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• (1830)

[English]

The Chair (Hon. Kirsty Duncan (Etobicoke North, Lib.)): Dear colleagues, I call this meeting to order. We are meeting in a webcast session.

[Translation]

Welcome to the 11th meeting of the Standing Committee on Science and Research.

[English]

The Board of Internal Economy requires that committees adhere to the following health protocols, which are in effect until June 23, 2022. All individuals wishing to enter the parliamentary precinct must be fully vaccinated against COVID-19. All those attending in person must wear a mask except for members who are at their places during proceedings. As you know, you can contact our excellent clerk for further information on preventative measures for health and safety.

As the chair, I will enforce these measures and, as always, I thank you for your co-operation.

[Translation]

Today's meeting is taking place in a hybrid format pursuant to the House Order of November 25, 2021.

[English]

I would like to outline a few rules to follow. Interpretation services are available at this meeting. You may speak in the official language of your choice. At the bottom of your screen you may choose to hear floor audio, English or French. The “raise hand” feature is on the main toolbar, should you wish to speak.

[Translation]

I remind you that all comments should be addressed through the chair.

[English]

The committee clerk and I will maintain a speaking list for all members.

We would like to welcome all of our witnesses tonight. We are grateful for your time and your effort, and we're looking forward to hearing from you.

We have, appearing as an individual, Andrea Wishart, a student at the University of Saskatchewan. From the Council of Canadian

Innovators, we have Benjamin Bergen, who is the president, and Nicholas Schiavo, director of federal affairs. From Mohawk College, we have Ron McKerlie, president and chief executive officer.

Each of you will have five minutes to present. Again, we thank you for joining us, and we'll begin.

We'll go to Ms. Wishart for five minutes.

Ms. Andrea Wishart (Student, University of Saskatchewan, As an Individual): Thank you for the invitation to speak with you today. I join you from Saskatoon, Saskatchewan, located within Treaty 6 territory, homeland of the Métis nation.

I'm a Ph.D. student and occasional sessional lecturer in biology at the University of Saskatchewan. I've served as president of my department's biology graduate student association, and I currently serve as the senior student post-doctoral counsellor for the Canadian Society for Ecology and Evolution. These roles have informed my experience of the incredible talent we have in Canada, as well as the challenges and hard choices that today's early career researchers face, but I come to you today just as myself—a Canadian woman highly trained in the life sciences, and hopeful for where the next step might take me.

You've heard from witnesses in the past few weeks of the typical career trajectory someone like me can be expected to follow. Even after earning my bachelor's degree more than 10 years ago, I'm still considered an early career researcher. As such, I still have many forks in the road ahead. Whether those diverging paths lead to industry, government or academia, it is critical that those those forks become opportunities for choice rather than pinch points where we lose talent.

My research seeks to understand how animals make choices about what to do with limited energetic resources. Can I thrive and invest in my future, the next generation, or am I barely hanging on just to survive for another day? I see reflected in the squirrels that I study as a biologist the trade-offs we must make with limited resources as early career researchers, but I also see what increased resources can let happen: Individuals can survive and thrive.

Canada is an incredibly educated country. That comes about because we champion our many existing strengths. They are strengths like the existence of our distinct research-based master's programs that are considered significant accomplishments in their own right. These programs help ensure a workforce equipped with research-based skill sets for individuals who do not want or need to pursue a full Ph.D., or who want to pursue a different path for their Ph.D. In my case, I completed a master's studying mouse genomics and decided to take those skills into a different arena for my Ph.D., studying ecology and evolution. Investing in master's students means investing in Canada.

The next major training stage is the Ph.D.—that's if you can secure the very competitive but low levels of funding. If you can squeak by, by the end of this apprenticeship the researcher now has years of hands-on experience in statistics, communication and creative problem-solving. That can all serve to solve the problems of today and tomorrow, and make the advancements we need in order to move society forward. The Ph.D. is long. It's oftentimes very tough. But it produces a mind keen ready to put those sharpened skills to work. Investing in Ph.D. students means investing in Canada.

But where to put them to work, and with what funding? We now come to another major fork in the road that has massive ramifications for the life and career of the individual and for the nation's workforce. You see, at this point, the researcher has spent years paying ever-rising tuition with stipends that have remained stagnant for years. Those are years of not being able to build savings that make a relatively low-paying post-doctoral position less attractive. Even the prestigious NSERC post-doctoral fellowships, which are highly competitive, are still worth only \$45,000 a year. This alone can make the lure of well-funded post-docs or more competitive industrial salaries outside of Canada an undeniable option—a pinch point, after so much investment in these individuals, now threatened by limited opportunity to bridge them into the sectors where they're most needed. Investing in post-docs means investing in Canada.

Canada, by investing in education and innovation, has invested in me. I now see the next fork in the road ahead for myself. Where do I put my skills to work, and with what funding? Is having a family compatible with a career in science, or will I become another “leaky pipeline” statistic? We have mechanisms in place that have proven time and time again to work, things like Mitacs and tri-council agency funding, but like a once-strong muscle that's been left to atrophy, the dollar value and accessibility of these mechanisms will weaken over time if not regularly reinvested in.

That the committee I speak to this evening was formed through a unanimous vote speaks volumes to the value that citizens and our representatives place on the health of the science and research ecosystem in Canada. As early career researchers trained in Canada, we want to stay. We want to do the work. To commit to a career rooted in science and research is to profess our conviction that a better future is in our hands for the making. We just need the resources to survive and thrive.

Thank you.

• (1835)

The Chair: Thank you so much, Ms. Wishart. I know that the whole committee will be wishing you luck with your Ph.D. You have a really interested committee here.

We will now go to the Council of Canadian Innovators.

You have five minutes. The floor is yours.

Mr. Nicholas Schiavo (Director, Federal Affairs, Council of Canadian Innovators): Good evening, Chair, Vice-Chairs and members of the Standing Committee on Science and Research. Thank you for the opportunity to present today on the study of top talent, research and innovation.

As you know, my name is Nicholas Schiavo, and I'm appearing this evening as the director of federal affairs on behalf of the Council of Canadian Innovators. I am joined by CCI president, Benjamin Bergen.

We are a national business council representing 150 of Canada's fastest-growing companies. Our member companies are headquartered here in Canada, employ north of 52,000 employees across Canada and are market leaders in the sectors of health, clean and financial technologies, cybersecurity and more.

Throughout the COVID-19 pandemic, the digitization of Canada's economy and public services has increased at a rapid rate. This shift, ongoing for many years, has created innovation and prosperity in many sectors; however, it has also added increased pressure on Canadian scale-ups to find the skilled talent required to fuel a digital future where growth can be sustained.

The priorities that I will speak to today address Canadian scale-ups and their ability to train, attract and retain top talent that improves Canada's innovation outputs in development and commercialization. This goal is critical to ensuring that Canada remains competitive in today's global and intangible economy.

I would like to begin by briefing you on the pressures facing domestic technology companies in Canada in their pursuit of attracting and retaining highly skilled talent.

A recent report from the Information and Communications Technology Council estimated that by 2025 Canada's digital economy will employ 2.26 million Canadians. That's 11% of all employment in the country. This will require an additional 250,000 jobs to be created over the next three years.

CCI's members and Canada's scale-up companies are committed to creating many of the new jobs required, but they face a serious talent supply issue. Unfortunately, scale-up companies can't just maintain their workforce. They need to grow rapidly, and adding the best and brightest talent remains a constant priority.

A recent survey of CCI's members found that most companies plan to increase their workforces by 20% this year alone. That's an additional 10,000 more workers added to our companies and our economy by this year's end.

It's important to note that, in addition to the private sector, the shortage of skilled labour in Canada is having an equally negative impact on the public sector. In April, a spokesperson for the Communications Security Establishment acknowledged this crisis, stating that recruitment for Canada's cybersecurity workforce remains "challenging and highly competitive."

For years, the shortage of skilled talent has been a driving concern for CCI, but the recent shift to remote work has only exacerbated the problem. Canada's skilled workers are now part of a global labour market where geography is no longer as important. Our domestic innovators are finding themselves in fierce competition with global companies that can offer significantly higher salaries for the same crop of highly skilled workers. This is driving up wage inflation across our companies.

Earlier this year, CCI surveyed our members on this topic and found that wage expectations have increased by 20% to 25% over the past year. This is not sustainable. Acknowledging this, CCI recently released a talent and skills strategy with 13 key recommendations to meet the talent needs of our country's fastest growing companies. I look forward to discussing these recommendations with you today.

These recommendations speak to the need to increase the generation, attraction and retention of skilled workers for Canadian firms. This strategy was developed in collaboration with Canadian entrepreneurs and the innovation ecosystem to provide clear and tangible policy recommendations to combat this issue from all angles.

These recommendations span four focus areas.

First is a focus on talent attraction by bringing more tech talent to Canada, updating the national occupational classification codes, expanding alternative credentials and enhancing the global talent stream and global skills strategy.

Second is focus on talent generation by financially supporting Canadian businesses that upskill their workforces and incentivizing post-secondary institutions to develop better experiential learning opportunities.

Third is a focus on talent retention by introducing innovative solutions to support recent graduates with student debt and a commitment to leave employee stock options unchanged as a key incentive for Canadian innovators.

Finally, we acknowledge that there is no silver bullet or one-size-fits-all solution to properly address the shortage of skilled labour. Instead, we are calling for a whole-of-government approach to build capacity and apply a skilled-talent lens to all economic policies and programs.

To conclude, with smart changes to existing strategies and the development of new measures where required, we can ensure that Canadian scale-ups have access to world-class talent and become leaders in the digital economy. Without this strong base of home-grown scale-ups, we will not be able to generate the economic

growth and public wealth necessary to pay for the public services that Canadians depend on.

Thank you, and I look forward to your questions.

• (1840)

The Chair: Thank you for bringing forward your perspective. Again, we're really glad to have you as witnesses tonight.

Now we will go to the president and chief executive officer of Mohawk College, and that's Ron McKerlie. Welcome.

Mr. Ron McKerlie (President and Chief Executive Officer, Mohawk College): Thank you, Madam Chair, and to the committee for providing me with the opportunity to address you this evening. As mentioned, I have the privilege of serving as president and CEO of Mohawk College, based in Hamilton, Ontario. Mohawk is one of the top 10 research colleges in Canada.

Community and industry partners engage our college for workforce development needs, rapid training and our ability to quickly address challenges that are limiting their productivity. We provide students with essential experience, in partnership with researchers, to develop and deploy customized innovations that increase efficiency and give organizations a competitive advantage. These partnerships provide employers with the ability to attract and retain highly skilled and competent workers.

Today, I would like to recommend four ideas that would make a significant and lasting impact on Canadian colleges, our employers and the communities we both serve.

The first relates to international learners. Many cities, like Hamilton, are working to attract and retain international learners as a way to address critical workforce needs. To successfully do so, it's essential that the federal government create the conditions to make Canada a destination of choice for international students. Timely and efficient study visa approvals, as well as ready access to work permits upon graduation, will help ensure Canada attracts the best and the brightest to our communities. Employment incentive programs targeted specifically for international students and graduates will create more immediate opportunities for graduates to establish themselves and contribute to the economy. Incentive programs designed to help international student graduates set up or transition into their own business will also ensure Canada is the destination of choice. These opportunities will motivate international learners to live and settle in the community with their families, buy a property and become a key part of the city's economy.

The first recommendation, then, is to please continue to find ways to make it easy and efficient for international students to study in Canada, including timely access to study visas and post-graduate work permits, and consider providing targeted incentive programs for employers to hire international students and graduates.

My second recommendation relates to the retention of the workforce. We need to encourage domestic students to settle in the area. As part of their education, many of our learners are involved in work on projects, co-ops and internships with employers, providing meaningful work—

• (1845)

The Chair: I'm sorry to interrupt, President McKerlie. I'm going to have to stop for a second.

Monsieur Blanchette-Joncas.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

There has been no interpretation for about the last 20 seconds.

[*English*]

The Chair: Thank you, Mr. Blanchette-Joncas.

I apologize, Mr. McKerlie. Would you go back about 20 seconds.

Thank you.

Mr. Ron McKerlie: The first recommendation is to continue to find ways to make it easy and efficient for international students to study in Canada, including timely access to study visas and post-graduate work permits, and consider providing targeted incentive programs for employers to hire international students and graduates.

My second recommendation relates to the retention of the workforce. We need to encourage domestic students to settle in the area. As part of their education, many of our learners are involved in work on projects or co-ops or internships with employers providing meaningful, work-integrated learning, but the work doesn't continue after the initial term because the SMEs don't have the funding to hire and retain those students upon graduation.

The second recommendation is to consider programs that would support small and medium-sized enterprises in hiring learners as they study, and then keep them employed as the company innovates and builds capacity. This benefits the student and the employer, and strengthens the community.

The third relates to funding opportunities of colleges. I'd like to begin by thanking the Government of Canada for the many programs currently funded in our sector. There are challenges, however. Today, colleges have to wait for open calls for proposals to be posted once or twice a year, and they often don't align with project opportunities, creating unnecessary urgency for partnerships and proposals. Also, I would respectfully submit that six to eight months is too long for the review of a project submission.

The third recommendation is to offer programs with ongoing intakes, rolling application dates and multiple opportunities to submit proposals. Colleges have been proven to respond quickly to help

address industry challenges, and providing ongoing access to research funds would allow colleges to help business and industry partners quickly develop new technologies and processes.

Finally, the committee recently heard from our friends and partners at Colleges and Institutes Canada, Denise Amyot, and Durham College president Don Lovisa. I echo their points about the importance of funding applied research projects at Canadian colleges. For example, Mohawk applied research projects raised more than \$3.3 million last year from industry; however, our college only received \$17,600 from the research support fund.

The final recommendation is to increase support for the research support fund or create a new funding option for colleges that can address the unique needs to allow us to expand and execute the research projects with the varying sectors.

Colleges across Canada are deeply involved in and committed to the communities we serve. We train and educate the local workforce, and colleges support and strengthen businesses, industries and organizations. Colleges are leaders and contributors to vibrant, prosperous communities. Your support of our role and mission is greatly appreciated.

In closing, I'd like to thank you for your time this evening. I'm happy to expand on any of my points during your question time.

• (1850)

The Chair: Thank you so very much.

I really would like to thank all the witnesses. We're grateful for your expertise tonight.

