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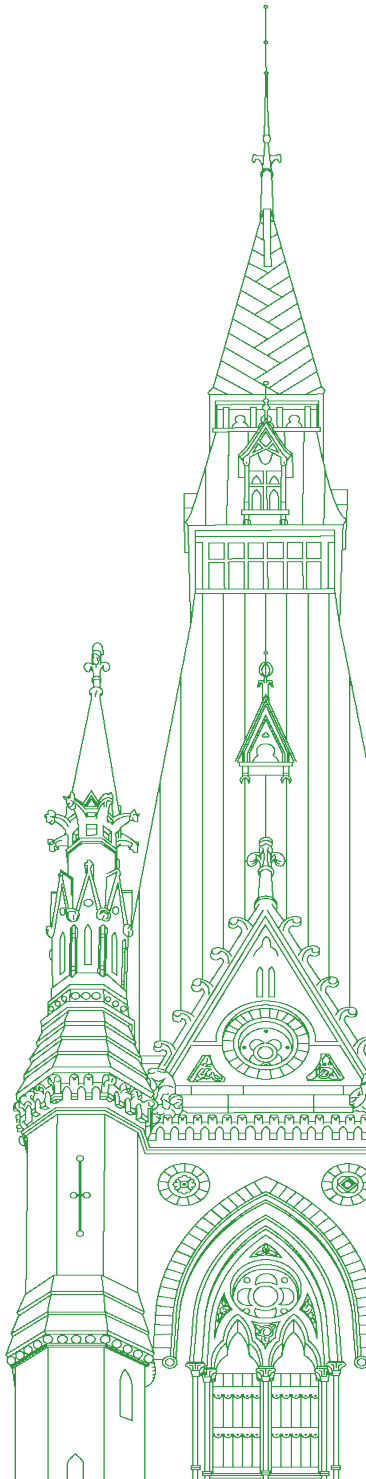

Chair: The Honourable Kirsty Duncan

Standing Committee on Science and Research

Thursday, April 28, 2022

● (1830)

[*English*]

The Chair (Hon. Kirsty Duncan (Etobicoke North, Lib.)): Good evening, everyone.

I call this meeting to order.

[*Translation*]

Welcome to the tenth[x] meeting of the Standing Committee on Science and Research.

[*English*]

I'll just go over a few rules.

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 the meeting in person must wear a mask, except for members who are at their place during proceedings. Please contact our excellent clerk of the committee 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*]

Interpretation services are available for this meeting. You may speak in the official language of your choice. At the bottom of your screen you may choose to hear the 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*]

When you are not speaking, your microphone should be muted. The committee clerk and I will maintain a speaking list for all members.

I'd like to welcome our excellent witnesses tonight. This is exciting. It's the second study of this inaugural committee. The study concerns top talent, research and innovation.

For this first panel we first have Thomas Bell, professor, Imperial College London. From the Quebec Student Union, we have Jonathan Desroches, president; and from the University of Toronto, Munk School of Global Affairs, we have David Wolfe, professor and co-director, innovation policy lab. We welcome you. We will be having five-minute statements from each of you.

With that, we will start with Professor Bell, for five minutes. The floor is yours.

Dr. Thomas Bell (Professor, Imperial College London, As an Individual): Thank you very much, Madam Speaker, for this opportunity to speak with you today in my personal capacity as a Canadian and as an academic living abroad.

Although I've lived outside of Canada for some years, I have a strong connection to Canada. I visit frequently and have much experience with the Canadian grant funding system, having sat on the NSERC discovery grant committee for ecology and evolution for three years, a committee that I then co-chaired for one year. In these roles, I've read and evaluated the research programs for a large portion of ecology and evolution research in the country, so I'm well aware of the quality of Canadian science.

I wanted to tell you a little bit about myself. I grew up in Montreal and I went to McGill for my bachelor's in biology. My graduate degrees were both funded through scholarships from NSERC, first as a master's student at the University of British Columbia, and then overseas at the University of Oxford in England for my doctoral degree. I was quickly hired as a lecturer in Oxford for several years, and I was then awarded a Royal Society research fellowship, which funded my salary for eight years, allowing me to focus exclusively on my research. During that time, I moved to Imperial College and was made full professor two years ago. I've recently been awarded a large grant to develop and direct a new research centre, which will occupy me for at least the next 10 years.

I've described my background because I believe it's relevant to the committee's work, and I understand it's the reason why you've asked me here today. Having been lured out of Canada by the prospects of new opportunities, I've become embedded in the system over here. As for any career, and as I'm sure many on the committee can appreciate, it becomes more difficult to move over time. Partly this is because you learn how the system works, and partly because personal situations change; you start a family, you buy a house, and so forth, all of which anchor you in one location. I believe it's important for the committee to consider what motivates scientists to move or to stay.

How do you retain and attract the best scientists to Canada? I can speak from my personal experience.

First, top scientists are attracted by top science, and the rest, I believe, is window dressing. This is not a novel opinion and has been true since the start of the university system.

While there is an understandable desire for governments to focus on technological innovation rather than discovery science, the one is not possible without the other. The best scientists will not come to Canada and will not stay in Canada if they feel that their science will suffer. Inspiration and innovation almost always come from being in environments with other top scientists in complementary fields. This can create a positive feedback loop where strength builds on strength, and the best scientists come because the best scientists are already there.

To a large extent, the question of how to attract and retain top scientists should therefore be rooted in how science innovation can be fostered in Canada right now. I think if you build it, then they will come.

The second point I want to make is that attracting scientists and retaining scientists are two separate issues. There are significant academic costs in moving labs. It's hugely disruptive. Packing up and reassembling a lab takes time, often resulting in months of inactivity. Moving to a new university means relearning all of the internal systems and ways of doing things, and moving countries is doubly disruptive. Scientists moving to Canada for the first time need to learn how funding and hiring works and how to attract students, and they need to build their collaboration networks from scratch. Many will have young families and would need to learn how the school system works. The cost of moving is therefore very high for a scientist, so attracting the top scientists to Canada is more difficult than retaining scientists. If you want to attract the top scientists from outside the country, these significant additional costs should be considered.

My third point is that junior and senior scientists have different motivations. It often only takes a nudge in one direction early in the career to change an academic trajectory. Later career researchers—"proven talent"—are lower risk, but more costly to move and often have a shorter scientific career ahead of them. I believe the committee should carefully consider these divergent motivations when they make recommendations about how to retain scientists at different career stages.

