficial in terms of helping to support that.

Again, the more things we can do to show industry and the rest of Canada the talent we have at our post-secondary systems across the country and how important the ideas those individuals have in terms of promoting Canada are, the more beneficial it would be.

Aslam Rana: Thank you very much.

My question is for you, Mr. Hannigan.

How can Canada better align its innovation policy with the actual social and organizational processes that shape commercialization outcomes?

Timothy Hannigan: I think it's important to distinguish between organizations establishing business models, proof of their business models, versus their operating models, which they can scale up. I think a lot of efforts in entrepreneurship are in the former and not the latter. When I speak about an ecosystem and the degree to which we can provide supports for scale-ups, I'm really focusing on the latter.

Scaling up is moving beyond just proving it. It's building markets. It's leaning into strategy so that we can have strategic strengths at the industrial level.

Aslam Rana: Thank you.

Your recent work examines a few of the risks associated with generative AI. What considerations should Canada keep in mind when promoting private investment in AI-related research commercialization?

Timothy Hannigan: I'm not going to mention the word we've coined, but in my recent research—I've had a few papers out recently—we're pointing to the risks of embracing the outputs of generative AI uncritically. This is not to say that generative AI is not a transformative technology. I actually think that it is. However, just thinking about the technology and not thinking about the practices within organizations, I think, can lead to hazards, and those hazards can be quite problematic.

To the extent to which we can attend to those hazards, we can position the technology around issues that we've known about in strategic management for a long time, like capacity, competitive advantage and routines. This is where we can unlock value in generative AI. However, if we just think about this technology as magic, that's problematic.

Aslam Rana: What role does institutional support play in enabling commercialization, especially in early-stage innovation ecosystems?

Timothy Hannigan: It can play several. Some of the comments we've heard today so far are helpful in this regard.

However, I'll come back to my framing that we need to think about, first, proving business models and, second, scaling operating models. It's one thing to have institutional supports to get the minimum viable product to prove that a customer might want to actually pay money for the value proposition that is being created by the organization. However, it's a whole other thing to scale that up into a market that is repeatable so that the company can survive over time.

I think the institutional supports for that are more on the ecosystem side. We do have some support systems in place, but in my comments, I pointed to the gap that we have, which is that we have no oversight looking across ecosystems in Canada. To the extent that they collapse, no one's really looking after that, and that's very much a local problem.

Aslam Rana: Thank you.

Mr. Doyle, what—

The Chair: You have five seconds.

Aslam Rana: Okay. Thank you.

The Chair: Thank you.

We will now proceed to Mr. Blanchette-Joncas for six minutes. Please go ahead.

[*Translation*]

Maxime Blanchette-Joncas (Rimouski—La Matapédia, BQ): Thank you, Madam Chair.

Hello to the witnesses joining us today.

My first question is for Mr. Hannigan.

In the “Canada strong” budget 2025, the government says it wants to make Canada a leader in innovation. Yet it does not provide any additional funding to the three granting agencies, even though the grants to the young researchers who are with us today have been frozen for 20 years. That means that the grants are now 40% below the real cost of living.

As a university professor, do you think we can say that Canada is strong in innovation while young researchers are being left behind financially?

• (1130)

[English]

Timothy Hannigan: It's important to distinguish between the tri-council funding that's going to basic science and the tri-council funding that's going to social science. With regard to basic science, we're actually doing quite well. With regard to social science.... My study I'm presenting here today was funded by SSHRC. I look at this as being an example of an early warning study of what is going wrong. We need to pay attention to both. We need to balance both.

[Translation]

Maxime Blanchette-Joncas: Mr. Hannigan, I think you misunderstood my question. I would like you to provide your answer in writing if necessary.

The "Canada strong" budget allocates \$1.2 billion to attract foreign researchers. On the other hand, it does not provide anything to improve conditions for students, doctoral students, postdocs and young professors.

As a professor, wouldn't you say that this strategy sends the message that Canada gives more funding to the talent it hopes to recruit as opposed to the people it is already training at its own institutions?

[English]

Timothy Hannigan: I apologize. This is not working.

[Translation]

Maxime Blanchette-Joncas: Yes, Madam Chair, I think the interpretation is not working, once again. This is nothing new.

[English]

The Chair: Let's stop the clock. We will look into it.

• (1130)

(Pause)

• (1130)

The Chair: We will resume.

Mr. Blanchette-Joncas, please go ahead.

[Translation]

Maxime Blanchette-Joncas: Madam Chair, I would like you to restart the clock because I don't think the witness understood my questions.

[English]

The Chair: Yes, we will do that.

[Translation]

Maxime Blanchette-Joncas: Thank you very much, Madam Chair. Science is important. It means a lot to me, as you know, so I have some good questions for this witness.

Mr. Hannigan, in the "Canada strong" budget tabled on November 4, the government says it wants to make Canada a global leader in innovation. Yet there is no additional funding in the budget for

the three granting agencies, even though the grants awarded to young researchers have been frozen for 20 years. This freeze has finally ended, but the latest budget does still not provide any indexing of those grants, meaning that their value is still 40% below the real cost of living.

As a professor who is part of the research ecosystem, how can we really talk about Canada as a leader in innovation when young researchers are being left behind financially?

[English]

Timothy Hannigan: That's a really good question.

[Translation]

Maxime Blanchette-Joncas: Thank you.

[English]

Timothy Hannigan: I celebrate this budget and its attempts to try to strategically bring top researchers here, but I also recognize that we cannot leave our young researchers behind. I do fear that we are not keeping up with inflation with respect to funding our young researchers, and this is a problem.

I don't have a firm solution for this, but I will say that, in innovation terms, we can't just have stars. We also need to have complementary resources that unlock the value of those stars.

[Translation]

Maxime Blanchette-Joncas: I think a number of people did not celebrate when they saw the last budget, including the students who are here today and who train the next generation of scientists.

The "Canada strong" budget allocates \$1.2 billion to attract foreign researchers, but does absolutely nothing to improve conditions for students, doctoral students, postdocs and even young professors.

In your opinion, doesn't that strategy send the message that Canada provides more funding to the talent it hopes to attract as opposed to the people it is already training at its own institutions?

• (1135)

[English]

Timothy Hannigan: I understand that university funding occurs at multiple levels. I think provincial funding is important as well. This is not just a federal concern. This is a concern that Canadian governments at multiple levels of jurisdiction have to attend to.

My comments today, regarding building our ecosystems to be more robust, are about continuing our funding and about our strengths for research, basic science and the inputs to this whole system. However, they're also thinking about linking this to ecosystems that can deal with what happens when students graduate.

What we want to avoid are zombie companies that are just going from grant to grant. We actually want to build them up. However, we cannot shift our attention only to the ecosystem spin-out and lose the engine that's driving this whole thing. I want to appreciate the strengths of our university system and point to what we can do in addition to this.

I think your comments pointing to this new budget are interesting because, yes, it would be great to have star researchers come here. However, if we don't have complementary assets to help them, then are we really going to unlock the value that they bring?

[Translation]

Maxime Blanchette-Joncas: I have some more questions for you, Mr. Hannigan, about the ecosystem you are part of.

According to data from the Ottawa Science Policy Network, close to two thirds of graduate students say it is likely or very likely that they will leave Canada after graduation, and less than half of new graduates intend to stay in Canada.

Might the new budget not accelerate the brain drain by underfunding the next generation and focusing on international recruitment?

[English]

Timothy Hannigan: In regard to the draining of the foreign students we train here, this is a potential problem. I was in the U.K. previous to my experience in Alberta, and Oxford had the same problem when I was there.

This also speaks to the need to have a coordinated, strategic approach to thinking about an ecosystem. What happens after we graduate our students? They incubate companies inside universities. That's great, but where do they find their first customer? How do they then build that up? How can we get them to stick around, given that we've effectively invested in them?