Our colleagues here have many questions, so we're going to go to the first round of questions. This will be a six-minute round.

We will start with Mr. Tochor.

Mr. Corey Tochor (Saskatoon—University, CPC): Thank you kindly.

I'm going to be splitting my time with Madam Gladu. She has some questions for this panel.

I'll start off with the Council of Canadian Innovators. You suggested micro-credentials through partnerships between academia and the industry to train workers in cutting-edge tech. Could you expand on what role you envision the federal government playing in that process?

Mr. Nicholas Schiavo: When it comes to international or alternative credentials, highly skilled tech workers may not have the formal credentials or that formal education that we typically look for. I think more than that, what we're seeing is innovative companies may actually require a wide range of technical skills, depending on the product, service or industry that they're trying to disrupt or transform. Given that this industry is moving so fast, the traditional model may just not cut it anymore. That's really what we're hearing from our members.

Really, I think the idea behind this recommendation is for the government to play a role in creating more flexibility within the immigration system to allow for a wider range of candidates who are self-taught or who have pursued alternative education paths to be considered. Obviously, there have to be some criteria; there have to be guardrails in place. That is something we and our members would be very eager to engage and consult on to make sure that there is some form of rubric. I think the idea is we need to move away from that formal education process that is becoming a drain on the talent market.

I don't know if my president, Benjamin, has anything to add to that as well.

Mr. Benjamin Bergen (President, Council of Canadian Innovators): Thanks, Nick.

In terms of supporting the specific comments that were raised by the member, the federal government's role in some of this will definitely be looking at how funds are allocated to upskilling and retraining—

The Chair: I'm sorry, Mr. Bergen. I'm going to have to interrupt. We have no interpretation. Please give us a second.

He doesn't have the correct mike.

Mr. Benjamin Bergen: We've tried many different mikes on my end to get this to work, so I will kindly bow out and leave it for Nick to pick up the baton for our organization.

The Chair: Thank you for being so gracious.

Mr. Nicholas Schiavo: Thank you, Ben.

I'll follow up on where I think Ben was going to go, which is to say that the federal government can absolutely play a role in upskilling and retraining as well. There are examples across Canada of Canadian companies that have already developed these curricula that fit with the industry and that meet the need. There's a variety of solutions that the federal government can provide to support these companies in that upskilling, whether it's in the form of a financial kickback or tax break.

What we've seen is that the private sector—our innovators—is stepping up where we need it. If there's a role for some financial support from the federal government, it would go a long way in spurring more of that upskilling across Canada.

Mr. Corey Tochor: Quickly, are there any similar provincial programs that are successful in our country? If there aren't any in our country, are there any other countries around the world that you think are achieving what you're proposing here?

Mr. Nicholas Schiavo: That's a great question. In terms of provincial-level programs, I would have to get back to you on that. I'm very happy to follow up with your office.

What I will say, to give some concrete examples, is we have the Montreal-based FX Innovation. This is a company that partnered with the University of Ottawa to build the CloudCampus program and it's had great success in terms of broadening the range of roles in the cloud computing sector. Another great example is in Alberta. Calgary Economic Development provided funding to AltaML to create the Applied AI lab, which aims to generate AI talent for the tech ecosystem.

Those are two examples that are near and dear to our hearts at CCI of the innovation ecosystem stepping up for that reskilling. Is there a role for the federal government to play in supporting them? That's really what we want to discuss.

• (1855)

Mr. Corey Tochor: I will pass my remaining time over to my colleague.

Ms. Marilyn Gladu (Sarnia—Lambton, CPC): Thank you.

My question is for Ms. Wishart. As the first female engineer in the House of Commons, and as a woman who started her career by building a woman's washroom everywhere I worked because there wasn't one, my question is this. Do you think there's more work to be done to eliminate discrimination against women as a barrier to attracting top talent in Canada?

Ms. Andrea Wishart: Thank you. That's a fantastic question. Thank you for being such a pioneer on that front.

It is definitely difficult in many ways to be a woman in science, even today. The biggest pinch point that I see isn't so much at the student level, where even up to the Ph.D. there are relatively large numbers of women participating. However, the big pinch point, and the one that I'm currently facing, is that move from the Ph.D. into either industry or into the post-doctoral fellowships.

Of note, women only hold about 35% of NSERC's post-doctoral fellowship awards. Only about 37% of the applicants applying for those are women. There's a huge drop-off in that. Part of that comes from years and years of higher tuition and higher costs of living, but the awards and the stipends offered to students are stagnant, essentially. In particular, the CGS master's and the PGS D doctoral awards haven't changed in value since 2003 and they're below the poverty line.

By the time people such as myself are reaching the end of a Ph.D., with years of spending lots of tuition money, we have no savings backed up. You get to that point where there just isn't that option to stay funded in that kind of career trajectory. A huge part of it is investing in those sorts of opportunities, particularly at the post-doctoral level, to try to increase the participation of women—

The Chair: Thank you, Ms. Wishart. I'm sorry to interrupt.

Thank you, Mr. Tochor and Ms. Gladu, for your questions.

Now we will go to Mr. Collins for six minutes.

Mr. Chad Collins (Hamilton East—Stoney Creek, Lib.): Thanks, Madam Chair.

Welcome, and thank you to all the witnesses for your attendance here this evening.

I'll start first, Madam Chair, with Mr. McKerlie, from Mohawk College.

Welcome, Ron, to the committee.

I want to pick up on the immigration theme that you talked about earlier in your recommendations. One consistent message we've heard from witnesses to date—and I think Mr. Schiavo was very succinct in his comments—is that it is a global labour market and there is fierce competition.

When there are discriminatory immigration practices in place—and we witnessed this during the last U.S. administration—I think we recognize what kind of an effect it has on the labour market and the impact it has on attracting and retaining top talent. We noticed the brain drain in the U.S., and Canada was the beneficiary of that for a number of years.

I would ask, through you, Madam Chair, to Mr. McKerlie, how important is it for us to have immigration policies and legislation in place that actually attract people from other parts of the world and to have a message that says to the rest of the world—especially those young people who are looking at colleges and universities here in Canada—that we're open for business and we welcome immigrants from all areas of the world?

Mr. Ron McKerlie: Thank you, MP Collins. It's so nice to see you. Thank you for all your support in Hamilton and Stoney Creek.

It's very important, obviously, to keep Canada's brand as pristine as it is around the world when it comes to attracting talent.

Most international students who I speak to—about 5,000 study at our college right now—come to Canada with a dream, not of working for somebody else, but of starting their own business. Many of them come from entrepreneurial families. Many of them are already focused on creating a business or helping to expand the family business.

Any policy change that would help support entrepreneurs as they come into the country, as they study at colleges and universities and then as they start their own businesses would be incredibly helpful. One of the biggest barriers they have right now is getting access to capital upon graduation to start or expand a business.

The other thing, though, is that they have options. This is a world full of options, so as the IRCC runs into delays in terms of approving visas, they have options to go elsewhere, where they might be able to start their studies more quickly. We need to make sure, to the extent that it's possible, that those backlogs are taken care of and that the timelines are relatively short to get visas into students' hands.

• (1900)

Mr. Chad Collins: Thank you for the answers.

On a related subject, I know that student travel to Canada, specifically to Mohawk College—and to McMaster University as well—was limited during the pandemic. I'm assuming the college had to pause for a couple of years while the travel was interrupted not just here in Canada, but across the globe.

How have you pivoted since the borders have opened up? What suggestions do you have in terms of short-term, immediate priorities that the government should be looking at?

You gave us four recommendations. What is the most pressing one now, Ron, in terms of a post-pandemic recovery for colleges as it relates to top talent?

Mr. Ron McKerlie: Thank you very much.

The IRCC was very helpful in allowing international students to start their Canadian studies abroad during the pandemic and to study there for a period of time before they made their way to Canada. That was very helpful, so we continued with international students right through the pandemic.

For a number of reasons, including some of the challenges on the geopolitical scene in the world right now, we have a huge number of students. We have over 12,000 applications right now from international students for the college alone. McMaster has a significant number of international students as well.

Probably the biggest need we have right now is to clear the backlog of visa applications and to make sure we can get those students into Canada to continue or start their studies here.

Many of them who are willing to accept jobs working for others will have job offers on graduation. That won't be an issue. There is a huge number of vacancies in our marketplace, as you will know, and in fact in most places across Canada. The challenge right now is just to get them into the country and to land them so that they can continue or start their studies.

Mr. Chad Collins: Thank you.

Mr. Schiavo, I think I have less than a minute now. You had a number of recommendations that you provided to the committee. Can you tell us what the top priority is in terms of post-pandemic recovery and how we deal with top talent in that regard?

Mr. Nicholas Schiavo: Absolutely. I think honestly it comes down to urgency. When we speak to our members, what we hear is we need talent now, if not two years ago. While we're very adamant to throw everything at the wall, and we talk about upskilling and re-training, I think immigration in terms of top talent is key.

I would echo the other witnesses, and say that if we can increase the timelines from the IRCC, and ideally move towards a 48-hour turnaround time for visa applications through the global talent stream, that would make a huge difference in getting the right top talent to Canadian companies and innovators.

The Chair: Thank you so much, Mr. Collins.

[*Translation*]

The floor is yours for six minutes, Mr. Blanchette-Joncas.

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

First, I want to say hello to my colleagues and the witnesses who are with us this evening.

My first questions are for Mr. Bergen and Mr. Schiavo from the Council of Canadian Innovators.

Gentlemen, I took some time to analyze the documents you submitted, in particular the one entitled "CCI Talent & Skills Strategy". From reading it, we can see that the labour situation is a matter of considerable concern, in particular for innovative firms. We see this in the high tech sector.

That document refers to wage inflation among tech talent. In the past year, wages have jumped by 20 per cent.

Can you explain to the committee what the result of such a rapid increase is?

• (1905)

Mr. Nicholas Schiavo: Thank you, Mr. Blanchette-Joncas.

If I may, I'm going to answer in English.

[English]

I think what we're seeing is when we have these major multinational firms come into Canada, often what's happening is they are sucking up the tech talent, and driving up wage inflation, but then at the same time these multinational firms can also hire Canadians from abroad. Now that remote work is so commonplace, it very much is a global tech talent race.

As a result, you have Canadians who are looking elsewhere for other jobs. They are looking to these major multinational firms that are able to pay exorbitant amounts right off the bat, and it's sucking up Canadian talent, it's sucking up Canadian innovation, it's sucking up Canadian IP.

The message is not we need to bar these multinationals, we're happy to compete, but we need to make sure that there is enough talent so that Canadian innovation can survive. That comes down to training more folks in STEM, again upskilling, bringing in more tech talent, supporting Canadians with student debt so that they stay in Canada and there is that sense of loyalty, but we really need all options on the table to try to compete with that wage inflation.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Schiavo.

There is something I'm trying to get my head around. You may be able to help the committee understand.

I had a look at the Global Innovation Index 2021, and Canada has a pretty poor track record there. We are a member of the G7, but we rank 16th in that index.

What do you think is the explanation for that? Why has Canada not managed to do better and distinguish itself on the international scene, particularly if we go by the Global Innovation Index?

[English]

Mr. Nicholas Schiavo: I'm not familiar with the index. Having not seen it myself yet, I will take it with a grain of salt.

What I would say is I think Canada struggles to support scale-ups, and that's really why CCI was established, that kind of high-growth Canadian firm that is looking to scale up and build. That is really where we struggle as a country.

There are a number of reasons for that. I think Canada can do a lot more in terms of IP development and protection. In particular,

one thing that CCI is very focused on in the coming weeks and months is the modernization of the SR and ED tax credit.

SR and ED is, obviously, a massive program here in Canada. It's integral to Canadian innovators, but there are a number of recommendations that we hope to work with government on in terms of improving this program and ultimately helping it benefit Canadian innovation.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you for your answer.

I understand that you aren't familiar with the Global Innovation Index. I'm trying to find out something: how would you, yourself, measure Canada's progress in innovation? On that point, can you answer for the committee?

[English]

Mr. Nicholas Schiavo: I'm sorry, Monsieur Blanchette-Joncas, but could you expand on that question?

[Translation]

Mr. Maxime Blanchette-Joncas: Yes.

I'd like to know how you measure Canada's progress in innovation.

[English]

Mr. Nicholas Schiavo: Right. At this time I don't have a clear answer for you, so I'm very happy to follow up.

What I would say is typically in speaking with our members and the ecosystem at large from a more qualitative standpoint we like to keep our finger on the pulse of innovation here and see what is working for Canadian innovators and what is not. In my conversations over the last several weeks, things like access to capital, protection of IP and access to talent remain the constant barriers. Those are very much the focus areas for us and those high-level measures that we are looking at constantly.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you.

Mr. Schiavo, among the 13 recommendations made by the CCI, the Council of Canadian Innovators, we see convening a national summit of representatives from universities and the federal and provincial governments to develop a national strategy.

What can you tell the committee on that subject? What do you think Canada's present vision is when it comes to innovation?

[English]

Mr. Nicholas Schiavo: That is a great question, and it's a question we should all be asking.

I will say on behalf of CCI we were very pleased to see several investments in innovation in budget 2022, and think that is absolutely a step in the right direction. That's great.

Really what is missing in Canada is a unified, consolidated vision of what innovation looks like and how we reach those targets, those KPIs. The idea behind this national summit is not a photo op, it's very much—

• (1910)

The Chair: Mr. Schiavo, I'm sorry to interrupt.

[*Translation*]

Thank you, Mr. Blanchette-Joncas.

[*English*]

Before we go to Mr. Cannings, I do want to recognize Mr. Bergen. This is not easy with the technology, but we want to acknowledge your contribution.

With that we will go to Mr. Cannings for six minutes, please.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you.

I'd like to thank the witnesses for being here this evening.

I'm going to start with Ms. Wishart.

You made quite an eloquent plea to invest in students at all levels. It made a lot of sense to me. I think we should view the funding that we put into students as an investment for the future in so many ways.

You talked about how the funding provided for living expenses of master's, Ph.D, post-doc students has remained stagnant over the past 20 years. I have the feeling also that the number of those grants has declined as well.

I'm wondering if you could expand on that. Do you know where Canada sits globally with that sort of support, and why would students in their right minds want to stay here if they were able to live more comfortably and get on with good science somewhere else in the world?

Ms. Andrea Wishart: Thank you for your question. It's nice to meet you.