Finally, I think its worth mentioning that you're competing for the top scientists in a global marketplace. To attract and retain the top scientists, you need to understand what financial and scientific rewards will draw them to Canada, or they'll go elsewhere. In Britain and Europe, the funding opportunities are much greater and more varied than in Canada, and the concentration of universities is also much greater and more varied. The system over here is far from perfect, but from that perspective Canada starts at a disadvantage.

● (1835)

Thank you very much.

The Chair: Thank you so much, Professor Bell, and congratulations on the recent professorship. We appreciate the hour you're speaking to us tonight.

Before we go to our second one, I will give you a warning with this yellow card at four and a half minutes, so that you know there are 30 seconds to go.

Thank you so much.

We will now go to President Desroches for five minutes, please.

[*Translation*]

Mr. Jonathan Desroches (President, Quebec Student Union): Thank you, Madam Chair.

My name is Jonathan Desroches, and I am the president of the Quebec Student Union, the UEQ.

The UEQ represents 91,000 university students in Quebec and, at the federal level, works in partnership with the Canadian Alliance of Student Associations, or CASA. Together UEQ and CASA represent more than 365,000 undergraduate and graduate students across the country.

I would first like to thank the committee for its invitation to appear and present students' views on research issues to the federal government.

The work you are doing is important and will ultimately shed light on the underfunding of the student scholarship programs of the three federal granting councils: the Social Sciences and Humanities Research Council, or SSHRC, the Natural Sciences and Engineering Research Council, NSERC, and the Canadian Institutes of Health Research, or CIHR. This underfunding has major consequences for the entire research ecosystem in Canada. Moreover, all the witnesses with whom you have addressed this matter in recent months have acknowledged that the student programs of the federal granting councils are not adequately funded.

The following figures will help explain the problem. In the past 10 years, NSERC's budget allocation for academic scholarships has declined from 13% to 8% of total funding. For SSHRC, that share was 17% 10 years ago and is now 13%. The figure for CIHR has fallen from 7% to 5% over the same period. However, it is virtually impossible to access CIHR's numbers and therefore difficult to form a comprehensive picture of the situation.

The UEQ estimates that a $120 million investment would be necessary to restore the percentage of funding granted to scholarship programs to its level of 10 years ago. That funding must be used to address one of the concerns raised in the 2017 Naylor report: longer scholarship terms. Master's scholarships are currently granted for one year and doctoral awards for three years, whereas a master's degree generally takes at least two years to complete and a doctorate four.

The result is thus that our students' incomes are cut off at their source in the final years of their postgraduate programs. This extends the time it takes to complete their studies as they are then forced to find alternative sources of income to support themselves as they complete their doctorates. It can even make it impossible to complete a degree.

The holder of the Canada Research Chair on the Transformations of Scholarly Communication at the Université de Montréal has shown that students who receive funding are more likely to earn a degree than those who do not. This is obviously not surprising.

For scholarships genuinely to enable students to focus on their master's or doctoral degrees, the values of those scholarships must be adequate. As one witness told this committee a few weeks ago, funding amounts for scholarships have not changed in two decades. I am referring, for example, to NSERC's $21,000 and SSHRC's $20,000 scholarships. Scholarship amounts must be high enough to enable students to focus on their studies and research. Indexing those scholarships would obviously be a good way to prevent them from losing their value in the long term.

If we are to increase the number of students who choose to undertake a doctorate, to conduct high-level research and to participate, now or later, in innovative work in all research sectors and fields in Canada, the number of scholarships offered by the student programs of the federal granting councils will have to increase. Underfunding prevents us from taking advantage of the talent pool we already have. Excellent candidates are many. They must be supported.

As in anything else, funding is obviously the central problem, but there is another factor that requires no investment and that can improve the situation. Unlike the situation in Quebec, there is no student representation on the boards of the federal granting councils. Students are represented on the boards of all the institutions of the Fonds de recherche du Québec, the provincial counterpart of the federal granting councils. Students have no voice on the federal granting councils, and we suspect that is one of the reasons why students' problems are overlooked.

To improve the situation, we encourage you to draw on the model established by Quebec's chief scientist, Rémi Quirion, and amend the enabling statutes of the three federal granting councils to add student representation to their boards.

In conclusion, I would note that master's and doctoral degrees are the gateway to careers in research and innovation. Graduate students are not merely the researchers of tomorrow; they are also today's researchers because they are already making considerable contributions to scientific publications and developing knowledge as they study. They must be provided with the resources to continue those efforts.

Thank you. I will be pleased to speak with you at greater length.

● (1840)

The Chair: Thank you, Dr. Desroches.

[*English*]

Now we will go to the University of Toronto, the Munk School of Global Affairs.

Professor David Wolfe, the floor is yours for five minutes.

Professor David Wolfe (Professor of Political Science, and Co-Director, Innovation Policy Lab, Munk School of Global Affairs, University of Toronto): Thank you, Madam Chair. I want to emphasize that I'm speaking as a professor at the University of Toronto and a co-director of the innovation policy lab. I don't represent the Munk School, and I'm certainly not authorized to speak for the University of Toronto as a whole.

I've been studying innovation in Canada for the past 40 years. In 2018, I was a member of the expert panel that prepared the report “Competing in a Global Innovation Economy” for the Council of Canadian Academies.. I want to expand on the mandate I was given by the committee a little bit, to address the innovation aspect of your title.

As the recent federal budget acknowledged, Canada is currently experiencing a crisis of business innovation. There's a growing recognition that in order to succeed, we need to invest more in growth-oriented, small and medium-sized companies that have high export innovation potential. These firms are often labelled scale-up firms.

Research that we've undertaken at the innovation policy lab, using the most comprehensive review of StatsCan microdata, finds that these firms have a disproportionate effect on job creation and revenue generation. Compared to non-scale-ups, they have a much greater impact on revenue generation; they innovate more and they're more productive; and they often export more, which is critical for Canada.

The critical challenge for us is to identify the policy supports that scale-ups need to maintain their success and continue to export and grow. We've also conducted extensive interviews with technology scale-up firms in Canada to identify what they need. The research results are clear and unambiguous: Scale-ups need access to capital, access to talent and access to markets in order to grow. The kinds of government policies they're looking for are the ones that will provide them with these three critical ingredients to support their growth.