[Translation]

Maxime Blanchette-Joncas: Attracting foreign researchers requires equipment, laboratories, graduate students and technical personnel. As it is, our universities do not have the means to provide real support to the next generation. Grants have been frozen for 20 years, meaning that they are still below the cost of living. Investments in research and development have been cut in the past 20 years. Moreover, Canada is the only G7 country to have done so. This is not very inspiring.

Does Canada really have the capacity to welcome international researchers without placing those who are already here in greater jeopardy?

[English]

Timothy Hannigan: That's a good question. It's a little bit outside of the scope of my expertise, but I will say that we absolutely need to maintain the strengths of our existing system. We cannot let it fall by the wayside.

[Translation]

Maxime Blanchette-Joncas: Mr. Hannigan, I know this is not your area of expertise, but let's look at the big picture. The facts are undeniable: study grants were frozen for 20 years and are below the cost of living; the last budget did not provide any additional funding to the granting agencies that fund research; and two thirds of graduate students say they are prepared to leave Canada after graduation.

Isn't there a risk that Canada will provide better funding to the researchers it wants to attract than to those who are trained in

Canada but don't see a future here after completing their studies in Canada or in Quebec?

[English]

Timothy Hannigan: Again, this is a bit outside of my expertise, but what I will say is that there is a strategic imperative to try to bring more money into the system in general. I think the legitimacy that star researchers can bring will actually be quite helpful for private sector investments.

The Chair: Thank you.

The time is up. We will now proceed to MP Mahal for five minutes. This is our second round of questioning.

MP Mahal, you have five minutes.

Jagsharan Singh Mahal (Edmonton Southeast, CPC): Thank you, Madam Chair.

I want to thank all of the witnesses who came today for their time.

I want to continue with Ken Doyle.

Thanks for coming back to this committee. As you mentioned in the last part of your testimony today, there was a recent report that was released by Statistics Canada, titled "Survey on Research Activities and Commercialization of Intellectual Property in Higher Education, 2023", and it was mysteriously taken down by the department after being released. Have you seen that report? You haven't seen that report.

According to that report, one in 10 R and D contracts are held with colleges. When it comes it dollars, are colleges punching above their weight when considering funding?

• (1140)

Ken Doyle: Yes, I believe at present the college sector receives about 2.5% or 3% of the federal investments in higher education research and development, so by extension, having 10% of the partnerships and contracts going to the college sector would show that, yes, we're comfortably punching above our weight.

Jagsharan Singh Mahal: In the same report, it says that 51% of the IP licensing from post-secondary institutions is done with foreign organizations. What we are seeing is Canadian-made technology being commercialized in foreign countries, not in Canada.

Ken Doyle: Yes, that is unfortunate. I believe the report did mention how the university-derived intellectual property disclosures make up about 90% of what the report tracked and that more than 50% of these licences went to foreign organizations.

Just like for the last few decades, these brilliant, big ideas are being supported publicly in Canada and developed in Canada, but as I mentioned in my remarks, we go from invention to innovation and then stop. Other countries are more than happy to license that IP, fully commercialize it and sell it back to us as finished products, processes or services. That's probably what we have to shine a bigger spotlight on if we want to tackle the productivity and competitiveness issues.

Jagsharan Singh Mahal: Thank you.

If we look at the current budget, we see that there is nothing much in the budget to support colleges and tech institutes. How do you feel that the room that is already stretched for private colleges when it comes to funding—in comparison to universities and bigger institutes—is going to impact the already-saturated market when it comes to funding? What do you think your performance is going to be in this competitive field?

Ken Doyle: That's an excellent question. Thank you.

It's a bit of a nuanced answer, where everything we do is collaborative with industry. The real beneficiaries of any activity that we undertake are these small Canadian companies that want to innovate. When we do hit funding obstacles, it's those companies that will suffer. Capacity will drop, and our capacity dictates how many companies we can assist each year, as well as how many students will benefit from experiential learning opportunities—both university and college students.

What I did find interesting in the budget was the productivity superdeduction, where there's support for advance write-offs for companies investing in technology adoption and increased supports for the scientific research experimental development tax credit, as well as the IP assist and elevate IP intellectual property supports. These are all well and good, but as the data has shown for decades now, Canadian companies don't invest in technology adoption, which doesn't put them in a position to do R and D, which means they can't create IP to then export.

While you mention there's not direct support for the colleges in the budget, I think there may be some indirect avenues for us to assist, mainly by being those objective innovation intermediaries that can support with recommendations, technology adoption, collaborative R and D, and validating that. Then, if it is protectable, it's getting those IP supports in place and scaled up to commercialization and export.

Jagsharan Singh Mahal: Thanks so much.

On a scale of one to 10, how satisfied are you with the current budget when it comes to college funding over university funding?

Ken Doyle: That's a great question. Thank you for that.

I've studied the budget closely. Given the fiscally constrained times we're in and the other turbulence out there, it's a very ambitious budget. Without, I guess, seeing how things are going to be implemented on the ground, I'd be reluctant to rate it out of 10. However, I'd probably have to give it a strong six or seven.

The Chair: Thank you. Time is up.

We will now proceed to MP Jaczek for five minutes. Please go ahead.

Hon. Helena Jaczek (Markham—Stouffville, Lib.): Thank you so much, Madam Chair.

We've certainly heard some very interesting testimony from all three of our witnesses today. What struck me is that both Mr. Doyle at Tech-Access and Dr. McCauley at the University of Calgary have taken somewhat of a similar approach when it comes to what we're calling applied research.

In other words, Mr. Doyle, Tech-Access provides a single door. You assist entrepreneurs, industry and small businesses to potentially commercialize through assistance with applications for grants, etc.

The University of Calgary has had a number of successes also. One of the things that intrigues me from your testimony, Dr. McCauley, was your reference to “national research goals”. Has the University of Calgary become known for concentrating on certain research goals related to your environment in Alberta? How have you perhaps concentrated on specific areas of research?

• (1145)

Edward McCauley: We're a comprehensive research-intensive university, but we pride ourselves in looking provincially as well as nationally as to where we can contribute people and talent, as well as ideas. In essence, we've taken the approach that we need the right priorities, the right people and the right catalysts. The right priorities are around supporting our sector in the province of Alberta, for example, in the areas of energy, health, agriculture, finance and so on. We then look at the horizontals that support growth in those sectors, whether it be quantum applications or data science and so on.

Then really, yes, we have taken the approach of prioritization, but what's really interesting is that the contributions from across our university span all of our different faculties, as the problems in those areas are truly multidisciplinary, the solutions are truly multidisciplinary, and we're able to do that.

In essence, at a national level, I think it's obviously very important, given the limited resources we have, to focus on very important priorities around our sovereignty, around protection and around building a prosperous Canada.

Hon. Helena Jaczek: Further to that, as a member of the U15, I presume you bring your ideas to U15, and consequently to ISED, to the minister, with these kinds of priorities in mind. To what extent have you heard about the federal government's desire to establish mission-driven kinds of priorities?

There has been talk of a capstone organization. Are you aware of those federal initiatives, and what is your opinion of them?

Edward McCauley: I've actually testified in front of this committee previously about the importance of mission-driven research. There really isn't a trade-off between discovery research and mission-driven research.

Canada is at a very important point internationally where we have to identify our priorities and identify where we want to lead on the world stage and where we want to contribute. That's where all universities and polytechnics, etc., across the country—all of our post-secondary institutions—are willing to contribute. The U15, because of the capacity and talent that we have, has some ability to provide results at scale, which are obviously really important. We're well aware of how the programs are being developed and so on.