That's a fantastic question. I don't have numbers from a global sense. What I do have experience is chatting with friends and colleagues who have gone elsewhere or have come from elsewhere, so I speak much more on a student voice level.

I think Canada is one of the best countries when it comes to our NSERC funding model. I do think there are definitely some strengths to the U.S. system. I ultimately think that the way NSERC funds these studentships in terms of the numbers and the amounts is quite good, but they are kind of falling behind.

In terms of being a Canadian citizen and looking at going elsewhere, unfortunately there are those barriers of paying international fees at other institutions. I was offered a Ph.D. position in Australia some years ago. I did turn it down because, ultimately, it is more affordable to be a domestic student and pay domestic tuition. That's

one of the options I was given, as well just staying in the country I was born in.

In the U.S. there may be higher dollar amounts and the ability to hire post-docs as researchers if you're a principal investigator on a project. For instance, you can write up a grant and very easily hire a post-doc on board. However, the NSF funding model is a lot more competitive, whereas NSERC is a little more egalitarian, in my view. However, again, it is stagnant and staying behind.

In terms of the post-doc awards, I believe that in Canada, there are about 7,000 Ph.D.s awarded every year. Obviously, not all of them fall under NSERC models, but there are only 180 post-doctoral fellowships offered by NSERC. They're highly competitive. To speak to Ms. Gladu's point earlier, only 35% of those 180 awards go to women.

There could be investment in not only the number of those awards, but in increasing their value to be at a market level. Once you hit the post-doc stage, it is quite alluring to go someplace else, where there is a bit more money put into post-docs and some flexibility on that front.

I think, again, we do a fantastic job within Canada. It has just stayed so stagnant over the years. Like you said, we're coming up on about 20 years with the CGSM and the PGSD. The PDF awards were adjusted in 2015, I believe, to \$45,000. That would be close to \$57,000 in today's money. By the time you finish three degrees, including a Ph.D., making only \$57,000 a year, even if we adjusted it, is still quite low.

Globally, I think—

• (1915)

Mr. Richard Cannings: Perhaps I could just jump in before I run out of time and ask you about tuition.

You mentioned the difference between international and domestic tuition. Here in Canada, we've seen steadily rising tuition at all levels over the last 30 years as government funding for universities and colleges has declined.

I'm wondering if there's something better we can do there. In my previous life, I would go to biological stations around the world and meet European students who were there volunteering in the summer because they didn't have to pay tuition. I'm wondering if you could comment on what sort of break in tuition might allow us to keep students here.

Ms. Andrea Wishart: Absolutely.

If there were some kind of cap to tuition, or at least when the student starts their program, perhaps capping it for the length of their program.... In the time since I've started my Ph.D., my tuition has risen constantly, year after year. I wouldn't have expected it to rise as much as it has when I started, so even just locking it in to that value for the length of a program would go a long way.

Unfortunately in Canada—I'm speaking from a biology perspective, visiting biological stations and being involved in long-term research myself—many students who are volunteering in the summers to get that experience are still paying these increasing tuition costs. There just isn't the flexibility in some of those grants to even be able to pay the volunteers. People are stretching themselves thin or going completely broke to get the experience to be competitive. They're really paying that cost in terms of their financial stability and what options they have by the end of their program.

Mr. Richard Cannings: Thanks very much.

I think I'm out of time.

The Chair: Thank you very much, Mr. Cannings.

We have now completed the first round. We will go to the second round of questions.

To our witnesses, you really do have an interested group of people here.

We'll go to round two. This is a five-minute round.

We will begin with Mr. Williams.

Mr. Ryan Williams (Bay of Quinte, CPC): Thank you very much, Madam Chair, and thank you to the witnesses.

I'm going to first direct my questions to Mr. Bergen and Mr. Schiavo

Thank you very much for attending today. We had representatives from the University of Waterloo here for a former study, who stated that they saw as much as 75% attrition in their software engineering grads, which is really concerning.

When we talk about retention, what are your recommendations to keep more of those grads in Canada and not have them leave for the U.S.?

Mr. Nicholas Schiavo: That's a great question.

We are absolutely seeing the exact same thing. One of the problems again comes back to those high wages and the global competitive nature. Retention is incredibly important. Some of the recommendations that we have put forward include not messing with employee stock options. These are an important tool for innovators to help build ownership for employees, to help retain employees. We are very happy to see those stay as they are because they are incredibly important.

Beyond that, we have some recommendations in terms of supporting students with student debt, such as moving the six-month grace period for federal loans to 12 months and making that permanent. This was something we saw during the pandemic. We'd love to see this continue.

Also, one of our more innovative proposals comes from a similar scheme that we've seen in the United States, which is, is there a role for the federal government to support businesses that are helping their employees pay off student debt if they are working for a Canadian company? It's another interesting retention tool.

I think what you'll notice throughout all of these recommendations is that they're very ambitious, and we don't claim to have all

the answers. We're very open to other ideas, but I think the federal government needs to take a serious look at employee retention within the tech space.

Mr. Ryan Williams: Okay, thank you.

Are those things that the U.S. is doing right now? Are they currently putting those initiatives in place? Is that why they're taking these students? Why are they taking that talent from Canada? What is the number one or number two reason?

Mr. Nicholas Schiavo: It's the nature of the global labour market. Again, being able to work remotely means there are a lot more options on the table. That's a huge factor.

Again, when you are up against the Metas and Amazons of the world, it is hard for Canadian SMEs, Canadian scale-ups, to compete with those wages. If you're a new grad and you're looking at a \$200,000 or \$300,000 starting salary, it's very tempting. At the end of the day, it's not wages that create wealth; it's IP, and it's by generating Canadian companies and Canadian entrepreneurs and entrepreneurship.

Our message is let's have Canadians working for Canadian companies who are creating that innovation here at home.

• (1920)

Mr. Ryan Williams: Thank you.

Of the 13 recommendations, you've given a couple of priorities. Which ones do you think can be done by the end of 2022?

Mr. Nicholas Schiavo: One of the key ones would be committing to a national summit on skilled labour. This is a non-partisan exercise. We would love to see all sectors, colleges and universities, of course, innovators and entrepreneurs, and the federal government as well as provinces at the table to really develop capacity building and to apply a talent lens. That's a very easy win.

Beyond that, we'd love to see some pilot projects in terms of a high-potential tech visa and a digital nomad strategy. These are strategies or visas that have either been adopted by other jurisdictions around the world or are being considered. They very much speak to the idea of increasing labour density of the skilled labour market. It's bringing more tech talent to Canada, even if there isn't that concrete job offer, that concrete visa, with the idea that they'd then be able to work for Canadian companies and integrate more into our economy and our ecosystem.

Mr. Ryan Williams: Thank you very much.

My colleague asked if you're starting to expand on a national vision for innovation. This is for all of our witnesses. If you can submit anything in writing that you don't have the chance to answer today to the committee, we'd be able to put that in a report.

My last question is for Mr. McKerlie.

How are you engaging local employers through the college system for job gaps? Again, if I miss you, please submit that answer in writing.

Mr. Ron McKerlie: We work directly with about 2,000 employers in the Hamilton community. Some of them are very comprehensive and can give us lists of employees they need over the next couple of years based on retirement and growth. Some of them are not quite as sophisticated.

We have a program called City School in which we will customize the credential to the employer, large ones like Dofasco or much smaller employers. We often seek out people who are in under-represented or marginalized communities and will offer them free education through the City School program with an employer and a job to—

The Chair: Mr. McKerlie, I'm sorry to interrupt.

Perhaps, Mr. Williams, you might like a written response.

Mr. Ryan Williams: Yes, please. I'd like it for that one and the previous one. Thank you very much.

The Chair: Thank you very much to both of you.

Now we will go to Monsieur Lauzon for five minutes.

[*Translation*]

Mr. Stéphane Lauzon (Argenteuil—La Petite-Nation, Lib.): Thank you, Madam Chair.

I'd like to thank my colleagues for being here this evening. I'd also like to thank all the witnesses who are taking the time to participate in the excellent study the committee is currently doing.

My first question is for Mr. McKerlie.

Mohawk College is located near the U.S. border. You talked a lot about international learners, but also about workforce retention.

What is your organization doing to retain this workforce? What are you doing to work with people who live not far from the U.S. border?

[*English*]

Mr. Ron McKerlie: We have limited opportunities to retain students once they graduate. We work with employers, obviously, to try to get local job offers in students' hands before graduation. On average right now, our students would get 2.3 job offers each before graduation. It's the highest it's ever been, but students still leave for a variety of reasons, such as better pay and other opportunities. Remote work, as was mentioned by one of the other witnesses, plays into this right now.

We just had a student graduate and immediately go to work for a Swiss company, staying in Hamilton but working remotely. It's getting tougher to retain students domestically when they have opportunities globally, some of which might be higher-paying jobs, but we do try to work directly with employers.

[*Translation*]

Mr. Stéphane Lauzon: Thank you.

What recommendations would you like to make to the committee? As the government, how could we help you more to retain students?

• (1925)

[*English*]

Mr. Ron McKerlie: One idea we might look at is a situation where we subsidize tuition for domestic students with the proviso that they stay and work locally or at least in Canada and if they did that, they wouldn't have to pay back the student loan.

Other countries are looking at that type of opportunity to try to keep down the level of debt for students and to entice them to pick a job locally or at least nationally rather than internationally upon graduation.

[*Translation*]

Mr. Stéphane Lauzon: Since you are surrounded by rural communities, you have a clientele that comes from that area.

Do you have problems with people who study at your university who come from somewhat remote rural communities?

[*English*]

Mr. Ron McKerlie: Some of our students would come from primarily urban regions around the Golden Horseshoe, although some would come from rural communities. There are always issues in terms of access to education when you have to travel, but in the last two years we solved a lot of those by offering remote programs.

I'm not sure if that's what you were getting at, but the issues are less now than they were before the pandemic.

[*Translation*]

Mr. Stéphane Lauzon: Thank you.

I have a question for Ms. Wishart.

In a study you co-wrote, you mention the importance of understanding the effects of exposure and radiation on wildlife, an essential responsibility in the case of nuclear energy. You did a study that addressed radiation exposure in songbirds.

How could the results of a study like yours lead to improvement or innovation in our technologies? I'd like you to give an explanation that would help me understand that.

[*English*]

Ms. Andrea Wishart: Thank you, and thank you for looking into my research past. That study came out about 11 years ago now and has a bit of uptake.

Part of the reason we study things like the effects of ionizing radiation damage on wildlife is to understand the impact of technology that can advance human interests but maintain the health of the ecosystems around it and highlight some of those issues.

In that particular study, one species typically is found more urban compared to the other species that had a little bit more damage. We can better advance the technology, and also decide where to put those sorts of technologies in the landscape so that we can minimize the effect on the environment.

[Translation]

Mr. Stéphane Lauzon: Thank you, Ms. Wishart.

The Chair: Thank you, Mr. Lauzon.

[English]

Colleagues, I'm cognizant of the time and will be fair.

[Translation]

I will let Mr. Blanchette-Joncas speak, and then Mr. Cannings, for one minute each.

The floor is yours, Mr. Blanchette-Joncas, and you have one minute.

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

I'm going to go back to Mr. Bergen and Mr. Schiavo from the Council of Canadian Innovators.

What are your expectations of the federal government? What is the most urgent thing for making sure we are able not only to attract talent, but also to cultivate and retain it, as you say in your documents?

[English]

Mr. Nicholas Schiavo: There's a lot in there. Thank you for that question. It's very important.

I would say get talent here as soon as possible. Look at the innovative programs I mentioned, the high-tech visa and the digital nomad strategy. Digitize the entirety of IRCC and the global talent stream so that the process is smoother. Ensure that there are stronger pathways to permanent residency for folks who come here with that talent.

The reality is that we need it now. The sooner we can get that done, the better, while also looking at things like upskilling and capacity-building.

The Chair: Wow. That was impressive. Thank you, both of you.

Mr. Cannings, you have one minute, please.

Mr. Richard Cannings: Thank you.

I was going to dive into visas more broadly, but I think I will just go straight to Mr. McKerlie and ask about student visas.

As MPs we all deal with immigration issues. Often it's taking years to get visas. With students it must be much more urgent to get that visa in a timely manner. I'm just wondering if you could give us some examples of visa issues that you've encountered at Mohawk College and how that can be fixed.

• (1930)

Mr. Ron McKerlie: Thank you very much.

We have a large number of students who would be waiting months for their visas.

Anything we can do to speed that up obviously will be helpful.

I see the yellow card from the chair.

Mr. Richard Cannings: Thank you.

The Chair: Thank you, Mr. Cannings.

With that, colleagues, we'd like to thank all of our witnesses tonight.

We are grateful for your time, your expertise and your joining us, and that you all prepared so much to come here. We thank you.

We will now suspend briefly and get ready for our second panel.

Again, witnesses, thank you and good night.

• (1930)

(Pause)

• (1935)

The Chair: I call the meeting back to order.

Colleagues, I'm going to welcome everyone back for panel two.

Welcome to everyone who's joining us tonight. We are thankful for your time and your effort, and we're looking forward to hearing from you.

This will be the second panel tonight.

We have Dr. Shaun Khoo, a post-doctoral fellow from the Université de Montréal.

From the Canadian Glycomics Network, we have Elizabeth Nanak, chief executive officer; Karimah Es Sabar, board chair; and Warren Wakarchuk, scientific director.

I apologize if I've mispronounced your names.

From Endometriosis Network Canada, we have Mathew Leonardi, and Philippa Bridge-Cook, the chair.

Welcome to all of you.

We will go through your statements. You will have five minutes. At the four and a half minute mark, I will raise a yellow card so that you know you have 30 seconds left.

We'll begin with Shaun Khoo for five minutes, please.

Dr. Shaun Khoo (Postdoctoral Fellow, Université de Montréal, As an Individual): Thank you, Madam Chairperson. Good evening and thank you for the opportunity to speak to you today.

My key message tonight is simple. Researchers might love making discoveries, but the way to attract and retain talented researchers is to improve their pay and working conditions. There are institutional and workplace culture issues as well, but job availability, salary and security are the most important.