None is more challenging than the need for later-stage growth capital. There are simply not enough programs in Canada to help scale-ups expand once they reach a certain critical threshold, often around $50 million in revenue and sales. Once they reach that point, they're often left to their own devices to find growth financing, which typically comes from abroad. This often results in the sale of majority control to foreign investors, which increases the odds of an early exit before the Canadian scale-up has reached its full potential.

With respect to talent, which is also critical, scale-up firms are appreciative of the measures that have been taken in recent years by the federal government to accelerate the hiring of foreign technology workers with unique or specialized skills that can help them grow. However, this is only one part of a much more complex picture.

In our detailed studies of technology clusters across Canada over the past two decades, there's one consistent finding. It's the depth of the local labour market for critical skills that anchors many of our most successful technology clusters in place, and our universities, polytechnic and community colleges have been the critical providers of many of these technical skills.

Another key finding is that post-secondary institutions are relatively good at reading and anticipating local labour market conditions and expanding their program offerings to meet anticipated demand. However, there's often a lag, especially in times of rapid expansion like the present, when the demand for skills can outpace the ability of post-secondary institutions to respond.

The dilemma in the current period is exacerbated by the dramatic info we've seen on foreign multinationals setting up research operations in high-technology centres across the country, such as Vancouver, Montreal and Toronto, to tap into the specialized skills in those labour markets. This creates competition in the local labour markets between domestic firms trying to scale, and the inward flow of investment from multinationals. It also generates pressure on local wages, which is advantageous for the individuals being hired, but exacerbates the challenges faced by domestic firms in scaling.

We may be in a situation where post-secondary institutions need greater public support in the short term to rapidly expand their intake of students in programs with high demand for their graduates. Here I'm thinking along the lines of the access to opportunities program, which was introduced by the Ontario government in the late 1990s to increase the number of computer science graduates in Ontario universities by 20,000 a year over three years—so 60,000 graduates funded by the provincial government over three years.

● (1845)

I recognize that this is primarily a provincial area of jurisdiction, but there are numerous precedents for the federal government to provide funding to support post-secondary education. The federal government is still currently doing that in principle through existing health and social transfers.

The final policy area is access to markets. One of the most commonly stated preferences by scale-up firms is for the Canadian government to assume a more active role in employing demand-side instruments, such as procurement, in a targeted fashion to act as a market maker in support of scale-up firms in strategic technology sectors. Procurement was frequently cited as a missed opportunity to enable Canadian firms to overcome pressures for early exit by using the government as a reference customer—

● (1850)

The Chair: Professor Wolfe, I am so sorry to interrupt. I'm sure my colleagues are going to follow up. I have to be fair to everyone.

Prof. David Wolfe: That's fine. I knew I had a little more to say than what was allowed. I'm happy to respond in questions.

The Chair: I am just going to say that we want to thank all of you. We're delighted you're here.

Now we're going to questioning by our members. This will be a six-minute round. We'll begin with Mr. Tochor.

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

Thank you to our witnesses today.

Mr. Wolfe, you were talking about government procuring more services from the sector, if I heard you correctly. What would that look like? What services could the government be procuring from—

Prof. David Wolfe: I'm talking often about not just services, but also goods and products. We have common-purpose procurement programs. The federal government has introduced several programs over the past five or six years to purchase innovative products from small Canadian technology firms. These programs need to be deepened and expanded.

The critical notion is the idea of a reference customer. Firms often tell us that when they go into international markets to try to sell their goods overseas, one of the first questions they get is who's buying their product in Canada. They want to know that. It makes a big difference if they're selling to federal or provincial governments.

Mr. Corey Tochor: To follow up on that one, what are the markets that we're, unfortunately, not in right now for these scale-up companies? What countries, I guess, would be...?

Prof. David Wolfe: I'm sorry; that would require a detailed study, which I haven't undertaken.

Mr. Corey Tochor: Okay.

Prof. David Wolfe: If you look at the overall export statistics, we sell primarily into the U.S., and to a secondary degree to the U.K., and a little bit to the EU, but if you also look at the overall composition of our exports, we export, overwhelmingly, minerals, oil and gas and manufactured goods, particularly automotive products. High technology exports are a minor fraction of these other three goods and commodities.

Mr. Corey Tochor: I have a couple of more questions for you; then I'm going to switch over to Jonathan.

You talked about the three-year plan by the Ontario government to increase the number of graduates, I believe, by 20,000 and some. Can you report on—

Prof. David Wolfe: Yes, the plan was 20,000 a year for three years.

Mr. Corey Tochor: Were they successful in increasing that?

Prof. David Wolfe: I believe they were. This was colloquially referred to as the “Nortel program”. It resulted from a tremendous amount of pressure exerted on the government by Nortel in the late 1990s when they were expanding rapidly. I've heard some people express the view that it was a waste, because all of those people came on stream just as the tech collapse occurred in 2001 and 2002.

When you look at the long term, at the current shortages and the current demand that we're still facing and the rapid growth of the tech economy globally over the past 20 years, all of those graduates were absorbed into the economy and we're in a comparable position today.

Mr. Corey Tochor: Great. Thank you very much for your testimony.

I'm going to switching gears a little bit and go to Jonathan, president of the Quebec Student Union.

You talked about increased funding of, I believe, $120 million that would satisfy the ask. Education, for the most part, has been identified as being provincial. On that ask, it's a positive ask, but unfortunately, with the reality of how indebted our country is now, we might have to go the other way.

If you were going to save $10 million on post-secondary education in Quebec, where do you think that first cut would be?

[*Translation*]

Mr. Jonathan Desroches: Thank you for your question.

I'd like to point out that funding for post-secondary education is a provincial responsibility but that much of research funding is federal. I'm referring here to research grants that are the domain of the federal government and the federal granting councils.

I'm aware that tough decisions have to be made. That's why we're talking about research and innovation because, in the long run, they contribute to the country's capacity for innovation and thus to our economy. Ultimately, when we support our researchers properly, they're able to create private sector businesses and non-profit organizations.

We know that researchers used to stay in the academic sector, but that's no longer the case. Once they complete their doctorates, researchers can establish organizations or private companies, for example. That would be a major boost to the country's economy.

● (1855)

[*English*]

Mr. Corey Tochor: If we were going to target funding for a little bit on the positive outcomes and spend that extra dollar on education/scholarships and whatnot, and support more capital and maybe a tax credit of some sort for the would-be businesses to encourage additional growth and/or hopefully to encourage students and research in general, we need to encourage general research, but as a country, if we're going to meet our potential, I think we need to double down on research that produces a product of some sort that we can market to the world.