The capstone, as was mentioned in the budget, provides that opportunity for us to have the discussion around how we actually deal with that mission-driven research and bring together all the different disciplines and expertise from across the country to actually solve those problems.

Hon. Helena Jaczek: Thank you.

Dr. Hannigan, could you give us some of your thoughts on the enhancements to the scientific research and experimental development tax incentives? We've heard some skepticism from Mr. Doyle about the value of these. How do you see them fitting into the whole picture here?

Timothy Hannigan: Thank you for the question.

I think they're important, but they're underutilized. It needs to appear as one tool amidst several. My message here today is about strengthening ecosystems and strengthening the signals to encourage private investment, of which that is, as you've mentioned, one of the tools we can use.

Hon. Helena Jaczek: Why do you think SR and ED is underutilized?

Timothy Hannigan: I haven't studied this, so at risk of being outside my expertise, what I will suggest is that it is underutilized because there isn't a particularly good reason to lean into it at a high level.

• (1150)

The Chair: The time is up.

We will now proceed to MP Blanchette-Joncas for two and a half minutes.

Please go ahead.

[*Translation*]

Maxime Blanchette-Joncas: Thank you, Madam Chair.

Mr. Doyle, you represent Tech-Access Canada, which represents technology access centres or TACs, which are funded by the Natural Sciences and Engineering Research Council of Canada, or NSERC. The technology access centres include Quebec's college centres for technology transfer, or CCTTs.

Outside Quebec, a TAC receives \$350,000 from NSERC, but a TAC in Quebec, such as Innovation Maritime, in my riding, receives just \$100,000 even though it does the exact same work.

Moreover, some of Quebec's technology access centres do not receive any funding at all.

Is there any justification for this difference in treatment, in your opinion, or is it simply a structural inequality that has to be corrected?

Ken Doyle: I think it's a structural inequality that has to be corrected.

The centres in Quebec receive just \$100,000 per year. Some centres designated as college centres for technology transfer receive \$200,000. There are also some centres that won the technology access centre competition and they are not even designated as CCTTs.

It has been that way since the program was launched in 2012: \$350,000 for the rest of Canada, but \$100,000 for Quebec. Looking at the 192 federal research and development funding programs, this was the only example we found where the centres in Quebec are treated as second-class citizens. Correcting that inequality would cost less than \$7 million per year.

Maxime Blanchette-Joncas: That's incredible, Mr. Doyle.

As you said, this inequality dates back to 2012. The network in Quebec has lost out on roughly \$200 million in applied research as a result.

What would you say are the real consequences of that underfunding, specifically as to the ability of Quebec regions to support innovation, commercialization and small businesses?

Ken Doyle: No one has ever been able to give me a good explanation as to why the centres in Quebec receive a third of the funding provided elsewhere in Canada, or even why the amount of funding has not changed since 2012. Considering inflation and other factors, it should be about \$500,000 per year, or \$150,000 for the centres in Quebec.

Small and medium-sized enterprises are of course the losers in all of this because the centres cannot afford to fund the requests from their client SMEs. It should be noted that the centres in Quebec do not only serve SMEs. Their expertise and facilities are so great that they receive funding requests from all over the country and even internationally. So they have to make choices.

Maxime Blanchette-Joncas: So Quebec is really being ripped off—

[*English*]

The Chair: I'm sorry for interrupting, but the time is up.

Thank you, Mr. Doyle.

Now we have two and a half minutes with MP DeRidder, then two and a half minutes with MP Noormohamed, and then we will end this panel.

MP DeRidder, please go ahead. You have two and a half minutes.

Kelly DeRidder (Kitchener Centre, CPC): Thank you so much.

Welcome back, Ken. My question is for you again. It's good to see you here.

The government announced a productivity superdeduction to incentivize investment in this new budget. While this deduction accelerates writeoffs, it does nothing to address the structural issues behind Canada's productivity crisis: high taxes, regulatory delays, slow approvals, capital flight and a declining competitiveness compared to peer countries. A faster writeoff doesn't solve those fundamental barriers.

How do you think it could meaningfully change SMEs and help them commercialize, with just a writeoff program and without eliminating these barriers that are in place?

Ken Doyle: Thank you for the question.

I know my colleagues at the Canadian Federation of Independent Business are quite seized with the red tape and the regulatory piece.

What I noticed with the accelerated writeoff is that at Tech-Access Canada, our centres deal with a lot of companies that are prone to techno-lust. They may go to a trade show over in Europe and see this incredible piece of equipment and think, "Wow, we need that," and they spend \$600,000 or \$700,000 on a robot welder. Then it arrives on a pallet and they have no idea what to do with it. They come to us and we explain, "Okay, you probably didn't need to get that one. You would have been fine with this much more scaled-down version, but now we can help you take this off-the-shelf, bleeding-edge equipment and integrate it into your workflow." Effectively, they don't know what they don't know.

It'd be interesting to have a layer on there so companies could come to a technology access centre to get an objective assessment of what technologies they could adopt. They'd be spending their money wisely on the right equipment for the right situation for their needs, and then being able to write off that capex would be fantastic because those resources could potentially be devoted to other research and development or commercialization activities.

• (1155)

Kelly DeRidder: Wouldn't it make more sense, then, to help fund more applied research rather than to just create another write-off?

Ken Doyle: It's facilitating access to objective innovation intermediaries who will tell them, "This is the right use case for you. It'll be different from your neighbour down the street." Other countries that have lightly borrowed the technology access centre model are using that as a way to put those centres as a stage gate in between companies and government supports funded by taxpayers to make sure they get objective advice on the right solution for their unique challenge. Maybe that's something we might want to look into.

Kelly DeRidder: Thank you very much.

I'm going to ask the professor here a question as well.

We've heard from multiple witnesses—

The Chair: The time is up.

Kelly DeRidder: Is it?

The Chair: I'm sorry, but yes.

Kelly DeRidder: Thank you.

The Chair: We will end this panel with MP Noormohamed for two and a half minutes.

Please go ahead.

Taleeb Noormohamed (Vancouver Granville, Lib.): Thank you, Madam Chair.

Thank you to our guests.

I want to begin by taking a brief moment to clarify some things that have been said throughout this conversation by my friends across. It's nice to see them embracing the need for more funding for science and research. I think their base may have some challenges with that given the narrative about defunding universities, but here we are.

There are a few things I think are important in this budget that I'd love your opinion on, Professor Hannigan.

One is \$1.7 billion for new researchers. There is \$1 billion on a cash-on-cash basis for venture, and there is \$750 million for early-stage companies. As a former entrepreneur, these were things I really wanted to see in this country, like access to early-stage capital. I had to raise my money outside the country, so it's nice that it's happening here or will hopefully happen here.

We've also heard this narrative about the tax rate in this country, but at 13% now, Canada will have the lowest effective corporate tax rate in the G7, much to, I hope, the delight of members opposite.

If we take initiatives like the streamlining of the SR and ED process, the productivity superdeduction and accelerated pathing for H-1B visas and the types of workers we actually need in tech and innovation here and bundle all that together, does that not now give Canada something it hasn't had in the past, which is the capacity to really build an ecosystem for many of the folks who are coming out of institutions like yours and are looking for early-stage capital and access to the vehicles and the means by which to grow, innovate and build here in this country?

Timothy Hannigan: Those are all positives, but my core message here is that companies need functioning ecosystems that make R and D investments strategically sensible and not just tax advantages.

Taleb Noormohamed: Let's talk about that for a brief moment.

One of the big priorities in this budget is buying Canadian—incentivizing government and incentivizing Canadian corporations to buy Canadian. If that budget doesn't pass and that provision isn't there, surely that will be a gap. However, if that provision passes as part of this budget, would that not then address precisely what you're talking about—incentivizing Canada to buy Canadian, incentivizing Canadian governments to buy Canadian and incentivizing Canadian businesses to buy Canadian?