All over the world, whether it's North America or Australia, where I'm from, there is an abundance of talented researchers. Somewhere between 80% and 90% of Ph.D. holders will not find permanent jobs in academia, which means there are five to 10 times as many Ph. D.s as universities need. This has allowed Canadian funders and institutions to leave wages stagnant, but Canada's academic institutions are not just competing with other countries for talent. They're competing with other industries that are offering us salaries that are double or triple those in Canada's academies and with better working conditions.

My perspective is that of a foreign postdoctoral researcher. I completed my Ph.D. in Australia before moving to Montreal in 2017. Canada was attractive both as a scientific leader in my field and as a great place to live. While not every postdoc can be retained, in my case I felt that five years overseas was enough. It would be relatively easy for Canada to retain researchers like me by giving us jobs with decent pay and conditions.

Good working conditions start with a bit of security. While one- or two-year contracts have become the norm for early career researchers in much of the world, short-term contracts prevent researchers from planning both their lives and their research. Research projects have gotten longer and more complex, so short contracts restrict the kinds of questions that can be answered or the expertise that can be developed. They also prevent researchers from planning their lives. If a top researcher wants to settle in Canada, it's hard for them to think about buying a house or starting a family if they're on a one-year contract. If you give researchers more secure contracts, we'll be able to spend less time doing employment and immigration paperwork and more time making discoveries.

There's also the issue of poor, stagnant pay. Canadian postdoc pay is so low that I earned more as an Australian Ph.D. student with some casual teaching roles than I did in Canada. On top of that, every year Canada gave me a pay cut in real terms because my Canadian postdoc salary wasn't indexed for inflation, nor did it rise with experience.

In Australia, Ph.D. scholarships and academic salaries are indexed annually. From 2004 to 2021, Australian Ph.D. scholarships rose over 54% while, and Canadian wages grew 62%. However, Canada's federal research student stipends and fellowships had zero growth, and senior postdocs with years of experience are earning the same as fresh graduates.

Stagnant wages were definitely a push factor in my decision to leave Canada. If Canada wants to retain talent, it needs to index scholarships and stipends from undergraduate summer scholarships to postdoctoral fellowships to keep pace with inflation and wages.

Another push factor is the ambiguous classification of postdocs. A postdoc employed on their supervisor's grant is an employee, but if you win a fellowship, the university classifies you as a non-employee. You do the same job. You work there, but you're not entitled to things that normal employees get. I know that, at Concordia University, for example, this means that externally funded postdocs need to fight for access to everything from an institutional email account to remote access to their own data, to filing expenses for reimbursement, and, of course, being a non-employee doesn't mean you get any student benefits. While postdocs are sometimes called

students, there's no discount in health insurance or transport. When I've won external prize money, my university has classified it as salary and made all the usual employee deductions.

I'd also like to touch on the issues of research culture and integrity. Hearing about institutions that bury misconduct allegations and let dodgy scientists collect federal funding on the back of fake data damages public trust and researchers' morale. After all, if a Canada research chair goes to someone dishonest, that means that a talented researcher has missed out. It also leaves a huge mess for honest researchers to clean up.

Providing more support to institutions to improve culture and prevent and respond to misconduct would lift this drag on research productivity. For example, financial rewards for researchers who are implementing more transparent and reproducible research processes would help Canadian researchers work more effectively.

Canada is already a leader in open access to research. For example, Simon Fraser University's public knowledge project develops free software that empowers thousands of scholarly communication platforms worldwide, but there's room for Canada to do more to reward researchers who are accelerating discovery through more open and transparent science.

In my experience, a love of research and discovery just isn't enough to keep talented researchers in the job. The vast majority of Ph.D.s I know have now left research for better salaries, job security and an environment that allows for a work-life balance. That's why my message is simple. To attract and retain talented researchers, improve pay and working conditions.

Thank you very much for your attention and, if you're curious, upon leaving Canada and leaving academic research, yes, I did double my salary.

● (1940)

The Chair: Thank you very much, Dr. Khoo.

The next speaker is from the Endometriosis Network Canada for five minutes, please.

Dr. Mathew Leonardi (The Endometriosis Network Canada): Good evening, Madam Chair.

Thank you to you and the Standing Committee on Science and Research for the invitation to present today.

I'm a gynecologist and Ph.D. scientist at McMaster University in Hamilton, with a clinical and research focus on endometriosis. I'm an early career researcher, having only returned from training and working in Australia in 2020. I am a volunteer with The Endometriosis Network Canada and EndoAct Canada.

I will now pass you on to my co-presenter to introduce herself.

Dr. Philippa Bridge-Cook (Chair, The Endometriosis Network Canada): Thank you.

Good evening, Madam Chair and committee.

I am an endometriosis patient advocate and Ph.D. scientist.

My long journey with endometriosis inspired me to become one of the founding board members of The Endometriosis Network Canada. I'm currently the chair of the board of that organization and the co-chair of EndoAct Canada.

Although I started having endometriosis symptoms as a teenager, it took me over 20 years to get a diagnosis. During that time I suffered from debilitating symptoms. This caused numerous changes in the course of my life, including deciding not to pursue a career in academics after my Ph.D. Almost 30 years after my symptoms started, I was finally able to get effective treatment and regain my quality of life.

We are speaking to you today because there is a crisis in endometriosis care in Canada, with significant gaps in our biomedical, clinical and health system services.

Endometriosis is an inflammatory disease that causes debilitating pain, infertility and other symptoms that affect the whole body, leading to significant impacts on individuals, families and society. There is no definitive cause or known cure for endometriosis. The disease is managed with specialized surgical care, other medical care and multidisciplinary services.

Aligned with the endometriosis research priorities published in the leading medical journal, *The Lancet*, in 2017, we will describe three main health research domains with inadequate research and talent deficiencies, and some proposed solutions.

On domain one, there is a limited understanding of the cause of endometriosis from a basic research point of view, leading to limited therapeutic options. This presents an opportunity to attract top talent, as the enigmatic nature of endometriosis is incredibly attractive to scientists and clinician scientists alike.

On domain two, there is a lengthy delay in diagnosis of five to 11 years. One reason for this is there is low awareness of the disease among the general public and health care providers, which is rooted in historic and systematic dismissal of women's pain. In addition, medical tools that would allow early identification and diagnosis of endometriosis are lacking. There is an opportunity to transform the lives of people with endometriosis through research investments that could decrease the diagnostic delay.

On domain three, in addition to long waits for specialized surgical care, the current array of treatments is inadequate and leaves most people with endometriosis continuing to have symptoms, with a tremendous impact on their daily lives. Many of the one million Canadians with endometriosis may be interested in pursuing career

goals in research and innovation, but are unable to do so because of inadequate treatment. I personally faced this situation.

• (1945)

Dr. Mathew Leonardi: Patients, clinicians and researchers are creating change for endometriosis in Canada. For example, Mr. Don Davies put forward motion M-52 requesting a national action plan for endometriosis. In addition to supporting M-52, we would like to propose some solutions for aspects of the endometriosis crisis that pertain to acquisition and retention of top talent and support for research and innovation.

Solution number one is to support the formation of endometriosis centres of excellence, where interdisciplinary research teams can work together to address the gaps that exist. These should be developed in established centres in Canada to leverage existing institutional supports. This would enable talent to reach their potential and ensure Canada rises as the leader in endometriosis research and innovation while also improving clinical care.

Solution number two is that we must start to distinguish gynecologic diseases, including endometriosis, from pregnancy or newborn-related diseases within academia and research. Gynecology is currently like a little sibling to the big sibling of obstetrics. Although women spend most of their lives avoiding pregnancy, obstetrics often takes priority. This lack of prioritization is not only unfair to those who suffer from gynecologic diseases, but also pushes any interested researchers away from working in this area.

Solution number three is to improve disparities in research funding. As outlined in our submitted brief, endometriosis affects 10% of women as well as transgender and gender-diverse individuals. Compared to the other diseases with far lower prevalence rates, endometriosis receives a staggeringly low number of grants and proportionally low funding per affected Canadian.

Thank you so much. We look forward to questions and answers.

The Chair: We thank both of you for your presentation. Dr. Bridge-Cook, we are sorry for your pain. We're glad you found some help.

We will now go to the Canadian Glycomics Network. We welcome you and we look forward to hearing from you for five minutes.

[Translation]

Ms. Elizabeth Nanak (Chief Executive Officer, Canadian Glycomics Network): Madam Chair and members of the committee, thank you for inviting me to testify before the committee.

I am speaking to you from traditional Métis territory Alberta Region 4, on Treaty 6 land.

[English]

My name is Elizabeth Nanak. I am the CEO of the Canadian Glycomics Network, which is also known as GlycoNet. Joining me today are Ms. Karimah Es Sabar, our board chair, and Dr. Warren Wakarchuk, our scientific director and lead scientist in glycomics.

As you may know, Karimah is also the chair of the ISED health and bioscience economic strategy table.

GlycoNet was created in 2015 through the networks of centres of excellence program. It is focused on glycomics research, development and innovation. We are currently one of the top three leaders in the field in the world.

Glycomics is a study of sugars in all living things, including humans, animals, viruses, bacteria and plants. The study of these sugars has enabled us to develop solutions to leading diseases in humans and animals. It has also translated into substantial health and economic outcomes. For example, five of the top 10 protein drugs on the market today are glycomics-related and have a combined annual revenue of \$75 billion.

GlycoNet has mobilized over 175 research groups across Canada and 160 partners from academia and industry to advance glycomics research and commercialization. Our leadership has helped us attract and retain top talent from academia and industry, fostering research excellence and partnerships. Since 2015, this has resulted in a total investment of \$90 million, equally matched by government and industry, for Canadian-led research and development.

Our partner universities have been able to attract talented researchers who now hold prominent positions including a Canadian excellence research chair.

GlycoNet has also provided training opportunities for over 550 trainees. Our graduates have populated our start-up companies and Canadian SMEs. They have continued on to work in academia and government, and have been recruited by multinational companies.

Thanks to government and industry support to date and GlycoNet's unique platform, we have been able to translate innovation to commercial outcomes and develop a new sector of the bio-economy.

Continued support will be necessary to maintain our leadership in this field and attract top talent, as Karimah will now outline.

• (1950)

Ms. Karimah Es Sabar (Board Chair, Canadian Glycomics Network): Thank you. Good evening everybody.

I'd first like to acknowledge that I'm speaking from the ancestral territories of the Squamish, Tsleil-Waututh and Musqueam peoples here in Vancouver.

It's my pleasure to present to you today. I'll pick up from where Elizabeth left off.

To ensure a truly sustainable and optimized platform in glycomics through GlycoNet and for the full economic benefit of GlycoNet to be realized, we need sustained public-private support on an ongoing basis. Continued and sustained joint public and private funding is critical to retaining and building the talent we need to capitalize on innovation, commercialization and the competitive advantage we have in glycomics.

As Elizabeth mentioned, glycomics is one of the leading fields in Canada and we rank amongst the top three in the world.

At the heart of Canada's glycomics ecosystem, GlycoNet is training the next generation of glycomics innovators and enabling talent attraction and retention in new and existing companies as well as traditional and global companies that are based in Canada in biotech and big pharma. Without top talent in this growing field, our country risks losing its opportunity to capitalize on the glycomics research, innovation, commercialization and investment and therefore on the economic benefit. Talent is the new oil and it certainly is no different for us in the glycomics area. This multi-stream approach has already demonstrated the economic benefits of new jobs and made-in-Canada solutions in the areas of health, clean tech and agriculture to support our innovation economy.

Canada's investment as a percentage of GDP has declined over the years in R and D and innovation and is sitting now at 1.7% versus the OECD average of 2.7% versus the 4% that top-tier countries are investing. Canada is slipping in innovation output and productivity in spite of our high quality of science and discovery, so it becomes very important to keep investing in our strengths and the platforms on which we are leading in the world.

The opportunity for Canada to firmly establish itself as a world leader in glycomics is very real. Its potential impact to Canadian health and to the Canadian economy is very significant.

Thank you.

The Chair: Thank you, Ms. Es Sabar. We thank you both for your contributions tonight.

We thank all our witnesses for joining us.

Now our excellent colleagues have questions they'd like to ask you. We will begin with six-minute rounds.

Tonight, we begin with Ms. Gladu.

Ms. Marilyn Gladu: Thank you, Chair.

Thank you to all of the witnesses for your testimony tonight.

My first question is for Mr. Khoo. You talked about the salary differential. Is a four-year contract acceptable? Would you consider that, in addition to some salary increase, you would be able to deduct your student debt from your taxes?

Dr. Shaun Khoo: Yes, I think a four-year contract would be fantastic. That would be between double and four times many of the contracts that I had in Canada. It would be competitive with winning fellowships elsewhere. For example, in Australia, a grant might be three years or an investigator award is five, so a four-year contract would be very competitive.

As for a tax deduction of student debt, I think that people would probably be quite happy with that. I don't have any personal experience to relate to that, but that kind of incentive would definitely encourage people to stay in the field.

• (1955)

Ms. Marilyn Gladu: Excellent.

My next question is for Ms. Es Sabar. Can you describe how you think the combination of public and private funding could help secure more expertise to do glycomics research?

Ms. Karimah Es Sabar: GlycoNet, for example, is a network connecting scientists, entrepreneurs, the investment community, students, everybody. It's an end-to-end network. The objective of having public-private partnerships, both from a funding perspective and from training and enabling perspective, is that many of the jobs are in industry, and some of the jobs are in academia. We want to ensure that we have talent here that is anchored and long-term in building this sustainable ecosystem, so there must be jobs on both sides. Industry benefits and so does the public sector.

We already have public-private funding. I think Elizabeth referred to the \$90 million that we got, which has been matched by the private sector.

Ms. Marilyn Gladu: Excellent. This is great.

I'm going to share my time with Mr. Tochor, so I'll let him take it away.

Mr. Corey Tochor: Thank you very much.

I'd like to carry on a bit, Elizabeth, from when you were talking about the \$90 million in funding from the private sector that was matched by government. In those arrangements, who owns the science? Is the partner who provides 50% of the dollars to do the research the one who owns 50% of the science?

Ms. Elizabeth Nanak: No. The science is owned by the universities. We work with the universities, so research is done with grants. The grant would go to the university and the scientist brings the research. The IP generated would belong to the university or the researchers, depending on the arrangements they have at that particular university.

The company may have a chance to have an option to license the technology, but it's not owned by the company.

Mr. Corey Tochor: You were saying you got going in 2015. Are there other revenues coming into your organization from those investments, if you own the research and IP on that research?