I'm running out of time, so just quickly on that concept, is there, just in general.... You talk about Quebec—

The Chair: You have 15 seconds.

Mr. Corey Tochor: No, I have a longer one than that to ask.

The Chair: Do you want to ask them to table it?

Mr. Corey Tochor: I will come back to it.

The Chair: Okay, thank you so much, Mr. Tochor.

Witnesses, you can see that we have a really interested committee here.

From Mr. Tochor we will now go to Mr. McKinnon for six minutes, please.

Mr. Ron McKinnon (Coquitlam—Port Coquitlam, Lib.): Thank you, Chair.

I would just like you to clarify, Mr. Desroches, what you were talking about with my colleague. Am I to understand that cutting back on scholarships and so forth would be a false economy?

[*Translation*]

Mr. Jonathan Desroches: That's exactly what I think. I think that limiting the country's ability to support our researchers would hurt its economy in the long run.

[*English*]

Mr. Ron McKinnon: Thank you.

From your point of view, putting more money into graduate students and postgraduate students to develop their skills in Canada would have long-term, beneficial economic results as well as scientific results for Canada.

[*Translation*]

Mr. Jonathan Desroches: Exactly, and we're relying on the 2017 Naylor report, which described the level of science in Canada and recommended that we provide improved funding, particularly in the form of master's and doctoral scholarships. We know that scholarship applications abound. All we have to do is fund those individuals so more students have access to Ph.D.s. Without funding, many students who meet all the criteria of excellence have to choose among doing research for free, going elsewhere or taking up another career.

We definitely lose talented people when we can't support and fund them. We're talking about retaining talent and brains, and they have to be adequately supported and funded.

[*English*]

Mr. Ron McKinnon: Thank you, Mr. Desroches.

I'm going to build on this, but will switch over to Dr. Bell.

Dr. Bell, in your remarks you indicated that, once we lose people, it's hard to get them back. Am I to understand that, if we can keep people here at the early stages of their careers, if we can make their career opportunities more robust, we are more likely to keep them and more likely to build on them?

Prof. David Wolfe: I think that's certainly the case with many scientists who go abroad. It's simply the fact that you set up a new life in a different country, you become static, and it becomes much more difficult to reintegrate into the system.

The Canadian scientific community is much different from the American scientific community or the European scientific community and, to a large extent, it makes it very difficult to re-enter that world once you've left it.

● (1900)

Mr. Ron McKinnon: Obviously funding is important because people have to be able to pay the bills, but you mentioned that the thing that attracts talent most effectively is good science, not necessarily money.

Go ahead.

Dr. Thomas Bell: By money, what I think I was referring to was not so much salary, although obviously it's always attractive to have a nice salary. I think what attracts scientists most is to have the funding opportunities for their research to be able to excel to their potential.

Mr. Ron McKinnon: I keep asking this question of all of our panellists. One thing you mentioned was important is discovery science and innovation. It seems to me, perhaps from your experience on NSERC, that one of the problems there is how you identify research that's worth funding, because fundamental science, discovery science, doesn't necessarily look like it's going to amount to anything at the outset. Perhaps you could address that concern as well.

Dr. Thomas Bell: I think that's very difficult to predict, and I think, if you look at the history of it, if you were trying to predict what the cutting edge of science would be today—if you were doing that 10 years ago—then very few people would have been able to predict what the research was going to look like.

I think that's difficult for scientists to do, and it's even more difficult for governments to do. Clearly, you need to make some decisions about where the funding should be allocated. I think it's worthwhile to allocate some of that money towards innovating technologies rather than just discovery science, but trying to predict which science will create those technologies is often a losing game.

Mr. Ron McKinnon: I'll switch over to Dr. Wolfe, I think.

You mentioned the importance of having a deep pool of talent in skilled labour. I expect that means that having a robust body of postgrads and so forth would be part of that.

Prof. David Wolfe: Absolutely. The labour market that I'm referring to is created by the graduates of all of our post-secondary institutions, from the community colleges through the polytechnics to the universities. It comes through all levels of graduate education, from bachelor through master to doctorate. All of those graduates feed into the local labour market. They don't always necessarily stay in the metropolitan area where they were educated.

What we've been finding in recent research is—

The Chair: Professor Wolfe, I'm so sorry. That's the end of the six minutes. This is really hard, and I've done it to you twice. My apologies.

[*Translation*]

I know give the floor to Mr. Blanchette-Joncas.

Mr. Maxime Blanchette-Joncas (Rimouski-Neigette—Témiscouata—Les Basques, BQ): Thank you very much, Madam Chair.

First, I want to say hello to my colleagues and the witnesses participating in this meeting.

My first question is for Mr. Desroches.

Mr. Desroches, your opening remarks were very clear. You outlined the situation and your demands.

What I understand from that is that we have talent in Canada, particularly in Quebec. We have to create the conditions for that talent to develop and succeed, and funding is one of those conditions. More specifically, you mentioned the $120 million investment, which was invested before the cuts in 2011. There has been more investment since 2019, but it's not enough and can't close the gap that opened up between 2011 and 2019.

Do you think the money invested since 2019 is enough?

Mr. Jonathan Desroches: Thank you for your question.

Cuts were made between 2011 and 2015, and more money has been invested in research since 2015, but not in scholarships.

Cuts were also made to student programs, as they were to the other chair programs and research funding in general. It's hard to understand why scholarships weren't funded after 2015.

That situation was partly rectified by the 2019 budget, but the funding we need to return to the level we had before the cuts, before 2011, is still lacking.

I would note that the federal granting councils have criteria of excellence. When students meet those criteria and we can't fund them, we lose opportunities to develop more highly qualified workers, and that's unfortunate.

● (1905)

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

In your analysis, has the situation of students in Canada improved?

Mr. Jonathan Desroches: The situation has definitely not improved. Much work remains to be done, particularly with regard to scholarship terms and amounts. As I noted in my remarks, NSERC and CIHR research scholarship amounts haven't changed in about two decades. Given the cost of living, which has obviously changed in the past 20 years, I can't say the situation has improved.

Mr. Maxime Blanchette-Joncas: Would you please tell me a little more about insufficient terms of financial support? You discussed the terms of master's and doctoral scholarships. Studies have been conducted on talent retention. I'd like you to tell me about the consequences that situation can have for talent retention and about the financial stress that can cause graduate students.