Timothy Hannigan: The spirit of it does. Do the specifics? Maybe.

I think this is where we need to collectively appreciate that the history of Silicon Valley is in part because of DARPA, which was the Department of Defense.

Is Canada going to link its investments in our military with building an ecosystem? I don't know.

Taleb Noormohamed: I think that's where you've seen Polaris and you've seen a lot of what's coming out now in terms of dual use and the ability to fund that to the tune of over \$3 billion. Let's hope that this government is going to try to do what you're talking about and align in a way we all hope.

The Chair: With that, this panel comes to an end. I really want to thank, on behalf of all the members, all three witnesses for their testimony today.

We will suspend the meeting for a few minutes, so that we can get the witnesses for the second panel on board.

The meeting is suspended.

• (1155)

(Pause)

• (1205)

The Chair: I call the meeting to order.

I would like to make a few comments for the benefit of the new witnesses.

Please wait until I recognize you by name before speaking. For those participating by video conference, click on the microphone icon to activate your mic, and please mute yourself when you're not speaking. For those on Zoom, at the bottom of your screen, you can make a selection for the appropriate channel for interpretation of floor, English or French. This is a reminder that all comments should be addressed through the chair.

For this panel, I would like to welcome our two witnesses, who are both joining us by video conference.

We are joined by Cam Linke, chief executive officer of Alberta Machine Intelligence Institute. We are also joined by Professor Kevin Outterson, founding executive director for CARB-X.

Both witnesses will have five minutes for their opening remarks. Then we will proceed to the rounds of questioning.

Mr. Linke, we will start with you. You have the floor, and you will have five minutes.

• (1210)

Cam Linke (Chief Executive Officer, Alberta Machine Intelligence Institute): Thank you, Chair and honourable members of the committee. I appreciate the opportunity to speak to you all today.

My name is Cam Linke. I'm the CEO of AMII, the Alberta Machine Intelligence Institute, one of Canada's three national centres of excellence in artificial intelligence.

Our mission encompasses fundamental research, applied innovation and the diffusion of technology, specifically artificial intelligence, across Canada, which I believe provides us with a unique vantage point on the committee's study.

To start, Canada should take a lot of pride in its scientific leadership in artificial intelligence. Researchers such as Richard Sutton, Geoffrey Hinton and Yoshua Bengio, our three Turing award laureates—one of whom did win a Nobel Prize—laid the foundations of modern artificial intelligence and positioned Canada as a global leader in AI research excellence. In fact, if you look, you'll see that nearly all of the core AI advances that are powering the global AI revolution today can be traced back to researchers at Canada's three AI institutes.

That said, investment in AI research and development by Canadian industry has been relatively weak. Today I'm going to focus on three challenges that we see in the Canadian economy and three things that we found helpful in overcoming them.

At AMII, we've now worked with hundreds of companies, from small start-ups and SMEs to large firms, and we consistently see three structural barriers across Canada that limit private sector engagement.

The first, just to be clear, is the structure of Canada's economy, and I think we need to be realistic about this.

In Canada, we have a small number of large firms, which often operate in protected markets, and a very large number of SMEs. These large, structurally protected firms often lack the competitive pressure to pursue ambitious R and D. Further, SMEs, which make up the vast majority of Canadian businesses, frequently want to innovate but lack the capital or expertise to do so, and since a relatively low number of graduate student researchers are working within Canadian companies, many of those companies lack the internal capacity to identify and execute meaningful projects.

The second barrier is around our funding architecture. Canada tends to be a funding ecosystem that is heavy on grants but light on risk capital. We offer a number of programs, but they're often dominated by small, fragmented grants that require significant administrative overhead to achieve impact. Grant funding in and of itself isn't a bad thing; it's great to be able to make targeted investments. That said, compared to risk capital, often in the form of venture capital, grant funding leads to smaller and less impactful applied research being done in Canadian companies.

A third barrier is the absence of foundational research infrastructure. Companies can't invest in R and D if the necessary infrastructure isn't in place. Access to compute, specialized facilities, secure environments and data pipelines that connect universities to industry are essential. Without these, firms face an impossible choice—build the infrastructure themselves, which is often cost-prohibitive, or take the research elsewhere. As an example, many AI advances that began here in Canada found their commercial impact outside of Canada, where the necessary computing resources were available.

At AMII, we've seen these three challenges first-hand and worked with our partners to tackle them. I'd like to highlight three ways that we've seen success.

The first is in early-stage support. At AMII, our advanced technology program collaborates with companies to identify research opportunities that drive business value. Then we work with them very closely to make sure that the research project succeeds. For SMEs in Canada, this early expertise helps de-risk the project without requiring significant upfront investment and enables them to source the talent necessary to progress in their projects. It should be noted that typically this company engagement is made without grant support, which I'm saying as a positive thing. This is where companies have seen the value in these engagements and have seen the groundwork to be able to invest.

Next, let's consider the availability of computing infrastructure.

A great deal has been said about the computing requirements needed for success in AI. Programs like the pan-Canadian AI compute environment, recent announcements of compute in the federal budget and partnerships with Canadian companies such as Denver Dataworks have provided capacity for research industry collaborations to take place. These have led to larger collaborations that drive impact in domains such as health care and energy, where the scale of these projects wouldn't have been possible without the available infrastructure.

- (1215)

It should be noted also that outside the area of AI, we've seen investments like these drive clusters of impact. For example, many quantum and chip start-ups collaborate with researchers at the University of Alberta due to the government's investment in the university's nanotechnology fabrication facilities.

Finally, we have found that breaking down the so-called language barriers has been vital in creating opportunities for industry to invest in research. At AMII, we talk a lot about “bilingual researchers”, researchers who speak both the languages of a specific domain like energy, biology or health care, as well as artificial intelligence. As part of our recent hiring of new principal investiga-

tors to our group, we targeted researchers who would provide this dual expertise. Bringing in researchers who deeply understand the domains of application have broken down the barriers that at times can exist between academia and industry. We expect this to continue to drive increasing competitive advantage for Canadian companies in the coming years.

To summarize, targeted research investments, cross-domain researchers and providing early project hand-holding and talent can lower the barrier to entry for research investment by Canadian industry and increase research and development overall.

In order for Canada to lead both in AI and other fields in the coming years, we need Canadian industry as well as governments to invest—

The Chair: Can you quickly wind up, please?

Cam Linke: We look forward to working with everyone on growing that leadership.

The Chair: Thank you.

We will now proceed to Professor Outterson.

Please go ahead. You will have five five minutes for your opening remarks.

Kevin Outterson (Founding Executive Director, CARB-X): Good morning, Madam Chair and honourable members of the committee. Thank you for having me.

I'm Kevin Outterson, a professor at Boston University and the founding executive director of CARB-X. We're the largest non-profit initiative in the world that supports and translates early-stage development of innovative products to treat, prevent and diagnose bacterial infections. We have been a recipient of funding from the Canadian government since 2023, and we are very grateful for this support.

Today, I am going to focus on Canada's role in financing a complementary mix of push and pull incentives for new antibiotics that will help drive and grow private sector investment in research and development in Canada, in addition to addressing the public health need both in Canada and around the world for new antibiotics now.

As you may well be aware, given the concern about antimicrobial resistance, or AMR, the market for antibiotics is broken. This is a product that comes to the market, and we want to use it as little as possible in the first several years. That's great for public health, but it's a disaster for small companies. We need both push and pull incentives, grant-based things that happen before approval and also something that happens after approval and it reaches the market, to make these products available to everyone, especially to Canadians who, in my prior academic work, came in dead last amongst the G7 in terms of access to new antibiotics.

We want to also encourage more private sector activity in this area. We're non-profit, but we work with all of the private sector companies that do this research.