Ms. Elizabeth Nanak: This is an excellent question.

In 2015, we were a network of centres of excellence, NCE, and we were normally scheduled to have funding for 15 years. We didn't want to put in conditions that could impede research and innovation. In between, the NCE program was terminated.

We have now developed a program to try to get a return on investment. This program exists now, and we have some percentages on some technologies that are being licensed. The revenue will be coming in the next few years.

Mr. Corey Tochor: We talked about different increases, which would obviously help your research. Is there anything on the regulatory side, the patent side or the legal framework in Canada to get any red tape out of the way and encourage more research?

Ms. Elizabeth Nanak: Karimah, do you want to answer this question?

Ms. Karimah Es Sabar: Yes. I'd be happy to.

We have some challenging IP policies. It's a potpourri of policies across universities. One could do a whole Ph.D. study on that. It is challenging. From institution to institution, some are more progressive and some are not. IP should always be inventor-driven. Again, it's the sharing and participation that's important, and we're starting to see that. In the life sciences and in biotech, it's a long life cycle, so it's a longer return period. In other areas—agriculture, environment and climate change—these things happen a little bit faster.

Again, I can't give you one single answer, because it really varies from institution to institution.

Mr. Corey Tochor: Thank you kindly to all the presenters tonight. It will be very helpful in the work we do. I appreciate your efforts to increase our understanding of science.

• (2000)

The Chair: Thank you so much, Ms. Gladu and Mr. Tochor.

Mr. Collins, you have six minutes, please.

Mr. Chad Collins: Thanks, Madam Chair.

Perhaps I could start with Dr. Leonardi and Dr. Bridge-Cook from McMaster. I was very intrigued with the suggestion of support for the centres of excellence concept they submitted to the committee. I'm interested in understanding how that would work in its implementation and in its form.

Dr. Mathew Leonardi: Thank you again for the invitation to be here tonight.

Centres of excellence in health care are not a new concept in Canada. They are established already in certain health domains, including cancer, bariatric surgery and mental health. The concept of endometriosis centres of excellence is built on some of the foundational work that others have already done to establish a network of individuals with clinical expertise but also academic research expertise on a topic.

The goal of a centre of excellence is really fourfold. The first domain is to improve the quality of care and the patient experience. The second is to improve population health. The third is to lower the cost of care because it is being done correctly the first time. The fourth is to improve the health care professional experience, which speaks to this purpose of the committee tonight around the retention of talent.

In Canada, being a gynecologist is quite challenging due to a number of barriers. Staying in Canada can be a challenge, particularly for those who want to maintain a strong research interest. There are really not very many centres around the country that are particularly supportive of research in the domain of endometriosis and research in gynecology in general. The centre of excellence would really support that concept as well.

Beyond the actual centre, we would need to build communities of practice around that to support the various regions around the centres of excellence that could be established at academic institutions with a health care affiliation.

Mr. Chad Collins: Thanks, Dr. Leonardi.

Can I ask a follow-up on that? The report that we'll deal with here on top talent will drive policy decisions and funding. What does the funding model look like to support the concept that you just highlighted?

Dr. Mathew Leonardi: At present, health care is provincially funded. Gynecologic health care is not particularly prioritized. This is something that various institutions individually are trying to advocate for, including my institution at Hamilton Health Sciences and McMaster University. I'm incredibly grateful that they are making those strides.

Really, the idea around health care funding is provincial, but the idea of federal funding for research is how the academics who will drive forward clinical science and basic science in particular, as well as social science, will be able to work effectively in their institutions and collaboratively in an interdisciplinary model. It's partially health care provincially as well as federally through grant agencies.

Mr. Chad Collins: Madam Chair, I will share the rest of my time with my colleague Ms. Diab.

Ms. Lena Metlege Diab (Halifax West, Lib.): Thank you very much.

I want to continue with that, Dr. Bridge-Cook. Since I became an MP seven or eight months ago, I've had constituents who have this disease contact me in my office and sort of educate me about it. Can you talk about your experience for the committee and for the public record? I would like you to share whatever you're able to share with us.

Dr. Philippa Bridge-Cook: Sure.

I started having symptoms of endometriosis as a teenager, but because there's very little menstrual education in schools about what's normal, I didn't really know that my symptoms were abnormal. And that's the case for many people with endometriosis, they're just not aware that the pain that they experience with their periods, other pelvic pain throughout the month, gastrointestinal symptoms, bladder symptoms, fatigue, these things can all be a part of endometriosis. As teenagers, you don't know what's normal, there's a big taboo and stigma associated with talking about any symptoms that are associated with menstruation, so that prevents teenagers from coming forward. I never really spoke about that when I was a teenager.

I went to university, I started graduate school, I was doing my Ph.D. in medical genetics, so I was in a biomedical field and I still had never heard the word "endometriosis," which is shocking in retrospect, but kind of not, because it's just not a topic that's generally understood or talked about. During graduate school, I realized that being debilitated for one week a month wasn't something that could move forward with me as an academic researcher, so I sought out other career options for myself.

After I was married, I wanted to have children, and my husband and I started trying to conceive and I ended up having recurrent miscarriages. I had six miscarriages with no known cause at the time; I still did not have an endometriosis diagnosis, although I'd started describing my symptoms to doctors. I saw five different gynecologists, and nobody gave me a diagnosis of endometriosis. I continued having miscarriages, nobody could explain why. Eventually, I had a very large endometrioma, which is a lesion of endometriosis on the ovary, and that was visible by ultrasound, which is how I ultimately got in to have surgery, confirm the diagnosis of endometriosis and treat the endometriosis at the same time.

• (2005)

Ms. Lena Metlege Diab: Dr. Bridge-Cook, I want to thank you for coming and sharing that with us publicly because it will go a long way to help many women and many families across the country.

Thank you.

The Chair: Thank you, Ms. Diab.

Dr. Bridge-Cook, I think everyone here's heart goes out to you, and we're grateful for your courage, for coming to share that story and fighting for others.

Dr. Philippa Bridge-Cook: Thank you.

[Translation]

The Chair: I'm now going to give Mr. Blanchette-Joncas the floor for six minutes.

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

I'd like to welcome the witnesses who have joined us this evening to participate in our study. I would like my thinking to line up with their testimony, of course.

But I am still going to come back to attracting and retaining talent, the subject of the study.

Mr. Khoo, my first questions are for you. I'd like to say that your testimony particularly affected me. It's good to hear someone at the committee describe their career for us. In your case, that career led you to leave Quebec, and in fact Canada.

What changes do you think the federal government should make to avoid the kind of situation you went through that led you to leave the country?

[English]

Dr. Shaun Khoo: I think that the key things to change at a federal level are to improve the availability of funding and to improve the salaries that are offered to post-doctoral fellows. I think that there are also things that can be done around immigration to make, for example, the renewal of a work permit faster and easier. For example, at the moment, the work permit renewal is basically the same as a full application, so it takes a substantial amount of time to be processed and involves a significant cost not just for the researcher, but for the institution that's hiring us in as foreign post-doctoral or foreign temporary workers.

Other than that, the main thing, as I said in my opening statement, is to increase salaries and improve working conditions.

Thanks.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you for your answer.

What do you think are the main obstacles for students who want to complete a doctorate?

• (2010)

[English]

Dr. Shaun Khoo: I think that there are a few obstacles. I think the biggest one, of course, is job security. It's very difficult to continue through all of your 20s and 30s on one- and two-year contracts, not knowing where you'll be or what you'll be doing in a few years.

There's a constant interest in alternative career paths, which can have great benefits for the rest of the economy. Skilled talent is needed, not just in academia but also in business and industry. For a lot of young researchers, that is a very difficult thing and a constant source of anxiety. Job availability is a big one.

Watching all of your non-academic friends and acquaintances be able to settle down, buy houses, have families and things like that is quite difficult for a lot of young researchers. That's one of the push factors that I think keeps people leaving academia and research.

[Translation]

Mr. Maxime Blanchette-Joncas: That's very interesting.

What could the federal government do to take on responsibility for that, of course, but also to improve the employability of doctorate holders in Canada?

[English]

Dr. Shaun Khoo: I think there are a few things that graduates struggle with in terms of finding jobs after a Ph.D. or other graduate research programs. For example, one is knowing what you can do. I think that, if the federal government were to provide some more support in institutions to provide more career training to graduate students, then they would be better able to identify alternative career paths and see how they can adapt their training during their Ph.D.s or master's to better prepare them for those alternative careers.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you.

A report published last year by the Canadian Council of Academies said that employers were not recruiting enough doctorate holders, even though, as everyone knows, doctorate holders represent a skilled and trained workforce.

What should we conclude from that finding? Collectively, what are we losing when we don't enable these skilled and talented people to find a job easily?

[English]

Dr. Shaun Khoo: I don't fully agree that there is a shortage of Ph.D.s. I think there is an oversupply of Ph.D.s, and I think that the difficulty is matching the talent to the jobs. As I said in my opening statement, between 80% to 90% of Ph.D. holders will not find permanent jobs in academia. I think that's partially because the vast majority of people who do Ph.D.s want to find a job in academia. There is this process that I think a lot of Ph.D.s and postdocs go through where they learn that maybe a job in academia isn't the be-all and end-all of their career and that there are other equally worthwhile and rewarding careers outside academia.

I think that integrating this into our training programs is something that is really important and could better help people match their expectations and job searches as they develop during their Ph.D.s and through their early postdoctoral years.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you for that information.

Mr. Khoo, if the government offered you incentives to come back and work in Canada, in Quebec, what incentives would be of most interest to you?

[English]

Dr. Shaun Khoo: I think it would be hard. In my case, the reason I'm back in Australia is mostly personal. It's to be near family and in my country of birth.

I think that a permanent job with good pay would be right up there. I think that's what I have now in Australia. I think a permanent job with good pay and a visa to go with it would be what would drag me back to Canada.

The Chair: Thank you so much, Dr. Khoo.

[Translation]

Thank you, Mr. Blanchette-Joncas.

[English]

Dear colleagues, we will now go to Mr. Cannings for six minutes, please.

Mr. Richard Cannings: Thank you.

Thanks again to this set of witnesses.

I'm going to stay with you, Dr. Khoo, and drill down on some of the issues that are purely monetary in many ways.

You mentioned that the private sector out-competes the academic sector. I recall when I was working summers as a biological student helper being shocked to find out that the geological prospectors that I met—students like me—who were working for the summer with private companies in the Yukon mountains were making six times what I was making. I thought very seriously of going into geology at the time.

One thing we haven't talked about.... We've heard about the grad student funding that NSERC and other of the tri-councils provide, and the post-doc funding. I think you've looked at some of the funding that is provided for these jobs between years when students are trying to get experience that will be valuable in the years to come.

I'm reading something you put together that said the NSERC undergraduate programs for these summer jobs, even after the university kicks in their share, are barely minimum wage, if at all. Is that what you found?

• (2015)

Dr. Shaun Khoo: Yes, that is exactly what I found.

If you do the math on how much a summer scholarship would pay a student and how much we would have them work—and be assured that we work them hard, because we want them to get the best out of their experience—in terms of the pay they would get relative to the effort, it would be at or below the minimum wage. I think it would be in the order of \$11-something per hour, which is less than the proposed \$15 minimum wage.

Mr. Richard Cannings: Things haven't really gotten much better since the 1970s when I was doing that. That's very interesting. I would see a lot of students think twice about staying even at that level.

I'm wondering, since you have this experience in both Australia and Canada, if you could compare some of the.... We hear about rising tuition costs. Every year, tuition seems to go up, yet the funding for a grad student stays the same. As you said, you don't get a raise; you get a pay cut every year.

Could you talk to the tuition fee side of things? How does Canada compare with the rest of the world in that regard?

Dr. Shaun Khoo: I can only really speak to the Australian aspect of how Canada compares, but I can say that in Australia, for domestic Ph.D. students, there are no tuition fees. There is no question of whether there will be an extra cost imposed on students. For international students, there are fees, but for the majority of students who are studying or completing their Ph.D.s in Australia, my understanding is that they would apply for and usually get an international fee remission scholarship.

The fees are there on paper, but the majority of students who are successful in winning a scholarship would probably also get their fees waived or funded by a scholarship, so they wouldn't need to pay anything there. In terms of Canada charging fees for post-graduate research, it seems to be a little out of step with what we would get in Australia.

Mr. Richard Cannings: Does that also apply to a master's student? Are there tuition fees for master's programs in Australia?

Dr. Shaun Khoo: I believe there are, but I'm not entirely sure of the situation for master's students. I think they might have some similar kinds of scholarships. The master's is a bit more complex, because there are master's by coursework and master's by research, so the variety of degrees on offer is different. There will also be a variety of different scholarship settings.

Mr. Richard Cannings: To clarify, did you say that in Australia the funding that grad students can apply for in post-docs has been going up year by year over the last 20 years, unlike in Canada?

• (2020)

Dr. Shaun Khoo: Yes. That's correct. For Ph.D. students in Australia, the funding is provided by the federal government. The Ph.D. scholarships are indexed every year. You can look up the historical Ph.D. student stipends on the department of education website. They go back many, many decades. You can see that they've been going up regularly for the whole time.

As for post-doctoral fellows, the salary is set by the institution that employs them. As a post-doctoral fellow in Australia, you're covered by the enterprise agreement just the same as any other employee of the university. Your pay is indexed according to that enterprise agreement. You will not have any issue with your pay decreasing over time. Hopefully, if the pay rate that's been agreed to with the employees goes up, then you will beat inflation.

Mr. Richard Cannings: Thank you.

The Chair: Thank you, Mr. Cannings, for your questions.

Colleagues, we will go to a second round of questions of five minutes each.

Mr. Soroka, the floor is yours, please.

Mr. Gerald Soroka (Yellowhead, CPC): Thank you, Madam Chair.

Thank you to all the witnesses. Boy, we've asked you a lot of good questions tonight. I've taken a lot off my list already.

Dr. Leonardi and Dr. Bridge-Cook, you spoke more about the education of women, or their lack of it, and even about the tendency to not talk about severe periods or something else affecting women to have systemic pain. What can we do to improve the education so that more women actually find out about this or are more knowledgeable about endometriosis?