Mr. Jonathan Desroches: Yes, that's a crucial point, and I would note, once again, that the Naylor report raised it.

The government invests in students' education for a number of years. However, scholarships don't run for the same term as their studies, as a result of which they lose their main source of funding as they approach the end of their education and have to stop focusing on their doctorate and research. You should note, incidentally, that doctoral students are involved in writing scientific articles and have been writing them for a number of years. When their term of study is longer, it costs students more to earn their degree. They may not even complete it.

Mr. Maxime Blanchette-Joncas: Thank you.

You discussed the doctorate, but it takes at least two years to complete a master's degree. However, current funding doesn't cover that period.

Mr. Jonathan Desroches: Exactly. The term of the NSERC and CIHR master's scholarships is one year. CIHR has started rectifying the situation by acting on the recommendations of the Naylor report on doctoral scholarships, but NSERC and CIHR still have work to do.

Mr. Maxime Blanchette-Joncas: You made another recommendation.

Quebec has guaranteed students a position in the administration of the Fonds de recherche du Québec since 2014. That's an initiative of Quebec's chief scientist, Rémi Quirion, who incidentally has appeared before the committee.

Are students listened to, and is their perspective taken into consideration? That's not the case of the federal granting councils.

Mr. Jonathan Desroches: That's currently not the case at the federal level. That's why we're making this recommendation, which would cost nothing. The federal granting councils fund research and students, but students have no forum where they can speak out.

Quebec's chief scientist is very satisfied with the initiative he introduced in 2014, as you noted. It's helping to contribute new ideas to the granting councils. But the research sector wants is to stimulate new ideas.

Mr. Maxime Blanchette-Joncas: Thank you very much.

Mr. Desroches, certain colleagues discussed investments earlier. We of course have to look at the budgets and columns of figures.

You had a recommendation regarding the Vanier Canada graduate scholarships program. If the government tried to innovate in order to rebalance the scholarships without having to invest further, what would you suggest it do?

Mr. Jonathan Desroches: The value of the Vanier scholarships is $50,000 for three years; they're called "super scholarships". We suggest that they be reduced to $35,000 at the doctoral level under the Canada graduate scholarships program so more of them can be granted. A study by Vincent Larivière...

The Chair: I'm sorry; that's all the time you had.

[*English*]

Mr. Blanchette-Joncas, we are really happy you're here with us.

● (1910)

[*Translation*]

Mr. Maxime Blanchette-Joncas: We'll accept the answer in writing, Madam Chair.

Thank you.

[*English*]

The Chair: Thank you both.

Tonight we're delighted to welcome Ms. Gazan to the committee.

The floor is yours for six minutes, welcome.

Ms. Leah Gazan (Winnipeg Centre, NDP): Thank you so much, Chair.

I am very happy to be part of this committee as a long-time post-secondary educator at both the *polytechnique* and university levels. This is certainly near and dear to my heart. My first question is for Mr. Bell.

You spoke about the reasons why academics leave universities. One of the criticisms of academic institutions, certainly in Canada, is that they have replaced, for example, tenured professorships with stipend positions. Academia has almost become a career path of poverty for these highly specialized, highly educated individuals in Canada. Would you agree with my assessment that we need to make sure that the positions offered at universities are less precarious so that we can retain top-notch academics in Canada?

Dr. Thomas Bell: I would definitely agree. Tenured positions are the linchpin of the university system. It's only with tenured positions that you can ensure that you get the best scientists. As I mentioned, you're competing with other countries for these scientists, and I think, if tenured positions become lacking, they'll go to other places.

I know that, increasingly, many university positions within Canada rely on soft money, on bringing in the grant income, and, if you don't bring in the grant income, then your position goes away. I think following that trajectory would be a mistake.

Ms. Leah Gazan: Just following up on that, what changes do you think should be made to overhaul the system so that scholars who want to do their research, continue their studies in Canada and contribute to solving major crises that we face? We often, I think, separate what we're doing in universities from what's happening on the ground, when universities and polytechnics really lead the way in solutions across the country.

Can you recommend some changes to the granting system?

Dr. Thomas Bell: That's a very difficult and complicated question. I'm not sure I'm sufficiently expert in that area to make a very detailed comment, but I should note that the granting system is very different in Canada from that in the U.S. and Europe. The money is spread much more thinly among many more people. This can also be a barrier to bringing top scientists into the country. The opportunity for large grants to do the most exciting research is often limiting within Canada.

Ms. Leah Gazan: Thank you so much.

Just moving on to Mr. Wolfe, when you look at the granting of research dollars by the federal government, one of the common criticisms for polytechnics is that they currently get 5% of all research dollars while universities get the lion's share at 95%. We know that polytechnics do a lot of research in partnership with, for example, companies that are currently in the process of trying to innovate new technologies.

Would you agree that the current granting system between polytechnics and universities maybe needs to be a little bit more equitable? Please answer yes or no and give your opinions on that.

Prof. David Wolfe: I'm not going to say yes, because I'm employed by the largest university in the country, so that's a bit of a loaded question. I will reinterpret it slightly, with your permission.

● (1915)

Ms. Leah Gazan: Sure.

Prof. David Wolfe: There have been a number of very innovative programs introduced at NSERC at the federal level. Ontario had one that targeted community colleges. I think some were targeted at the polytechnics.

When we think of university interaction with industry and firms, I think we need to look at it as part of a continuum. Collaboration on basic fundamental research, the kind that Dr. Bell has been talking about, is at one end. The kind of more applied, incremental innovation that goes on that people from the community colleges and the polytechnics can work with firms on is at the other end. We need to look at the entire spectrum.

I think it's a mistake to say that there's only one pot of money for basic fundamental or discovery research and that we have to allocate to all of the post-secondary institutions. I think we need to look at the different roles those institutions play in supporting innovation and ask ourselves if we have the appropriate mix of policies targeted at the role that the different post-secondary institutions can play and make sure they're adequately funded.

The other thing I've long said is that we need to flip the switch a little bit on how we look at that relationship. We tend to have a supply-push model of research results. In other words, we fund the fundamental research in the universities, and then we think in terms of how to push that out into private firms, but, if you talk to private firms, they will often say, “I have this technical problem I'm trying to solve. I'm sure there's someone in my local college, polytechnic or community who can help me solve it. I don't know where to go to find the solution.”