Two years ago, I served as an international member of the expert panel for the Council of Canadian Academies project that led to the report called "Overcoming Resistance", building on prior work by CCA and the pan-Canadian action plan. This is a great report. The consensus is clear. It says that, without new incentives, the antibiotic pipeline is going to be perilously thin and that Canadians are going to lack access, worse than any other G7 country.

Second, the report said that, if you do both push and pull incentives, you are going to restore health to the pipeline. Canada can be a leader within the G7 on this issue, and you can protect the foundation of modern medicine. You wouldn't have a knee replacement or many cancer treatments; they would be less safe and more dangerous if you didn't have the safety net of antibiotics.

These incentives work in different ways against the same problem. They work together and are both essential. Canada has already been acting on this. The Public Health Agency of Canada invested in CARB-X two years ago. We're grateful for that.

CARB-X is currently supported by six G7 governments, including Canada, and three private foundations: Wellcome, Gates and Novo, as well as the European Commission, who will be announcing their support for us later in the year.

This important role was mentioned four times in the last G7 health ministers' communiqué and also in the G20. It was also mentioned at the UN General Assembly's high-level meeting on antimicrobial resistance last year. We've had 22 products make it to human clinical trials. Three have reached the market, which is remarkable, given how thin the pipeline is.

We're really grateful for the partnership with the Canadian government, which was historically represented by PHAC, the Public Health Agency of Canada, but is now transitioning to health emergency readiness Canada, HERC, which will continue at a level that is commensurate, we hope, with other G7 governments. Considering what other governments are giving us, the Canadian amount would be something like \$6 million per year. The U.S. government is contributing \$55 million, for example. Germany gives \$15 million, and Italy contributes \$12 million.

The push incentives, like what you did with CARB-X, lower the cost of R and D. Obviously we think they're useful, but we also need pull incentives. The "Overcoming Resistance" report has a very important pilot program on pull incentives, a revenue guarantee across Canada. This is very valuable, and it is important that we

get that right, when the pilot comes out, for it to be effective in working with the market so that Canadians have access and research development is supported.

Canada's science community is world class. A colleague of mine, Professor Gerry Wright from McMaster, is also testifying at this hearing at some point in the future. He is one of the leading researchers of the world. A recent important paper in Nature came out of a discovery in his lab. He told me—and said I could share with you—that out of the 87 trainees, post-docs, Ph.D. students and techs who have worked in his lab in the decades that he has been working at McMaster, today, only seven of them are still working in antimicrobial resistance.

There's a human capital problem, and there's a pipeline problem. They need to be solved by a combination of push and pull. I'm grateful for what Canada is doing to make that happen.

● (1220)

Thank you.

The Chair: Thank you.

We will start our round of questioning. The first round will be for six minutes each.

We will start with MP Ho for six minutes.

Please go ahead.

Vincent Ho (Richmond Hill South, CPC): Thank you, Madam Chair.

My first questions are for Mr. Linke.

You mentioned in your opening statement that private investment in Canada in research and artificial intelligence has been relatively weak. Do you think this is the result of a failure in government policy that's causing our companies to fall behind our peers?

The Chair: Is he frozen? Can you stop the clock? We will check.

MP Ho, can you pass it on to Mr. Outterson, or would you like to ask...?

Vincent Ho: I'd rather just wait.

The Chair: Okay. We will suspend the meeting, and we'll have a look at his connection.

The meeting is suspended. Thank you.

• (1220) _____ (Pause) _____

• (1225)

The Chair: The floor is with MP Ho. We'll start the clock from the beginning.

MP Ho, you have six minutes for your round of questioning.

Vincent Ho: Thank you, Madam Chair.

My first questions are for Mr. Linke.

You mentioned in your your opening statement that private investment in Canada in artificial intelligence research has been relatively weak. Do you think this is the result of a failure in government policy that's causing our companies to fall behind relative to our peers?

Cam Linke: I think there are a couple of structural things, as I mentioned. One is that, realistically, we have a lot of SMEs, and cash is king in SMEs, so it's tougher for them to make investments. The second one is that we have a lot of protected industries, and the incentive for protected industries to invest in R and D is a lot lower.

Risk capital matters a lot, and I was heartened in the last budget that there was funding specific for risk capital. I believe this is something that we need to do a lot more of in Canada. There are some structural things that we can maybe improve on the policy side, but to be honest, to me, it's a lot more about the amount of available capital that's causing a big part of the challenge.

Vincent Ho: You mentioned the structural piece. There are a lot of protected industries in Canada with a relatively small number of firms.

Do you think the cause of that market structure is a result of too much regulation, too much red tape? That tends to favour the large companies that are able to comply with that red tape and protect their market share from new entrants who will need to be burdened with extra regulatory costs in order to compete with the bigger firms.

Cam Linke: There are things we can do to bring competition into the country. I think competition drives investment in research and development. If we're going to protect industries, there should be an encouragement or an expectation that those companies are investing in R and D to drive forward Canadian competitiveness.

Vincent Ho: You mentioned government funding and supports for research, development and commercialization. Depending on which study you look at, there are upwards of 100—close to 200—federal funding programs out there. That's a lot of programs. It's a lot of bureaucracy.

Do you think the sheer amount of bureaucracy and paperwork involved is part of the reason we're lagging behind our peers?

Cam Linke: I think it contributes to it. I mentioned that we tend to be grant heavy and capital light. Personally, I'm a simple person. I'd like to see a lower number of programs that are targeted and that have low administrative expectations. To me, that capital should be focused on risk capital with people who know how to make these investments.

Again, an example of that is the fund of funds investment in the last budget. These types of investments are ways of growing the capital in the Canadian ecosystem in order to capitalize private Canadian companies to be able to grow and have the resources to make investments in R and D.

Vincent Ho: Why do you think we have a lack of private investment in Canada? Is it too much red tape, or is it too hard to get approvals to get things done? Is it taxes being too high or just an overall uncertain environment, with the government getting in the way of projects that are trying to get off the ground?

Cam Linke: What we're seeing is a little bit of momentum. You're seeing a bit of an increase recently in venture momentum. That needs to increase, and we should be looking at capitalizing the Canadian ecosystem better. Things like expectations around the large Canadian pension funds investing in venture in Canada would help grow the amount of capital in that ecosystem.

Some of the structural barriers for venture investment in Canada have gone down, and we've seen increases in Canadian venture because of it. To me, it's about getting more capital into that ecosystem overall.

• (1230)

Vincent Ho: My next set of questions is for Mr. Outterson.

Do you think there's a mismatch in incentives in terms of supports for research and development and the commercialization of new ideas in Canada?

Kevin Outterson: There certainly is globally. Canada follows a similar pattern. We have pretty good funding for basic research. I'm sure researchers in the U.S., Europe and Canada would all say we need more, but at least there's a stable base there. What's lacking is the ability to translate that into a product that survives market entry.

Vincent Ho: What are some of the ways you think we can support that ecosystem?

Kevin Outterson: The “Overcoming Resistance” report from the Council of Canadian Academies from two years ago has a comprehensive list. I was one of 11 co-authors of that report. The majority of the authors are Canadian. I fully support those recommendations, which are basically that we need to find ways for these drugs to be launched on the Canadian market and for there to be some way to recover the sunk cost investment in research development.

The prices are relatively low in Canada for antibiotics. As a result, the smallest number of new antibiotics have been launched in Canada compared to all of the G7 members plus seven other high-income countries in Europe that are not members of the G7. That has everything to do with the company's commercial decision that we're not going to make enough money for launching.

Then Canadian doctors are put into the position where, if their patient needs an antibiotic that is not yet approved in Canada but has been approved in Europe and the United States for five years or longer, they have to go through an—

The Chair: I'm sorry for interrupting. Your time is up.