Dr. Philippa Bridge-Cook: I think it's very important for there to be education about this in schools. Obviously, that education is a provincial responsibility, but I think the federal responsibility role in that is in providing a leadership role. For example, we've been advocating for a national action plan for endometriosis from the federal government that would state that endometriosis is a problem and these are the problems with it—for example, the lack of awareness is a problem—and to provide leadership the way that other countries have done. For example, in Australia they actually made an apology to people with endometriosis, apologizing for the neglect of their disease.

It would be really important for the federal government to provide that leadership role that could then translate into more specific improvements through, for example, provincial governments for funding for education in schools.

Mr. Gerald Soroka: Thank you for that. I hope that does come about a lot more quickly. I don't think people should go through suffering the way you had to. I feel sorry for what you had to go through to find out that you have this disease.

Dr. Philippa Bridge-Cook: Thank you.

Mr. Gerald Soroka: With that, I'll go to Dr. Khoo.

You spoke about the integrity in research and the foundations that can be integrated in order to ensure the credibility of data in research and improved social trust and morale. Could you give us a bit more explanation on that, please?

Dr. Shaun Khoo: Yes. Thank you for the question.

There are a lot of movements in science right now to make data more open, to give transparency and allow other people to check it. For the most part in science, we operate on a trust principle. If a paper is published, the dataset underlying that doesn't actually get reviewed while the paper is reviewed, and that doesn't necessarily get assessed at any time after publication either.

At the moment, there is a reform movement, or multiple reform movements, within science to make it more open and transparent and to share these datasets more publicly at an earlier stage. By supporting scientists who are doing this, that would make their work more open and more readily assessed by other scientists and more closely scrutinized. That will ensure, we hope, that the science that is produced will be more reliable.

Mr. Gerald Soroka: Thank you.

You spoke about salaries, contracts and livable wages. Even in terms of incentivizing immigration to obtaining permanent residency, do you think that would encourage researchers to stay as well, or is it basically just the money contracts and the livable wage?

• (2025)

Dr. Shaun Khoo: I think there's a mix, and it depends of course on each individual person. For some people, wanting to migrate to

Canada is definitely part of the reason they apply to Canadian research institutions, whether it's for their research degrees or for their post-doctoral fellowships. I think that immigration incentives would definitely attract researchers.

For me, personally, that wasn't a strong factor in wanting to come to Canada. Returning to Australia was always part of my personal plan. But I can imagine there are lots of people who would find migrating to Canada on a permanent basis to be a strong incentive.

Mr. Gerald Soroka: Thank you.

Basically, I have no time left, so I'll just forgo my time.

The Chair: Mr. Soroka, I want to acknowledge that you're right. There have been a lot of good questions from a really interested committee. Thank you for your questions.

Now we go to Monsieur Lauzon for five minutes.

[*Translation*]

Mr. Stéphane Lauzon: Thank you, Madam Chair.

I'd like to thank all the witnesses again who are here this evening.

Ms. Bridge-Cook, you talked about endometriosis and that piqued my curiosity. So I did a bit of reading and I learned some things about this disease.

To make the connection with the study we are doing at the moment, I would say we have to retain the best talent. In your case, we have to create the best talent and retain it.

You made it very clear to us that endometriosis is not well known. If there were an association in Canada like the cancer society or the diabetes association, or like the EndoFrance association in Europe, which is very active in the field, I read, could that help your cause?

[*English*]

Dr. Philippa Bridge-Cook: Yes, it definitely would. I was a founding board member of the organization that's currently the only registered charity for endometriosis in Canada, and that is Endometriosis Network Canada. It's a very grassroots organization focused on increasing awareness and providing patient education, government advocacy and support for people with endometriosis, but as a grassroots organization that's focused on a gendered disease, our funding is very low. If we were to grow bigger... For example, obviously the Heart and Stroke Foundation and the Canadian Cancer Society are a completely different level of organization, but they're also able to fund research, run enormous programs and have a tremendous impact through their work. I think it is really important to support organizations like this in our work, for sure.

Mr. Stéphane Lauzon: Thank you.

[*Translation*]

As you clearly explained to the committee, you want there to be this kind of recognition. Even before getting into retaining specialists and researchers, what could the government do, in concrete terms, to make your work known?

[*English*]

Dr. Philippa Bridge-Cook: I think the funding for research is a big important thing. We know that endometriosis research in Canada is quite underfunded compared to other conditions. For example, the funding per affected Canadian for endometriosis is only \$7.41, and that's compared to, for example, inflammatory bowel disease, which affects far fewer individuals and receives funding per affected Canadian of about \$340.

Endometriosis is a very under-researched area due to a lack of funding, so the federal government could certainly help through research funding. Endometriosis researchers don't have a great home to apply to for their grants in endometriosis, so restructuring of the CIHR would help encourage those applications and, as Dr. Leonardi described in the opening statement, separation of gynecologic diseases from obstetrical diseases, which tend to receive prioritization....

In terms of awareness, the federal government could provide funding for awareness campaigns that could reach many more Canadians than our small grassroots organization can ever hope to do.

• (2030)

[*Translation*]

Mr. Stéphane Lauzon: Thank you for your answer.

My next question is for Ms. Nanak.

Ms. Nanak, I don't know whether you are a francophone, but I noticed that your French was impeccable.

Can you tell us about retention of francophones in Alberta, in your field? What are your strategies for retaining them?

Ms. Elizabeth Nanak: Thank you.

There are not a lot of francophones in Alberta. Personally, I come from France, which explains the quality of my French.

[*English*]

Maybe I will continue in English, because I have become more used to speaking in English for the last 20 years.

Because Glycomics Network is a pan-Canadian network, we work a lot with people from Quebec, too. Most of the universities in Quebec are part of our network. What we do here for retention is we stay in Canada. We're not staying in Quebec because we have these partnerships and collaborations. They may go after their studies to do a post-doctoral fellowship somewhere else in Canada in another province until they come back.

Mr. Stéphane Lauzon: Thank you.

The Chair: I'm so sorry. Perhaps, Mr. Lauzon, you might like a written answer there.

Mr. Stéphane Lauzon: No, that's okay.

The Chair: I want to say thank you to all our witnesses. It has been a very good discussion. We're grateful.

Monsieur Blanchette-Joncas and Mr. Cannings, I'm sorry about this round. We will try to get to you the next time.

We will briefly suspend, and we will come back for our third panel.

Thank you, one and all.

• (2030) _____ (Pause) _____

• (2035)

The Chair: Colleagues, we will call this meeting back to order.

Everyone's working hard. It's two hours in, and we're delighted to go into our third panel tonight.

We are pleased to welcome from ApplyBoard, Martin Basiri, chief executive officer and co-founder. From the Institute for Science, Society and Policy, we have Sarah Laframboise, student in biochemistry, University of Ottawa, and president of the Ottawa science policy network; and Paul Dufour, senior fellow. From Mitacs, we have John Hepburn, chief executive officer.

We're delighted to welcome you to this inaugural committee on this important study.

We will hear from each group for five minutes. At the four and a half minute mark, I will hold up a yellow card, which will let you know that there are 30 seconds to go.

With that, we will start with ApplyBoard for five minutes, please.

Welcome.

Mr. Martin Basiri (Chief Executive Officer and Co-Founder, ApplyBoard): Thank you, Madam Chair.

Thank you, committee members, for engaging on this important matter. It's very encouraging to see everyone talking about talent, how to attract the best talent and retain and develop it.

My name is Martin Basiri. I came to Canada from Iran in 2010 to study at the University of Waterloo for my master's in engineering. I loved it here, so I brought my brothers, Meti and Massi, here to also study as international students. A couple of years later, exactly seven years ago today, we started ApplyBoard, the largest online platform on planet Earth to help international students go to Canada, the United States, the U.K. and Australia.

ApplyBoard is one of the fastest-growing companies in Canada and in the world. So far, we have helped over 300,000 students from 130 countries. We have about 1,500 staff globally, with almost 1,000 of them here in Canada.

I would like to make a couple of very important remarks. As the CEO of a tech company and someone who has worked with tens of thousands of talented people who come to Canada and other countries, seeing the immigration policies of other countries, I think these remarks can bring another point of view to the committee.

As you know, right now in Canada and other western countries, the talent shortage is a very big problem. In Canada especially, we have over one million jobs open, but we don't have enough people for these jobs. A lot of companies' growth is capped because of the talent shortage. From coast to coast, you can go to any type of business, from the highest grade tech companies to grocery stores, and they will have a talent shortage. What's the solution for that?

I believe Canada has the best immigration system in the whole world. There are three to four programs that are very targeted to solve this talent shortage problem. One of them is visas: the study permit, the student visa, the work visa, the skilled worker permanent residency and the start-up visa. By the way, I got my permanent residency through a start-up visa and was able to stay here in Canada and, along with my brothers, build our company.

These programs, by policy, are the best in the whole world, but other countries are catching up, and they're trying to attract the best talent. These days talent can go to any country in the world. If you are the best developer, you can go to almost any country, from Singapore to the UAE, to France, Germany, the Netherlands, the U.K. and Sweden. It's no longer only countries like Canada or the United States that benefit from inbound immigration and attracting the best talent.

We need to continue to invest in our immigration, especially the systems and the policy, to make sure that it's the most seamless. If you are a top talent, if you are a top developer, if you are a good doctor or if you are a good nurse, you can literally go anywhere. Everywhere you go, they want you. We are in a global village right now, and you want to have the best and most seamless system.

Our immigration system right now, even though it has a very good policy, has a lot of things we need to continue to invest in. One of them is the predictability of time. If someone wants to come to Canada, and at the first moment, they are.... Basically, instead of waiting for months, they need to deal with two years of waiting. These people, even if they come to Canada, don't have the confidence that they can apply for their permanent residency after that, because they don't know how long it takes. They don't know how long it will take to bring their family, wife, husband or partner here. Speed and reliability in terms of predictability are very important.

The other thing is that we have a huge labour market. We have data. We know in real time exactly what job openings there are and which jobs are having a hard time being filled, though we don't steer our study permits and skilled workers in real time to these programs. We know, for example, what jobs they need filled in literally every single town in this country.

• (2040)

We need our skilled worker and study permits to be more aligned with the labour market, so that as we bring in the talent.... It's better for the students, because they can study what the market needs and

find jobs, rather than come here, study something and be hit with the reality that they should have studied something else.

The second piece is government funding—

The Chair: Mr. Basiri, I'm so sorry to interrupt. Thank you for sharing a bit of your story. I have to be fair to everyone. I know that colleagues will want to ask you questions.

Thank you.

Mr. Martin Basiri: Thank you.

The Chair: Now we will go to the Institute for Science, Society and Policy for five minutes, please.

[*Translation*]

Mr. Paul Dufour (Senior Fellow, Institute for Science, Society and Policy): Thank you, Madam Chair, members of the committee.

Thank you for inviting us this evening. My name is Paul Dufour.

[*English*]

I'm a senior fellow—emphasis on “senior”—with the Institute for Science, Society and Policy at the University of Ottawa. With me is Sarah Laframboise. She is associated with ISSP and is a Ph.D. student in biochemistry. She will have some quick remarks immediately after mine.

Before we make our short remarks, permit us to congratulate you, Madam Chair, for your considerable efforts in establishing with colleagues this new House of Commons Standing Committee on Science and Research. It is indeed a welcome addition to our parliamentary House.

My own career path has been an eclectic one in the science policy world, but suffice it to say that at the ISSP, the issue of talent training remains critical, whether it is here in Canada throughout our educational institutions, labour market, and federal labs, or around the globe.

Our institute, led by Dr. Monica Gattinger, is well known for the work at the intersection of science with policy and society. We've just released a strategic plan that builds on our research work over the past decade and outlines new directions. At the heart of this vision is providing students with the opportunities, skills and tools centred on the rapidly evolving knowledge space of science and research policy.

I've had the privilege of teaching at the institute and interacting with the next generation of talent in our science, society and policy world. This includes the Ottawa Science Policy Network but also working closely with such others as the student-led Science & Policy Exchange in Montreal, the Canadian Science Policy Centre and the Students on Ice team based in Quebec, not to mention the fabulous cohort of Mitacs science policy fellows. I'm also monitoring and mentoring the diverse and creative youth council that is advising the government's chief science adviser and her office on next-generation issues associated with science policy.

I can honestly say that all of these networks of talented students and researchers want to make a difference and, like my oldest granddaughter, who's about to start her university studies in pharmacy in Quebec, are passionate about learning so that they can apply their skills, entrepreneurship and knowledge to build a better society.

But they will need your support. They will also need a better understanding of how the public policy world works. I do hope you can help provide them with some of the necessary tools and guidance to make this happen with your recommendations in your report and with your own efforts in your own respective constituencies.

Who knows? Maybe a new pairing scheme of science students with members of Parliament can be contemplated here, or perhaps some of our emerging talents may even find their way onto this very committee in the future.

Thank you.

If I could, with the chair's permission, let me now turn this over to my colleague Sarah Laframboise, who will speak briefly about a very important survey result.

Sarah.

• (2045)

Ms. Sarah Laframboise (Student in Biochemistry, University of Ottawa, President of the Ottawa Science Policy Network, Institute for Science, Society and Policy): Thank you, Paul.

As mentioned, my name is Sarah Laframboise. I am a Ph.D. student in biochemistry at the University of Ottawa. I want to thank the members of the committee for having me today. I hope to provide a student perspective on graduate student life and funding.

While pursuing my Ph.D., I've been heavily involved in the science policy landscape, where I was fortunate to meet Paul from the ISSP. I am also a member of the leadership council for the institute. Last year I founded the Ottawa Science Policy Network, where I've been investigating graduate student funding in Canada.

As we heard in the committee already, there are significant challenges to being a graduate student in Canada. Only 33% of graduate students are actually supported directly through tri-council awards from one of the three federal granting agencies. The rest are supported indirectly through stipends provided from their supervisors' research grants or departments. This leaves students vulnerable to financial instability and creates a financial barrier of entry to pursue graduate degrees in science.

In December of last year, we launched a national graduate student finance survey. Over the last four months, I have met with graduate student associations across Canada. We've listened to countless stories of struggles, inequalities and crippling debt. Simply put, graduate students need more support.

It's important to note that these students are young adults, typically between the ages of 20 and 30, who care about things like housing, savings and starting a family. Currently, an average student in Canada makes \$19,000 at the masters level and \$21,000 at the Ph.D. level. After paying tuition and compulsory fees, this leaves a master's student with about \$10,000 and a Ph.D. student with only \$12,000 to live off of for the rest of the year. This is hardly enough to pay rent in most major cities in Canada, let alone other necessities like food, transportation or hydro.