We need to also be thinking in terms of what the appropriate demand-pull mechanisms are to help pull the available scientific knowledge or technical expertise out of the post-secondary institutions and put it to work assisting firms that are trying to solve concrete technical problems.

Ms. Leah Gazan: I thank you for your grace in answering my question in the way you needed to answer. I really appreciated your response.

The Chair: Ms. Gazan, I am sorry. I appreciated your grace. Thank you to you both.

Now we're going to go to the five-minute round.

We're pleased to welcome tonight Monsieur Lehoux.

The floor is yours for five minutes. Welcome.

[*Translation*]

Mr. Richard Lehoux (Beauce, CPC): Thank you, Madam Chair.

Thanks to the members of the committee for welcoming me this evening, and thanks in particular to the witnesses for being with us.

My first question is for Mr. Desroches.

You talked about student representation on boards of administration. I'd like you to address that point and to tell us more about your board experience.

What does that add to the mix?

Mr. Jonathan Desroches: Thank you for your question.

Based on the work that Quebec's chief scientist has done with the provincial councils, student representation on the research boards makes it possible to present the student point of view and to raise those scholarship funding concerns.

For example, when funding is granted to the granting councils in future, people could systematically ensure that a portion of that funding is paid to emerging scientists, master's and doctoral students.

However, Canada can also follow the example of what Quebec's chief scientist is doing. Mona Nemer, Canada's chief science advisor, is supported by a youth council. If I had a suggestion to make, it would be that the youth council select individuals to sit on the boards of the federal granting councils.

Mr. Richard Lehoux: Would that require amendments, Mr. Desroches?

I understood at the outset that you had raised this important point. The federal government should make amendments to certain statutes.

Mr. Jonathan Desroches: That's correct. The composition of NSERC, SSHRC and CIHR is defined by three separate statutes.

Mr. Richard Lehoux: Earlier you mentioned that there had been an improvement to funding. However, from what I understand, there hasn't been a significant improvement with regard to indexing in recent years.

Mr. Jonathan Desroches: That's correct. Research scholarship amounts are fixed. Scholarships aren't indexed and haven't been increased in many years. We can see the value of the scholarships declining over time. I might add that a $20,000 scholarship in Quebec doesn't have the same value as a $20,000 scholarship elsewhere in Canada, where the cost of living may be higher.

Mr. Richard Lehoux: Thank you, Mr. Desroches.

I have a question for Mr. Bell.

We know there are obstacles to attracting and retaining talent, but I'd like to hear what you have to say on one specific point.

What role could the federal government play in more effectively attracting and retaining talent outside the major urban centres and large cities?

● (1920)

[*English*]

Dr. Thomas Bell: The key is always that the science attracts the science. If you want to attract scientist outside of the metropolises, then you need to create the centres of innovation there. That may mean setting up centres of excellence at locations where you'd like to set them up. I don't think that scientists are distracted by the particular location; lots of very prominent universities are in very odd places around the world. The main thing is that you need to set up a place where it's beneficial to do your science.

The Chair: Professor Bell, I'm sorry to interrupt.

[*Translation*]

Thank you, Mr. Lehoux.

[*English*]

Now we will go to Monsieur Lauzon, for five minutes, please.

[*Translation*]

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

I'd like to thank the three witnesses, Mr. Bell, Mr. Desroches and Mr. Wolfe.

My first question will be for Mr. Wolfe, who is a professor of political science at the University of Toronto.

In 2018, you helped draft a report entitled Creating Digital Opportunity for Canada.

What drew my attention to that report is that you say, on page 31, that the federal government has delivered more than 90 programs. In your view, the investments made in Canadian businesses have contributed to the training and retention of talent at our educational institutions.

I'd like you to tell the committee about the impact of this development, which you mentioned in your report.

[*English*]

Prof. David Wolfe: I'm sorry; I missed the title. The audio cut out when you said the title of the report, so I need to—

Mr. Stéphane Lauzon: Okay, you were part of the report “Creating Digital Opportunity for Canada” in 2015-16.

Prof. David Wolfe: Yes, that was my research project that I led.

Mr. Stéphane Lauzon: You said in this report, on page 31, that the investment we made as a federal government in Canadian enterprise and the contributions for the retention of the school were important for you. Can you speak a little bit about that?

Prof. David Wolfe: I don't have the report in front of me, so you have me at a disadvantage. I think I was making the same point that both of the other witnesses were making. You need to fund the science. You need to fund the post-secondary education, and you need to fund the students and make sure that the students are funded at all levels through the post-secondary system in order to create the deep talent pool of technical talent.

We're living in an age that's increasingly being defined as an intangible economy, an economy that runs on data, on intellectual property, on branding and on marketing, and the intangibles are based on people with the ability to understand the talent to create the IP, to do the research and to analyze the data.

I've been studying these areas for over 20 years. I worked in government 30 years ago. The world has shifted dramatically in the past 30 years. Talent was important then; it's ten times more important now. If we don't fund, support and nurture that talent and put it out into the local labour market, we don't have the base either to grow our own domestic firms or to attract other firms into our regions. That was the fundamental point I think I was trying to make in that report.

[*Translation*]

Mr. Stéphane Lauzon: I'd like to ask you another question.

As a university professor, to what extent are you involved in funding decisions?

We heard Mr. Desroches mention the problem of student underfunding several times. As you know, there has to be a balance between program funding and funding for students. If program funding were reduced in order to give students more, what impact would that have on your university?

What do you think would be the best way to fund students?

[*English*]

Prof. David Wolfe: Mr. Desroches can speak to Quebec. I'm not qualified to do that. I can speak to Ontario.

The reality is that going back to the ending of the block funding formula from the federal government to the provinces in 1995, the federal share of funding that is going to post-secondary institutions has declined steadily for 25 years. The Association of Universities and Colleges of Canada has called for the introduction of some form of a block funding formula dedicated to post-secondary institutions.

At my university, if I'm not mistaken, the level of public funding at the moment is about 25% of the total operational cost of the university. The rest comes from tuition, from external research grants and from philanthropy. It doesn't come from the public sector, and very little of that 25% comes from the federal government.

If the federal government is truly worried about how post-secondary education is being financed in this country and how affordable it is for students at all levels, then they need to take a long, hard look at how the shared cost formulas between the federal government and the provinces have changed over the last 27 years, because the net result of that change has been a decline in share of federal transfers that end up supporting post-secondary education.

● (1925)

Mr. Stéphane Lauzon: Thanks for the answer.