Kevin Outterson: They have to go through an emergency process to get that drug. The patient needs it now, not three days from now.

The Chair: Thank you.

We will now proceed to MP Noormohamed for six minutes.

Please go ahead.

Taleeb Noormohamed: Thank you, Madam Chair.

Thank you to our witnesses for being here. I'm going to start with Mr. Linke.

Cam, it's always great to see you. Thank you for the work you and AMII do.

I want to pick up a little bit on what you talked about in your opening comments and in your response to Mr. Ho's question. There are folks who are desperate to try to figure out how to blame government for the fact that there isn't as much early-stage start-up capital in this country. As you rightly pointed out, it's less about government and more about the risk appetite of pension funds and others in this country. We've spent a lot of time talking about the need for the venture community in this country and for investors in this country to take the same types of risks on Canadian businesses they're willing to take outside of Canada.

In this budget, there's \$1 billion, as you pointed out, for venture and another \$750 million for early stage. This is to incentivize the private sector. What do you think it is that the private sector investment community in this country actually needs, psychologically, in order to be able to value Canadian early-stage companies in the same way they value other early-stage companies from outside this country?

How do we incentivize—not just with money—or open the eyes and minds of investors in this country to look beyond the first round? How do we make sure they are the first money rather than waiting for others to take the risk?

Cam Linke: That's a great question. I always appreciate this discussion overall.

There are two challenges that I've talked about in the past. One is capital, and the other is customers. Both of those, I think, are really vital. There's a bit of a structural challenge in Canada of where dollars are going. There are more in venture, but this typically is later in the process versus in that first cheque. There's an opportunity to be able to fill the gap on that first-cheque investment that needs to happen. If not, what we see over and over is that those companies

will go south of the border for that first cheque, and the odds are that they're going to move south of the border in that process.

The second part is that we have a low velocity when it comes to customer interaction with our start-ups here in Canada. The amount that our Canadian companies.... Because our adoption of our technology is low, that leads to a lower customer base for Canadian start-ups. This means that if the government is not a customer of companies and if Canadian businesses aren't customers of companies, then you're, again, selling outside of your jurisdiction, which is typically south of the border. Now your capital is south of the border and your customers are south of the border, so the odds of you staying north of the border are not really high.

I think those are two really big things. Capital I've talked about quite extensively. I think the other one is customers. If we can do a lot to encourage Canadian companies and Canadian governments to buy from Canadians, we can help head that off.

• (1235)

Taleeb Noormohamed: As you know, a big part of this budget is making sure that there is incentive for Canadians to buy Canadian and for the Canadian government to procure Canadian. One of the challenges, of course, that I think a lot of early-stage companies in this country face is how to get their fellow Canadian companies to see Canadian innovation as “as good as”. I think this is something that you and others in this space are working towards.

I mean, I'm heartened by, unfortunately, the instability of the United States that has actually forced Canada to look inward in terms of those opportunities. However, you know, digging a little bit deeper into this question about customers.... Obviously, government can procure and is now mandated to procure Canadian at the federal level, and at the provincial level there is a lot more of that happening. For Canadian companies, that risk, the perceived risk that they have to take to buy Canadian or to buy from a Canadian company that they may not know as well as a big name from another country.... How do we get over that? How do we get around that hump in the first instance?

The second piece, really, is this: If we need to, how do we back-stop that so that we see that growth happening in terms of the customer set for Canadians? I'm not talking about government intervention here because I think that maybe people will then rail against them and say that they're not really viable and this, that and the other. However, how do we make sure that the commercially viable businesses that are being built in this country are able to sell to Canadian government, and not just to government but also to the private sector in this country?

Cam Linke: On the government side, every start-up I've talked to has not asked for priority treatment—like, “Hey, we're the worst product, but buy us anyway.” They want to be able to compete on a level basis. There are a number of structural pieces in there.

I'll give you an example of a company I know. It can't sell to the Canadian government because it hasn't sold to the Canadian government, which seems like a funny cycle that it'll probably never get around.

I think there are some structural pieces from the government that just level the playing field to buy from Canadian companies. We've seen some pieces there where that reference customer makes a big difference, and then Canadian companies will adopt after.

On our side, the other piece we do is help on the hand-holding side of working with companies directly—but on Canadian platforms. The ability for us to be a bit of that bridge between the two.... We've seen that help make sure that companies we work with end up on Canadian start-ups as a platform, and we always seek to do that in our work.

Taleeb Noormohamed: With the remaining time I have left, which I think is—

The Chair: It's 15 seconds.

Taleeb Noormohamed: Then I will not ask another question. I will just thank you both for your time.

The Chair: Thank you.

We will now proceed to MP Blanchette-Joncas for six minutes.

Please go ahead.

[*Translation*]

Maxime Blanchette-Joncas: Thank you, Madam Chair.

Hello to the witnesses who are joining us for the second hour of the meeting.

Mr. Linke, budget 2025 announces tax incentives to encourage private companies to do more research and development. As you pointed out, a number of them are already grappling with the complexity of federal programs.

Furthermore, although Canada has research infrastructures such as universities, colleges and research centres, Ottawa has decided to increase new incentives rather than support existing public facilities.

You work with small and medium-sized companies and technology companies every day. Do you think that approach makes sense? Would it not add a layer of complexity to a system that is already hard to understand and above all to use?

[*English*]

The Chair: Who is the question for?

[*Translation*]

Maxime Blanchette-Joncas: My question is for Mr. Linke, as I said at the outset.

[*English*]

Cam Linke: I don't have details of the specific implementation to be able to say whether this is a complex layer or not.

At least from what I've seen in the budget, things are clear around depreciation, around tax depreciation there tends to be fairly clear things about what happens. There's the streamlining of SR and

ED. Some of these things, at least without seeing the entire implementation plan, are bringing down the structural challenges or increased admin burden of some of these programs. I would always love to see more of that, but at least as a start I've seen that in the budget here.

• (1240)

[*Translation*]

Maxime Blanchette-Joncas: Mr. Linke, in the budget tabled on November 4, the government stresses once again that it wants to support buying Canadian. To do that, it needs to encourage Canadians and strengthen the local infrastructures that contribute to the development of our own champions, whether in artificial intelligence or in other fields.

The budget includes investments of more than \$1 billion in measures to attract foreign researchers even though our companies are already unable to hold on to our own researchers, or even, as you pointed out, navigate the existing federal programs.

Don't you see a contradiction in that our ecosystem could be weakened by focusing on outside talent rather than truly consolidating the research and innovation capacity that already exists at our universities, colleges and innovation centres?

[*English*]

Cam Linke: I'll say that's not how I read it. To me, we need to have growing research capacity in Canada. The billion dollars to attract outside researchers to come to Canada grows Canadian research capacity overall. To me, that's further knowledge coming in to the ecosystem, further investment in the ecosystem and further opportunity for those research collaborations to happen.

That said, we need to make sure, for things around buy Canadian, that there's clear support for that research to be commercialized into a form that can be bought. These are all important pieces, but without continuing to grow that core research base, we may run out of expertise to be able to continue to create the ideas that get bought by the Canadian government.

[*Translation*]

Maxime Blanchette-Joncas: In your opinion, are local university researchers already facing challenges? Are public laboratories in good shape?

You say attracting people from abroad is something positive. I am trying to understand if that is really the case. In what way are research and innovation being strengthened when there are budget cuts to research?

[English]

Cam Linke: You'll always find an advocate in me for further investment in research and further investment in the things that we are doing here in Canada. We have great universities, we have great polytechnics and we have great institutes that are doing very strong work. To me, I would always love to see further investment in them—especially targeted investment in specific areas that we can be champions of here in Canada. I don't see them as exclusive.