These are all aspects of the survey that we wanted to investigate. The survey closed just a few weeks ago, with over 1,300 responses from graduate students across Canada. While the results are still preliminary, I'd like to share some key highlights with you.

We found that almost 45% of students—

The Chair: Ms. Laframboise, I am so sorry to do this just as you're giving us the results that—

Ms. Sarah Laframboise: It's okay.

The Chair: I have tremendous colleagues who are going to ask really good questions.

Monsieur Dufour and Ms. Laframboise, thank you both.

Now we will go to Mitacs for five minutes.

[*Translation*]

Dr. John Hepburn (Chief Executive Officer, Mitacs): Thank you, Madam Chair.

My name is John Hepburn and I am currently in Vancouver. Since it will soon be evening here, I will say good evening to everyone. Given that my French leaves a bit to be desired, I'm going to speak in English.

[*English*]

The chair of this committee knows us very well, but many of you probably don't know us. Somebody was telling me in a recent meeting that Mitacs is Canada's largest not-for-profit. That's close. We're somewhere behind World Vision Canada, but we're certainly many times larger than most of the not-for-profits, health charities and the like that support innovation in this country.

I'm not here to beg for money from the federal government. The federal government is very generously supporting us, with two long-term funding agreements for just under \$1 billion. That money is matched by all 10 provinces plus Yukon territory, plus industry support.

What do we do with all this money? We provide work-integrated learning opportunities based on innovation partnerships between post-secondary institutions, industry and not-for-profits, and also we have expanded to include municipalities and hospitals. Our goal and our stated purpose are to increase innovation and prosperity in this country, to increase social innovation, basically for the good of all Canadian.

Our activity is 20% in international programs. We bring very talented students, like Mr. Basiri, to Canada under our Globalink programs. Success for us is to have a senior undergraduate student arrive from someplace that's not Canada to spend a *stage* in a Canadian university before they make their decisions about graduate school. The goal is to convince them to come to a great Canadian university for their Ph.D., at which point they can get a Mitacs internship—we provide about 20,000 of these per year—to work on a joint research project between Canadian industry and a Canadian university. That student is then eligible for support through our e-accelerate program to start a company. We have examples of students who have done exactly that.

How do we retain students? The answer is that we first of all take advantage of our fabulous universities, which attract talent from around the world. We work with them to provide them with opportunities to work, between the university and industry. We do this at Mitacs. I won't say most, but almost half of the students we deal with have come to Canada to study Ph.D.s as international students. Of these students who get Mitacs internships, 75% remain in Canada after their degree—master's, Ph.D. or post-doc—to work and apply their talents to the benefit of Canadians, and obviously to their own benefit. This retention rate is 30% higher than the retention rate for students who come as international students and don't do a Mitacs internship.

We have an agreement with the Government of Manitoba that anybody who does a Mitacs internship is automatically registered in the provincial nominee program for fast track to permanent residency. We're talking with other provinces about doing the same thing.

However, what I'd like to say is that, in addition to supporting organizations like Mitacs, one thing the federal government can do—and I know that innovation is a big part of the current agenda—is support innovation in this country. Talented students are not going to come and stay in Canada unless they have great jobs to go to post-graduation, unless they can start their own companies, like Mr. Basiri, or unless they can work for existing companies. That's why students go to Stanford. Let's not fool ourselves: Stanford is a great university, but they go there because they know they are going to get a fantastic job when they graduate. That's critical.

One way the government can do this, and I think I'm running out of time.... I was just in Edmonton, Alberta, for an announcement of a partnership between us and AltaML, which is an artificial intelligence company, and the Government of Alberta, which is going to

establish something called GovLab.AI, actually using a Canadian company to solve government problems using machine learning.

If they are successful, these problem-solving solutions, which are intended—their first project will be predicting wildfires, for example, something we care about a lot in British Columbia.... They are also going to work with health data to provide more efficient health care for Albertans. If they develop these solutions, and they will, because AltaML is a very successful, rapidly growing company that we've been working with for years—well, they're not that old, it's been for four years—they can commercialize these products. They can build their company and, using the government procurement process, they can become a successful company which will then employ loads of students and attract more students.

● (2050)

Thank you very much.

The Chair: Thank you, Mr. Hepburn. We appreciate it.

You've all given the committee so much to think about. They're eager to get started. You have a really interested committee.

With that, we will go for our six-minute round, and we will begin with Mr. Williams.

Mr. Ryan Williams: Thank you very much, Madam Chair.

I'm going to start with Mr. Basiri.

You were talking about a few recommendations. I'd like to get you to continue that. Specifically, what specific recommendations can you make for Canada to be the best at talent and immigration attraction for the future?

Mr. Martin Basiri: Yes, absolutely. I tried to cover it very fast so there would be time for others as well.

The second recommendation I wanted to cover is on procurement, as that is very important. If you ask all the CEOs, the majority of them will tell you that a dollar of revenue is far better for a company than a dollar of grants or funding. If government buys the products we create, even the ones they fund themselves.... Sometimes, or the majority of the time, they don't buy them. If government buys the products that companies in Canada create, we can create big companies, and innovation in Canada would then grow much faster.

Government is the biggest spender in Canada, but when it comes to procurement, the majority of those dollars, for example, in technology, in software technology, are going to big companies in the United States, because they're just being safer. But isn't innovation all about risk? If we have companies in Canada that are innovating, instead of a free grant I would just buy the product from them. Yes, it has some risks, but it creates very sustainable innovation.

On the third one, you asked about our immigration. I think we need to solve the technology aspect of it. Instead of government trying to solve everything themselves, there are so many software technologies in the market, in the business world, that can solve a lot of these problems that we're dealing with in our immigration system. I don't know how other ministries are solving their technology problems, but the whole Canadian immigration system can be built very fast if there is a will for using the current technologies in the market.

I would recommend this, and then, connect it with a good AIML that gets the labour data and gives a very good alignment between our immigration and our market. For example, right now, our immigration—

• (2055)

Mr. Ryan Williams: Mr. Basiri, I'm sorry. I'm short of time, so I'm going to stop you there, but thank you very much. If you, and all witnesses, have anything else, please submit it in writing to the committee, and then we can get the rest of your data.

Mr. Hepburn, you've talked about the shortages of labour. Even back in 2020, certainly, in an interview, you talked about Canada shifting to a knowledge-based economy and the shortage of labour. Do we find that this labour shortage is across the board and knowledge based? Is that something you're looking to solve through Mitacs right now? What kinds of labour shortages are you seeing?

Dr. John Hepburn: We're seeing a lot of labour shortages with all the companies we're dealing with. The labour shortages are actually pretty much across the board. Even in skilled trades there's a labour shortage, but certainly, at the high end in the tech economy and the knowledge economy, companies are crying out for talent. They're competing with the Americans. An artificial intelligence graduate can work for an American company with a starting salary up to and including \$300,000 a year, so there's a real arms race on for talent.

Our goal is to keep the talent in Canada. We have unbelievably good universities, so the talent is here. People like Mr. Basiri come to Canada because of our great universities. Mitacs' job is to keep them here, and we've been working with companies like IQBit, Xanadu and AltaML to provide them with a—

Mr. Ryan Williams: Thank you, Mr. Hepburn.

Through the chair, you talked about a program you have where 75% of your scholarships through the program stay in Canada. We had a witness in another study—one of the reps from the University of Waterloo—who said that we lose 75% of our software engineers to the U.S. Through your program, what are we doing, just like that scholarship program, to keep talent? What can we do better to keep that talent in Canada?

Dr. John Hepburn: Connect them to industry before they graduate. It's as simple as that. The reason we're so successful keeping students is that they come to Canada with no Canadian experience, no Canadian connections, and they enter into a strong academic program. If they graduate without building the industry connections in Canada, why not go to the United States? Why not return back to the country they come from? If they get the industry experience and the industry connections, then they'll be offered a job before they

graduate and they'll stay. It's as simple as that. That's why we're successful.

Mr. Ryan Williams: Mr. Hepburn, thank you very much.

One thing that you mentioned, which I think you were getting close to talking about, was an incubator system, and maybe Mr. Basiri was talking about that as well. If we have immigrants who want to come to Canada, who might have an idea. The incubator might be something whereby we bring those entrepreneurs here to start that.

Is starting an international incubator something that you've looked at through your programs at Mitacs? I guess that's how we'd classify it.

Dr. John Hepburn: It is. We have agreements with most of the university-based incubators across the country. We also have agreements with international incubators. We have a program to send entrepreneurs abroad to incubators that we have agreements with so they can develop international markets, but we work with all the Canadian incubators. We have a program to support start-up companies once they actually become companies and we can actually support them with Mitacs' incubators.

Mr. Ryan Williams: Thank you very much.

If you have any examples of those, could you please submit them in writing to the committee so we can put them into our study?

Thank you so much.

Dr. John Hepburn: Okay.

The Chair: Thank you, Mr. Williams. You're right on time.

We will now go to Ms. Diab for six minutes.

Ms. Lena Metlege Diab: Thank you very much, Madam Chair.

Thank you to all our witnesses for coming tonight. We very much appreciate that.

Through you, Madam Chair, to Mr. Hepburn of Mitacs, when I saw that your company was on the list, I knew I had worked with Mitacs at one point. I looked at it, and in the fall of 2020, when I was a provincial minister in Nova Scotia, we partnered—I guess you could call it—with Mitacs and invested \$1 million to provide up to 250 internships for university and college students to work with local business. I remember at the time hearing stories regarding the talent development and entrepreneurship of former Mitacs interns. I know Dalhousie, for example, partners quite a bit with Mitacs.

Can you explain to us the value of these partnerships and how they support the development of student talent?

• (2100)

Dr. John Hepburn: Thank you very much. I was just in Halifax last week talking to your former colleagues.

We in fact delivered 600 internships in Nova Scotia, so we not only spent the million dollars the Nova Scotia government gave us but we supplemented that with the money provided generously by the federal government.

The internships in Nova Scotia are critical for keeping the talent that places like Dalhousie and Acadia and other universities in Nova Scotia attract to the province. We were at a celebration of start-up companies, young entrepreneurs who'd been aided by both our programs and the Lab2Market program out of Dalhousie University, which trains young entrepreneurs. They've established companies in Nova Scotia and they're going on to success.

I have many, many success stories of companies we have supported. Graphite Innovation and Technologies, for example, develops coating for ship's hulls that prevents biofouling and thus reduces fuel costs by a large percentage. It's good for the environment and good for shipping costs.

Ms. Lena Metlege Diab: How would you say talent retention for urban institutions like those in Halifax differ from those in smaller schools and rural settings that you've worked with?

Dr. John Hepburn: Obviously, the urban schools have more students and more research, but we work with other, smaller institutions in Nova Scotia, for example, and we have worked with the fishing industry in Nova Scotia. We work across the country, from St. John's to Victoria. We have business development people in places like Chicoutimi, Trois-Rivières and Thunder Bay.

We work very hard with smaller institutions, but obviously the larger institutions, the urban centres, are where most of the jobs are. We're very proud of our record on smaller institutions.

Ms. Lena Metlege Diab: How would you say Canada compares to our G7 and OECD peers, in your opinion, in the retaining of those talents?

Dr. John Hepburn: Compared to the giant vacuum cleaner south of the border, not so well. Clearly, talent is attracted to the large American centres. We're not bad, but our innovation economy is weak. We need a stronger innovation economy if we're going to have productivity that doesn't constantly lag American productivity growth.

We could do better. Let's put it that way.

Ms. Lena Metlege Diab: What other recommendations do you have for us? What kinds of incentives or other government programs do you think we don't have, or that we do have and can do better?

Dr. John Hepburn: Getting back to what Mr. Basiri said, I think, take advantage of government procurement to support growing Canadian companies, and of investment funds, which I know the government has established, and the new innovation organization that has yet to be finalized and things like that—more direct

support for growing companies. The Americans do it through procurement and direct support for growing enterprises.

Ms. Lena Metlege Diab: How can our businesses further help leverage the talent from the educational institutions? We've heard a lot and we know that we have wonderful universities and colleges—I would say in Nova Scotia, but across the country. How can we partner more and seek help from businesses and non-academia?

We've heard a lot that to have talent you need good-paying jobs, and in order to do that, you need the partnerships and people to do networking and so on. What else can we do?

• (2105)

Dr. John Hepburn: I think industry should work harder on partnering with academic institutions and on taking advantage of the talent that's there. Most students who graduate with master's degrees and Ph.D.s in fact go on to work in industry. They don't go on to academia. They become like Mr. Basiri and establish companies.

I think industry needs to invest more in innovation and needs to take more risks, whatever supports and incentives government can give to do that, but support the companies that are established through procurement and through direct support. Industry needs to work harder in partnering with universities and vice versa.

The Chair: Thank you very much.

Thank you, Ms. Diab.

Again, thank you to all our witnesses. We are really grateful.

[*Translation*]

I am now going to give Mr. Blanchette-Joncas the floor for six minutes.

Mr. Maxime Blanchette-Joncas: Thank you, Madam Chair.

I'd like to welcome the witnesses who are joining us this evening for the third hour devoted to our study.

My questions are for Ms. Laframboise.

Ms. Laframboise, this morning I met with representatives of the University of Toronto who are counterparts of yourself at the Institute for Science, Society and Policy. As was the case last week, we discussed, in connection with our study, the funding for granting agencies and councils, and, more specifically, increasing the value of graduate and postdoctoral scholarships.

I would like to hear your comments about that. The figures we have tell a lot. They show that for some students, the scholarships are inadequate to meet their needs, so they have to find other resources to survive, while continuing their studies.

[English]

Ms. Sarah Laframboise: I'm sorry. I don't think I heard a question with that one, but I couldn't agree more. I think it was just part of the translation, but—

[Translation]

Mr. Maxime Blanchette-Joncas: I'll repeat it, Ms. Laframboise.

Do you think that funding for graduate and postdoctoral studies is adequate and sufficient at present?

[English]

Ms. Sarah Laframboise: Thank you for repeating that and thank you for the question.

No, I don't think they're sufficient, and I think most students across Canada would agree with me on that. In fact, research that Science & Policy Exchange and other groups have done has shown that students want it to be increased and that it isn't covering the expenses they have.