Thanks very much, Madam Chair.

The Chair: Thank you so much, Mr. Lauzon and Professor Wolfe.

We will now go to the last round. It will be for two and a half minutes. We will start with Mr. Blanchette-Joncas.

[*Translation*]

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

I'm going to continue the discussion with Mr. Desroches.

I'd like to circle back to the point raised earlier concerning the Vanier Canada graduate scholarships. That program awards 167 $50,000-a-year scholarships to highly talented graduates, some of whom come from outside Canada.

What do you recommend we do to ensure that we can at least fund Canadian students with some of the money from those scholarships.

Mr. Jonathan Desroches: Thank you for your question.

To increase access to funding and ensure as many students as possible are funded from available funds, we suggest that the super scholarships awarded under the Vanier Canada graduate scholarship program be reduced to $35,000 in order to fund more students.

We base that recommendation on research conducted at the Université de Montréal that shows that a student who has access to funding over a certain amount won't produce more research as a result of that funding. The optimum solution would therefore be to grant funding to other students.

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

You've made an exhaustive effort to evaluate the funding shortage, the $120 million you mentioned in connection with the research scholarships. I understood that it's harder to get data from certain funding councils.

Please tell us about that experience.

Mr. Jonathan Desroches: The Canadian Institutes of Health Research, CIHR, doesn't have any aggregated data on scholarships from the annual reports of the three federal funding councils. Consequently, we can't form an overall picture. Without data, we can't determine whether funding is a problem. The ideal would be to restore data publication so we could determine the number of applications submitted and the number of scholarships awarded and observe how access to research scholarships has developed.

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

I have a final question for you.

The number of researchers in Canada has declined in recent years. Canada is the only G7 country that has lost researchers. We see there's a correlation between that and economic development. Between 2001 and 2019, Canada fell from eighth[x] to seventeenth[x] place in the Global Innovation Index.

What you think about that?

Mr. Jonathan Desroches: I'm going to refer to my remarks. We have to provide more support for graduate students who are already in the country and for the time they spend on their studies.

Mr. Maxime Blanchette-Joncas: Thank you very much,

Madam Chair do we have any time left?

[*English*]

The Chair: You had 10 seconds left, my friend. That was right on time, Mr. Blanchette-Joncas.

Now we will go to Ms. Gazan for two and a half minutes.

Ms. Leah Gazan: Thank you so much, Chair.

My questions are for Mr. Desroches. When I was teaching at university, I didn't lose a lot of students due to academic issues. I lost a lot of students to poverty and their being unable to afford their studies—some of the brightest minds in my classrooms—and it was tragic.

You, of course, talked a little bit about the need for better funding for students. One thing that I've been fighting for is a guaranteed, livable, basic income, including for students, so that students could focus on their studies and be the best in their fields.

Do you think a guaranteed, livable, basic income would assist students in being able to focus on their studies? I believe that, if you have the time to focus on your studies, you become the best of the best. You get the best of the best in the fields.

● (1930)

[*Translation*]

Mr. Jonathan Desroches: That's why, in order to support students more, we suggest that funding for the research scholarships for which the three federal councils are responsible be increased. As you just demonstrated, for example, it's the students that have no funding and must work during their doctoral studies who are affected and thus unable to publish during that time.

[*English*]

Ms. Leah Gazan: Thank you for your response.

I absolutely agree with your assessment. I also agree that part of the issue is that there is a lack of student input, that decisions are made on behalf of students in the absence of the voices of students who are really living the experience.

Do you feel that it's important for students to be part of the decision-making or having part of any sort of decision concerning things related to budgeting or delivering grants?

[*Translation*]

Mr. Jonathan Desroches: Science is based on the clash and confrontation of ideas. Consequently, what students in Canada can provide are new ideas in certain contexts, including the administration of funding.

The Chair: I'm sorry, but I have to stop you there.

[*English*]

Dear colleagues, we all want to thank the witnesses for your time, your effort and your expertise. We are grateful that you've taken the time.

Professor Bell, we do recognize the hour this is for you. We hope that you've had a good experience, and thank you.

We will briefly suspend as we get ready to go to our second panel.

● (1930)

_____(Pause)_____

● (1935)

The Chair: Colleagues, I will welcome you back for panel two of the second study of this inaugural committee.

We'd like to begin by welcoming our witnesses. We are so glad you joined us, and we look forward to hearing what you have to say. You have a committee who's really interested in your work.

Tonight for the second panel we have Shiri Breznitz, associate professor, Munk School of Global Affairs, the University of Toronto. From Dalhousie University, we have Alice Aiken, vice-president, research and innovation. From the Université du Québec, we have Etienne Carbonneau, executive advisor, governmental relations; and Céline Poncelin de Raucourt, vice-president, teaching and research.

We're going to hear from each of you for five minutes. At the four and a half minute mark, you'll see me lift a yellow card, and that means you have 30 seconds left.

We look forward to your testimony, and we will begin with Professor Breznitz.

The floor is yours, please.

Dr. Shiri Marom Breznitz (Associate Professor, Munk School of Global Affairs, As an Individual): Thank you very much.

Dear members of the committee on science and research, my name is Shiri Breznitz. I am an associate professor at the Munk School.

I will focus my statement on the importance of entrepreneurship education and the role of international education in entrepreneurship.

Policy-makers have long viewed universities as significant contributors to entrepreneurship, job creation and economic growth. In recent years, many studies have examined the impact of firms started by students and graduates. In the U.S., studies find that universities' major impact is in the form of start-ups created by students rather than faculty. For that, we need entrepreneurs.

First, I would like to discuss the importance of entrepreneurship education. Studies indicate the importance of small and medium-sized enterprises to a successful, innovative economy. Here is where entrepreneurship education becomes an important tool. Our research finds that, in comparison to no entrepreneurship education at all, entrepreneurship education courses do have a positive impact on entrepreneurship in general, but especially on students' entrepreneurship.

In addition, a combination of entrepreneurship education from different organizations such as government agencies, incubators, accelerators and universities promotes the establishment of high technology firms, so it's not just any business, but high technology businesses.

On the policy level, this means that we need government to support a variety of entrepreneurship support organizations that teach entrepreneurship and support entrepreneurs.