All of those universities need new professors, new students and new researchers to be able to grow their overall capacity. I don't see the two in conflict.

I think that certainly if we're bringing new researchers here or growing our overall research base, we also need to make sure that we're continuing to invest in the existing research excellence that we have.

[Translation]

Maxime Blanchette-Joncas: This evening, we will be voting on the budget tabled on November 4.

In that regard, I have sent a number of messages to the minister responsible, the Minister of Industry. By the way, you may have noticed that the word “science” has been dropped from the title. It was probably too long to say, or maybe that word wasn't important enough. In any case, I asked the minister to explain the support measures for innovation and research, but did not get any reply. I did not even get confirmation that she had read my email.

Clarity and stability are essential for the research sector. Do you really think we can modernize Canada's innovation ecosystem when parliamentarians cannot even get clear answers from the minister before voting on the budget?

[English]

Cam Linke: It sounds like a great opportunity to adopt some great Canadian technologies that work in this space. I'd love to see more of that. That's probably all I can comment on the area.

[Translation]

Maxime Blanchette-Joncas: Mr. Linke, what do you think about the fact that a parliamentarian cannot even discuss it with another parliamentarian? As part of the science ecosystem, what do you think about the fact that even those people who vote on and build public budget policies do not have the necessary information?

[English]

Cam Linke: It's tough for me to comment on an interaction from the outside. I'm not trying to bow out of the conversation. I just don't really have any details.

[Translation]

Maxime Blanchette-Joncas: For my part, I can tell you that I find it embarrassing and irresponsible. It is a lack of accountability. This government is not transparent or willing to work with opposition parties, among others, to strengthen science, research and innovation, in particular.

[English]

The Chair: Thank you. Time is up.

This is the start of our second round.

We will now proceed to MP DeRidder for five minutes.

Please go ahead.

• (1245)

Kelly DeRidder: Thank you, Madam Chair.

Mr. Linke, this question is for you.

You are infiltrated in the start-up community so you know that especially with technology, AI and innovation, the retention of our intellectual property, our data and the patents on our technology is important to have in this country, because that's the economic growth out of all of our start-ups.

What is this current government doing to ensure that we are retaining our intellectual property and data within our start-up ecosystem?

Cam Linke: To me, the IP question is a big question.

When you look at where IP is created, it's very often created, as it should be, in a business context, where it's going to drive business value for that company. When we have a lack of research and investment adoption made by Canadian industry, we're going to ultimately see less IP in that industry. To me, the pieces around buy Canadian are big, because that provides more revenue capital and more customers who are very clear and aligned to what the value of that business is, and this gives them the ability to create more IP on top of that. Things like the ability to use tax incentives to grow and invest in R and D are important. Even though it's a second-order effect, these are the things that can ultimately drive IP investment in Canada.

Kelly DeRidder: As the member of Parliament for Kitchener Centre, Canada's innovation capital, I see a ton of technology coming out of our riding, a lot of IP and a lot of data.

I'm going to ask you about what I'm also seeing. Do you think we're paying other countries right now to own our IP and data through our research funding and tax credits in Canada?

Cam Linke: I can't speak to every university and program and region, but I can speak to ours. The times that we're seeing Canadian researchers whose IP ends up, at times, in a foreign company, that company is paying for it. It isn't an investment by Canadian taxpayers or provincial taxpayers. It's an investment by that company.

The opportunity is for Canadian companies to make that investment. The more we see of that, the more we're going to see that IP north of the border. To me, that's the bigger gap more than it's the taxpayer paying for these things.

Kelly DeRidder: In lots of these cases, are we not paying for the funding that's going into the research behind these start-ups and these companies? Are we not funding that through our research initiatives?

Cam Linke: Everything's going to be case by case. I think we've created lots of base technologies here. Which ones and how they can be specifically protected, I think, is an ongoing discussion. We're obviously looking at more ways of seeing that realized here in Canada.

What we are seeing typically is that when there's IP that ends up outside the country, it is more about that company paying for that research in their business context, and they've often hired somebody to be able to do that. It isn't a piece of co-research that ends up south of the border. I'm not saying that doesn't happen, but we're seeing more where the investments are made outside by an international company, and that investment isn't made by a Canadian company.

Kelly DeRidder: Would that company, though, have gone through an incubator program that's publicly funded before that investor comes along, typically?

Cam Linke: We haven't seen that. There are certainly Canadian companies that get bought by U.S. companies, and I think being protectionist about that might present a challenge on the investability of those companies.

Certainly, as you see start-ups come through incubators and then create a company, they're going to get investment, and as there are multiple paths to exit, one of those is to be purchased. There's a potential path for companies to be bought there, but that's the natural life cycle of start-ups. It does recycle more capital into the ecosystem for new things to be able to grow.

Kelly DeRidder: Do you think it's important for these companies to have some sort of retention of their IP and data in Canada?

• (1250)

Cam Linke: Yes. I would like to see more IP and data retained in Canada by Canadian companies. I think the best way to do that would be to have more Canadian companies investing in research and development and creating more scalable companies, where their path is more often to an IPO or becoming a large, sustainable company. The goal would be to see that happen a lot more often.

Kelly DeRidder: Do you think less red tape and lower taxes would help drive that?

The Chair: I'm sorry for interrupting, but the time is up.

Kelly DeRidder: Thank you.

The Chair: We will now proceed to MP McKelvie for five minutes.

Please go ahead.

Jennifer McKelvie (Ajax, Lib.): Thank you, Madam Chair.

My first question is for Mr. Linke.

The pan-Canadian AI strategy, I think you would argue, has been very successful. I'm wondering if you could outline what that recipe for success was.

Cam Linke: The core is that great ecosystems are built on top of talent. What we've done extremely well here is to continue investing in the talent we have to attract incredible outside people to set up here and make Canada their home, and to attract talented young researchers in the form of grad students who come to make Canada their home and build their companies and their lives here. That is the basis or the core of every incredible ecosystem. It's what every country and every region around the world is trying to do: to grow and attract the best and the brightest in the world. That's what creates new start-ups and new R and D in companies. You have to have that base or you can't have further success on top of it.

To me, that has been the most successful thing.

Jennifer McKelvie: We had the talent, we had the ideas and we had the people. We know we're trying to do more of that through this budget with the piece that's in there to attract and retain researchers here in Canada. We were intentional in setting up a strategy that played to the strengths across the country and really enabled them.

Do we need to do more of that as a country and be deliberate in our research investments and try to be strategic? Are there fields, like quantum computing, for example, or things in the defence sector? What should be our next pan-Canadian strategy from your point of view?

Cam Linke: There are two pieces to that.

We very intentionally invested in centres where there was a centre of gravity and a critical mass of expertise like, specifically, Toronto, Montreal and Edmonton. Continuing that makes a lot of sense. The field of AI is growing like crazy. Continued investment is going to see enormous returns, so seeing that is really important.

The other thing we did in the recent round of researchers we brought into the group is what I refer to as bilingualism, so that's AI plus X. There are researchers who typically would be in computing science and instead are in biology, medicine, linguistics, physics, space and other areas like those. There's a big opportunity for Canada to double down on dual expertise. If we say that we're really incredible in the area of virology or we're really incredible in the area of quantum, or specific areas of quantum, are there ways we could double down by saying we're great in quantum or we're great in genomics and we're great in AI, so let's pair the two together to really do something special, where we're really great in each but together the combination of the two is something that couldn't be found anywhere else in the world?

That's a very big opportunity for the entire country.

Jennifer McKelvie: Thank you.

I agree that interdisciplinarity is definitely a strength of Canadians.

My next question is for Dr. Outterson.

Your work has been in partnerships with the U.S., the U.K., Germany and international foundations. When you look internationally to some of your partners, are there examples we should be learning from about IP retention and commercialization? Who is doing it well? If we want to look for models elsewhere, who should we be looking to?