I have a lot of data from our survey and others that show it isn't enough.

[Translation]

Mr. Maxime Blanchette-Joncas: Could you provide us with some data about what you believe is urgent?

What changes could the federal government make to ensure that institutions attract and retain the best talent?

[English]

Ms. Sarah Laframboise: It's hard to not say that funding is a big part of this. Students are overall very stressed and anxious about their finances. When we're talking about retention of students in general, a big part is student debt once they graduate. We're seeing about 40% to 45% of Ph.D.s graduating with student debt, and that's valued at about \$20,000. When we're thinking of them going on to post-docs, as you were mentioning, this is not enough to even pay their student loan payments—along with their expenses. This becomes very troubling for students when we're thinking of retaining talent.

I have to comment, as well, on marginalized groups and under-represented groups. This disproportionately affects these groups, who maybe don't have the choice to take on these lower-income roles. They maybe have dependents or families who also would be funded through these sources.

These are big topics of concern for students.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you. I'm going to continue with Mr. Dufour.

Mr. Dufour, we see that the number of doctorates granted in Canada is falling, as compared to the other member countries of the OECD, the Organization for Economic Cooperation and Development.

Do you think there are factors or reasons that explain that?

Mr. Paul Dufour: I heard one of the witnesses in the previous group say that the problem isn't that there is a shortage of doctoral

or postdoctoral students; there is actually an oversupply, and they can't find jobs in their specialities. A lot of them get discouraged and leave the system, if I can put it that way, and do something else. They stop using all the knowledge they have acquired and stop putting it to work for the private sector, in various sectors of the economy, or for the environment, for example.

So yes, there is a loss of this knowledge. We need incentives for these people, for them to see we support them.

● (2110)

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Dufour.

In more concrete terms, can you give us some examples of incentives that would allow doctoral students to find a job more efficiently and simply that would enable them to continue their studies to the doctorate level?

Mr. Paul Dufour: We have been talking about this recommendation for a long time. We have so many research incentive programs, but we don't have a platform where people can find the information they need in order to take advantage of them and fund their work. We have to create some kind of platform or portal for finding this information everywhere in Canada.

The federal government offers numerous incentive programs of this type, but you have to be able to find them. As well, the provinces also have their own scholarships and funding programs.

So I think the solution consists of putting it all together. Our colleague talked about using artificial intelligence to do that. It would be worthwhile to use that type of platform to enable these researchers to find funding.

The Chair: I'm sorry, Mr. Dufour, but your time is up.

[English]

I'm afraid I have to stop you there.

Thank you, Monsieur Blanchette-Joncas.

Now we will go to Mr. Cannings for six minutes, please.

Mr. Richard Cannings: Thanks again to the witnesses.

I'd like to ask Mr. Basiri some questions.

You more or less opened your comments by saying, in terms of attracting top talent to Canada and attracting international students especially, that the four programs Canada has to do that, the visas and permits, are among the best in the world. As MPs we are all, I would say, beset daily by examples where that hasn't worked for people and people have found great delays in getting various types of visas, not just student visas.

I want to give you an opportunity to expand on that and talk about how the execution of those programs can be improved for Canada, in terms of making the process more efficient, getting students into positions they are fit for, etc. I'll give you that time to expand on that.

Mr. Martin Basiri: Thank you so much for the question.

The policies behind the programs are very good, but other countries will soon catch up. Right now delays in the process are not good. Things take a long time. For example, for the majority of places on planet Earth it takes six months to get a permit to study in Canada. For you to come for the fall semester, which starts in September, you should already have applied by April 1. However, many times universities issue acceptance offers in May or June.

The system doesn't work. You can't get your acceptance in May and then have your visa take seven months. Even for a country like India with SDS, which is supposed to be a fast-tracking system, it takes about four months. It kind of leaves a bad taste in people's mouths if this is the first interaction and it is so hard. They wonder what the next ones will be like and how they can trust that in two years the system will work. Of course during COVID it was a hard time, so we have to be fair to the system as well.

The system can be very good. Purely with technology we can fix it. We have some recommendations we talked about. This is not the hardest problem. Right now humans send rockets to the moon and to Mars. Getting a good piece of software is not a hard problem to solve. It's just a question of will. If the government has the will to solve it, it's very fixable. I don't think it would take more than a year to fix the whole thing and for it to be the best in class.

Also it has to be aligned with the labour market. Right now there is a need for 100,000 health care workers, but the study permit is doing nothing about that. It's kind of disconnected. These are acting independently. If these two worked together, it would be a good system and an AI engine could easily solve this and Canada could just flourish.

We have a lot of land. There's a good health care system. People are nice. Canadians are welcoming to almost everyone, no matter what race or whatever nationality they are. We have a huge shot for the future. I bet the future belongs to Canada if it can really invest in its immigration service.

• (2115)

Mr. Richard Cannings: Thank you.

I'd like to turn to Ms. Laframboise or Mr. Dufour and talk about science and policy.

You mentioned Monica Gattinger. I have interacted with her and, I think it was, her Positive Energy program. I attended a lot of those events. I've been involved peripherally with a group called Liber Ero. I don't know if you've heard of Liber Ero. It's a program funded through a private foundation to connect early career environmental scientists with policy-makers, with decision-makers and with the media to really give them a good grounding in how to get their results out into society.

I'm wondering if you can comment on that in Canada and on what the government could be doing to help us once we have all of these excellent scientists working and on how we can make sure we take advantage of their findings and their research.

[*Translation*]

Mr. Paul Dufour: Thank you for that question.

[*English*]

Can I take this for a few seconds, Sarah?

Thank you very much for that question. Of course it's an issue that underlies much of what our institute does. There are a number of programs out there. You mentioned Liber Ero. I'm familiar with that and with what we're trying to do with ISSP through our various workshops and events around this interface between the science side and policy.

I did mention in my remarks that Mitacs, Mr. Hepburn's organization, has a fantastic program that's funded through various federal departments and agencies in part to have senior top-level grad students join a department or an agency in the federal government, as well as in some provincial governments, as an experiment, to provide their skill sets to the public service in those various organizations. It goes both ways, by the way. They're learning, but the public service is also learning about how science and research are conducted.

The Chair: Mr. Dufour, I'm sorry to do this. The worst part of this is interrupting people.

Mr. Cannings, thank you for the questions.

We will now go to the five-minute rounds.

We will begin with Mr. Tochor.

Mr. Corey Tochor: Thank you kindly, Madam Chair.

My question is for John Hepburn from Mitacs.

We've all had a challenging two years with the pandemic. I can't imagine it was easy bringing in international students. How have you handled all the travel regulations and troubles brought by the last two or three years?

Dr. John Hepburn: What a troubling question.

In the first year of the pandemic, we had 800 students scheduled to arrive in Canada. We had to disappoint them all, because we had no way of bringing them in, obviously. In the second year of the pandemic, we had over a thousand students who we knew were likely unable to come to Canada. We arranged virtual internships for them, so they were still able to work with Canadian researchers, but they stayed in their home countries where they were safe. There was no travel.

This year, because of pent-up demand or whatever, we have 2,100 students arriving in the country as I speak. We have 74 Ukrainian students trying to get to Canada—fingers crossed—and we are doing our best to make sure they can come here. We have students coming from around the world. Most of them will arrive.

The past two years were not much fun.

• (2120)

Mr. Corey Tochor: I appreciate that, and I appreciate learning a bit more about your organization, because I think the marrying of entrepreneurship, academia and research is important and should continue.

You talked about partnering with different companies. What are the three largest companies you're partnering with for these placements?

Dr. John Hepburn: We partner with very large companies. We partner with large oil companies, and with Telus, Bell and IBM—the big companies. Most of the companies we partner with, some 80%, are actually small and medium-sized enterprises with fewer than 500 employees. That's where the growth is in the economy. That's where a lot of the innovation is. We'll partner with anybody. We'll partner with start-up companies.

So, yes, we partner with the major companies, but, as I said, more than 80% of the companies we partner with are small and medium-sized enterprises.

Mr. Corey Tochor: You talked a little about funding. I believe you were saying that it was a billion-dollar funding. How many years was that over?

Dr. John Hepburn: It was over five years.

Mr. Corey Tochor: When did that start?

Dr. John Hepburn: We've been funded by the federal government since—I'm going to get this wrong and get corrected by the chair—2012. We had short-term funding agreements with ISED. We've been growing like mad. We double in size every three years.

The most recent funding agreement started with the 2021 budget. It's a five-year funding agreement, plus a second funding agreement that starts this year for the national quantum effort. As I said, we also get support from all 10 provinces and Yukon territory. Forty per cent of our money comes from industry.

Mr. Corey Tochor: May I ask how you got funding in 2021 if, as you said, you couldn't bring anyone in? You received double the funding, if I heard you right.

Dr. John Hepburn: Yes, 80% of our programs are for students who are already in Canada.

Mr. Corey Tochor: They are already in Canada.

Dr. John Hepburn: Yes. Many arrived in Canada as international students, but 80%.... In our current funding agreement, 70% of our internships have to be partnerships between Canadian universities and Canadian industry.

Mr. Corey Tochor: Across Canada, we heard about Nova Scotia, but how has your experience been in Quebec? How has your experience been dealing with the Quebec government on this?

Dr. John Hepburn: It's been excellent.

About 90 of our 400 employees are in Quebec, where we have a large business development team. As I said, we have business development officers in Montreal, mostly, but they're also in eastern Quebec and Chicoutimi. We're spread all over the country. The Quebec government has been very generous with us. We're quite happy with our relationship with the Quebec government.

Mr. Corey Tochor: That's fabulous.

Speaking in general terms, are there underserved regions that you are targeting in order to increase your presence there? Are there regions in Canada where it's difficult to find either funding partners or students willing to attend those universities?

Dr. John Hepburn: Getting back to the previous question about working outside the major urban areas, we put a lot of effort into working with colleges, which is a new area for us, as well as northern and rural communities.

Yes, it's a challenge to find students and match them, but we've been working hard on that. We have several indigenous business development people. It's not as productive for our business as working in Montreal, but it's an important effort for us, which is why we now have a business development person in Whitehorse working on that. We've been talking with Denendeh Development Corporation.

The Chair: Thank you.

Mr. Corey Tochor: Great.

With the last question, could we get it in writing?

The Chair: I'm sorry.

Mr. Tochor, you are always a gentleman. Would you like to ask him to submit it in writing?

Mr. Corey Tochor: Is there one region of the globe that most of your students come from, or what are the largest two areas of the world that we receive students from?

• (2125)

The Chair: In writing.

Mr. Corey Tochor: In writing.

Thank you again for your presentation tonight, and your award, which sounds amazing.

The Chair: Thank you, Mr. Tochor.

Now we will go to Ms. Bradford for five minutes, please.

Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.): Thank you so much, and thanks to all of our excellent witnesses.

I'm particularly happy to see Martin Basiri here with us tonight.

It's good to see you again, Martin, and congratulations on that recent well-deserved win of the Governor General's innovation award. It's so well deserved.

I have a number of questions that I want to ask you, because I think you have some important things that we want to get on the record.

In your experience with connecting students to institutions, how much does program selection play in attracting and retaining academic talent in Canada, and how are organizations like yours assisting in appropriate program selection?

Mr. Martin Basiri: Program selection is everything, because in different countries there are different job markets. For example, if in the market civil engineering is very hot, maybe in Canada it's not as hot, or in that region it's not hot. Unfortunately, it's not being done properly by the universities, because it's not connected to the labour market.

The good news is that companies like us are trying to fill that gap, trying to send students to the programs that are best suited for them.

The other problem is that a lot of the programs that universities are teaching are not necessarily as relevant to the labour market, or they are very delayed. We need a faster time for universities and colleges, especially colleges, to develop programs. As of now, on average it takes them three years to develop a program. Industry is shifting very fast, so the time for them to get the approval for a new program has to be very short. It has to be under six months for a new technology, for example, blockchain. In three years, the whole industry will change, so if a university takes three years to develop a program, in three years it could be completely outdated.

Ms. Valerie Bradford: It needs to be nimble.

Do you know what proportion of academic talent who use your service decide to remain in Canada?

Mr. Martin Basiri: With the data for 2019 that we have, 56% of international students stay here afterwards, but then when you survey them, over 75% said they would like to have stayed here. The difference is probably the ones who either can't stay or they found opportunities in another country.

A lot of people go to the United States, especially in STEM, unfortunately. If you are a good computer science student or engineering student, you will find they are more attractive. It's very easy, even with hard countries like the Middle East or India, to get a U.S. visa while you are in Canada versus directly going to the U.S. We have to do a better job of retaining them. It's not only about attracting them.

Ms. Valerie Bradford: Is there anything more that could be done to draw more international students here?

Mr. Martin Basiri: I believe if we can invest a little bit in the—I go back to the software that Immigration uses. One big problem is that it's very unpredictable. For example, with the students who got visas last year, right now those students are not getting visas, or vice versa. That is sending a very bad signal to the student market. For example, IIT in India, the university that we want every single one of those students to be here...if Canada is unpredictable and your friends with this situation last year got a visa, there's no guarantee that you will get a visa. It's not only that, but the visa rates can go completely up and down.

We need to invest better in predictability and have a longer-term strategy rather than just a very short-term strategy. This way we can build a reputation. We can say that this is the requirement for entering and it's the same every year, so our embassies and counsellors around the world can market those as the requirement for entry.

I'm not saying to lower the requirement. I am saying, stay consistent. It can't be like a stock market that goes up and down. It has to be more consistent. We want talent to come to our country, and good talent wants consistency because they want to make a plan.

In our tech companies, if you are a good software developer and you decide to immigrate, of course you want to have a plan. You want to buy a home. You want to have kids. You can't say that this year it takes six months and next year it takes two years. You need predictability and speed.

● (2130)

Ms. Valerie Bradford: I just got the wave to close it out. I'm going to ask you to submit the answer to this question to the clerk. What are some of the main reasons that international students come to study in Canada? Someone has also asked me if Ms. Laframboise could send an answer to the responses that she referenced about the grad responses, but didn't get to because of time limitations.

The Chair: Thank you very much, Ms. Bradford.

Colleagues, this comes to the end of the panel.

You have brought us such interesting information, and you can see the engagement from the committee here. We say thank you for your time and expertise.

We will adjourn the meeting. Thank you to all.

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