Kevin Outterson: One of the advantages of CARB-X is that instead of the small companies having to apply to 10 different governments and foundations, we collect it and they all apply through a single portal. That helps them to not waste money. We're non-dilutive. We don't take their IP in any form. We actually put them through a process in which we help them to improve their IP estate. We look back at the original licence, typically from a university, and try to clean up any mistakes that were made in that regard.

More broadly, something that other governments do well that Canada might think about is the SBIR grant, which helps ideas translate from university into a small start-up. There's a form of that in the U.S.. There are forms of that in Europe. To my knowledge, there's not one in Canada. It's been very valuable in those other settings.

• (1255)

The Chair: Time is up.

Kevin Outterson: Making sure the IP—

Jennifer McKelvie: Thank you.

The Chair: Thank you.

We will now proceed to MP Blanchette-Joncas for two and a half minutes.

Please go ahead.

[*Translation*]

Maxime Blanchette-Joncas: Thank you, Madam Chair.

I have some more questions for Mr. Linke.

Canada already has some of the best artificial intelligence centres, including Mila, located in Montreal, which you also mentioned. That centre was founded by the Quebecer Yoshua Bengio, who is now the most frequently cited living researcher in the world. We have talented people in Quebec and we are proud to say so.

Despite this exceptional strength in artificial intelligence, we have still not been able to build an industrial ecosystem that can compete with the big American or Asian companies. In the last budget, Ottawa focuses primarily on attracting foreign talent, allocating more than \$1 billion to that, and on tax incentives for big companies. So there is no clear strategy for keeping the intellectual property, data and economic benefits in Canada, even when they are generated by centres of excellence such as Mila in Montreal.

Would you not say that the problem is that Canada excels in research, but systematically allows its economic value, patents, data and companies to be picked up elsewhere? In other words, are we not becoming a country that trains researchers for other countries rather than a country that transforms its science into economic strength?

[*English*]

Cam Linke: This is an area of particular interest for me. My background is on the start-up investment side of the world so realizing this in Canada matters a lot to me.

There are a couple of pieces to it. One is that the provinces also invest in the area. We see provincial investment in commercialization activities. That is one way of the government investing in the area and of the federal government and the provinces working together on this. The second part to it is that while I do think grants and programs can be targeted and very helpful, the biggest challenge is still in capital.

When I look at our grads, for instance, who've ended up leaving, it's not because they wanted to leave Canada. It's not because they didn't have an incredible life here. It's for opportunity. We see more of, "I needed to move because my first cheque was elsewhere," or "My first cheque and my first customer were elsewhere." Now the commercialization activity of that graduate ends up being elsewhere as well. It's very important to have a well-capitalized system, especially [*Technical difficulty—Editor*]

The Chair: I'm sorry. I'll stop the clock. I think there are some problems. Mr. Linke's Internet is not very stable. I'll give him a second.

Mr. Linke, are you good? Can you say a few sentences?

He's frozen.

[*Translation*]

Maxime Blanchette-Joncas: Madam Chair, Mr. Linke's connection is just like the federal budget: disconnected from the public.

Some hon. members: Oh, oh!

[*English*]

Cam Linke: It's always embarrassing as a technology organization to have bad Internet or for the Internet to go down in a situation like this. I apologize.

The Chair: He's back.

Mr. Linke, you can please respond to Monsieur Blanchette-Joncas' question. You have 20 seconds.

Cam Linke: I'm sorry. I didn't catch the question. I just caught the comment about my Internet.

The Chair: Monsieur Blanchette-Joncas, can you please repeat the question? We'll give you—

[*Translation*]

Maxime Blanchette-Joncas: Yes, Madam Chair.

Mr. Linke, I was simply saying that your connection is just like the budget: disconnected from the public and the real needs.

[*English*]

Cam Linke: As I mentioned, investment in capital and investment in researchers coming to Canada, these were important investments in seeing commercialization. Hopefully, it's better connected than, unfortunately, my Internet here.

[*Translation*]

Maxime Blanchette-Joncas: Thank you. Don't give up.

[*English*]

The Chair: Thank you.

We will end this panel with two minutes for Mr. Holman and then two minutes for MP McKelvie.

MP Holman, please go ahead. You will have two minutes.

• (1300)

Kurt Holman (London—Fanshawe, CPC): Thank you to the witnesses who are here today in front of the science and research committee.

Mr. Linke, Canada positions itself as a leader in AI, yet we remain behind our peers in launching new antibiotics.

From your vantage point, what are specific AI-enabled opportunities that Canada is failing to capitalize on right now with respect to antibiotics?

Cam Linke: On the AI front, I can tell you that, while it's not specific to antibiotics, we're part of a national consortium around pandemic preparedness and working on leveraging AI to be able to design vaccines that can be rapidly deployed in the case of a new pandemic. There is a very big opportunity for Canada to be able to use similar things for antibiotics.

We've seen that AI as a technology is able to be a great lever in the acceleration of new antibiotics being created. Certainly that's an incredible opportunity here in Canada.

Again, this is part of this pairing of the two. We're fortunate here to have Nobel laureate Dr. Michael Houghton. Being able to pair somebody like Mike Houghton and the expertise of the research institute that we have is going to bear really fruitful results.

Kurt Holman: I have a follow-up question for you, Mr. Linke.

What prevents AI talent from moving into research and development? Is it funding models, regulatory barriers or a lack of industry partners? Are there any specific recommendations you can make to address these barriers?

Cam Linke: Often we talk about internships and things during study. There is what we call a leaky pipeline right after graduation, where the opportunity right away is in a large U.S. company that does a large amount of hiring and onboarding, or is supporting them as they are a very risky early entrepreneur and are off to create their new business.

There's a big opportunity to make sure those research opportunities for postgraduates are in Canada. Allow them to further create their homes here and create IP for Canada and Canadians. Make sure of that first cheque in, so we're investing in the start-ups and the people that we're creating in the institutes.

The Chair: Thank you. The time is up.

We will end this panel with MP McKelvie for two minutes.

Will MP Noormohamed take it?

Jennifer McKelvie: Yes, I'll pass my time.

Taleeb Noormohamed: I want to put a wrap on the conversation we were having earlier, Mr. Linke.

One thing I would observe—and you might share this observation or not; I'd love to hear your thoughts—is this idea that every investment has to be a home run, that every investment has to be a 10-bagger or a 20-bagger right off the bat.

How do we think about an ecosystem in this country where sometimes it's just getting on base and having those first couple of wins, so that you can actually go and raise a larger round? How do we get into that psychology, as well, where our investors are looking to make sure that the second and third round can actually happen?

Going back to the earlier conversation, how do we, as government now for a moment, cultivate the type of environment—beyond the things that we've already talked about doing—to ensure that the first cheque can actually come in? What do you think the reticence is in the investment community to actually being that first cheque?

Cam Linke: That's a great question.

I'm just white-knuckling my Internet here towards the end. Hopefully it will stay with me.

There are a couple of pieces. One is that it's hard for people to invest in an area they don't know, and we know that AI literacy in Canada isn't that high. Increasing AI literacy across the country will create an opportunity for both more adoption and more informed investment at the earlier stage. That's one area that's really important.

The second piece is making it easier for the incredible talent that we attract here to stay. I think there are some things we can do visa-wise to encourage that talent to stay and make it easier for them to be invested in and have that cycle of new company creation, so their success here stays in Canada.

Taleeb Noormohamed: Thank you. I think I'm out of time.

The Chair: With that, I'll thank both of the witnesses for appearing before the committee. Thanks to all of the members.

Is it the will of the committee to adjourn the meeting?

Some hon. members: Agreed.

The Chair: The meeting is adjourned.

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