Second, I would like to highlight that, while STEM education is important for a technology-based workforce, it does not increase the number of start-ups or firms. Studies debate the importance of STEM education for entrepreneurship. My work indicates there is a positive relationship between a non-STEM degree and entrepreneurship opportunity. No matter how we define entrepreneurship, STEM graduates do not outperform their counterparts who have only non-STEM degrees. That said, we also found that having both types of degrees is positive for entrepreneurial activity. It is assumed that, by studying both STEM and non-STEM subjects, graduate students will learn more diverse knowledge and skills. The important take-away from this is that an overemphasis on a STEM workforce may not lead to a higher rate of entrepreneurship.

Third, I would like to discuss the importance of international education and international employment on entrepreneurship. Many studies show that foreign students are more entrepreneurial than domestic students. Our study examining U of T alumni supports these studies and find outperformance among students with foreign education experience in creating start-ups. However, we find that, irrespective of their country of origin, students who have earned any foreign degree—this includes not only non-Canadian students who come to Canada, but Canadians who pursue higher education outside Canada—are more likely to become entrepreneurs.

Education is just one aspect of international experience, which could also involve working in a foreign country. Since we also analyzed the differences between international education and international employment as well as the impact of having both experiences on entrepreneurship, our empirical research showed that international education experience matters more, so education matters more to entrepreneurship than international employment experience.

When we break down the analysis and we examine the subjects studied by students, the international experience seems to be more important than the subject studied or the degree obtained, and it doesn't matter what students studied abroad. The experience of international education has a positive impact on entrepreneurship.

For policy-makers, the important take-away here is to pay attention to domestic students who have obtained academic degrees outside their home country and even create programs to support international education. Many countries such as China, India, Spain and New Zealand have introduced policies to induce skilled workers to return to their country of origin. Canada should consider similar policies.

Thank you for your time.

● (1940)

The Chair: Thank you so much, Associate Professor Breznitz. We appreciate that.

Now we will go to the vice-president of research and innovation, Alice Aiken, for five minutes, please.

Dr. Alice Aiken (Vice-President, Research and Innovation, Dalhousie University): Thank you for your invitation to represent Dalhousie University here today to discuss the opportunities we have as a nation to attract and retain top research talent at our post-secondary institutions.

To address this pressing issue, we need to ask what incentives are required to attract the world's thought leaders to pursue made-in-Canada research and innovation and what investments are needed to ensure they stay in Canada to train the next generation of researchers and innovators.

The good news is that Canada has already made a lot of ground attracting and keeping talent. The Canada research chairs, CRC, and Canada excellence research chairs, CERC, programs have had a considerable impact. We were encouraged by the pledge to create 1,000 new CRCs in the Minister of Innovation, Science and Industry's most recent mandate letter, and the funding for up to 25 new CERCs in the 2022 budget was also certainly welcome.

However, this encouragement is tempered by the fact that Canada is well behind many other OECD countries in the percentage of GDP we invest in research. Several of these countries are assertively increasing their investments in research. Our competition is ramping up. When it's time for the world's leading research talent to decide which country will empower them to reach their full potential, how can we ensure that Canada is their choice?

Before we consider this, let's first consider what the CERC and CRC programs have already accomplished, because there is a lot to celebrate. For instance, just last week, Nova Scotia-based company Planetary Technologies won a $1-million XPRIZE finalist prize from the Musk Foundation for their innovation that uses the ocean to capture carbon from the atmosphere.

Their goal is to remove one giga-tonne of carbon every year. This is a remarkable goal. What gives them the confidence that they can achieve it? Well, they're powered by a research partnership with Dalhousie led by CERC emeritus and current CRC Dr. Doug Wallace and the researchers he has helped attract to the university from all over the world. Technology like this is putting Atlantic Canada on the leading edge of ocean carbon capture and storage, and it would not be happening without Canada's CERC investment, which attracted Dr. Wallace to Canada.

Another example is Dalhousie's Dr. Jeff Dahn, a tier 1 CRC. For nearly 40 years, he's been a global leader in advancing the science and technology of lithium ion batteries. His research has made lithium ion batteries the preferred power source for portable electronic devices, electric vehicles and more. How have we kept him at Dalhousie? The CRC program has played a fundamental role, and the ripple effect has been tremendous.

Dr. Dahn's research lab has generated two spinoff companies, including Halifax-based Novonix, which recently celebrated its listing on the Nasdaq. More importantly, Dr. Dahn's work has attracted other top researchers and a whole new generation of graduate students from around the world to Canada. When you invest in top talent, the benefits are far-reaching in terms of the research and innovations delivered and the HQP trained.

How can we ensure that we do not lose ground? Well, CRC and CERC help attract talent; however, the value of the CRC has not increased over time and has, in fact, decreased relative to programs offered by our competitor countries. To ensure that we continue to attract the very best research, our per chair investments need to increase. To attract top talent—whether to fill chairs or not—Canada needs to ensure we have robust funding programs in place to support the groundbreaking research they want to pursue, which means investing in our federal granting agencies.

With the Naylor report investments, CIHR, SSHRC and NSERC have just caught up to their international counterparts after being underfunded for many years, but there hasn't been any new money for investigator-driven research in the last two budgets or to sustain growth in our granting agencies. We can't afford to remain idle or we will fall behind again. We also need to ensure that we have the infrastructure, equipment and personnel to support researchers with world-class ambitions. This means investing in our research environments and the upkeep and management of this important research infrastructure because, in research, the famed cinematic quote holds true: “If we build it, they will come.”

● (1945)

Thank you again for having me here today. It's been my great pleasure to share successes and discuss opportunities, and I'm looking forward to addressing your questions.

Thank you.

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

We will now go to the Université du Québec. Vice-President Poncelin de Raucourt will be speaking.

Welcome. The floor is yours

[*Translation*]

Mrs. Céline Poncelin de Raucourt (Vice-President, Teaching and Research, Université du Québec): Thank you for inviting me to this working meeting of the Standing Committee on Science and Research.

I am the vice-president for teaching and research at the Université du Québec, which is a cooperative network of 10 institutions scattered across Quebec.

Today the committee is addressing two separate but interrelated issues: attracting talent and supporting research.

I'll begin by recalling that students, researchers and the professional staff of our universities constitute an outstanding pool of highly qualified personnel. They support the innovation required for a green and resilient economy. At universities, as in industry and organizations generally, these people know how to generate and operationalize the knowledge required to provide innovative solutions to complex problems. Although they contribute to Canada's global impact, these highly qualified people are also essential in providing appropriate responses when global issues become challenges that are experienced by our communities at a regional and local level.

However, highly qualified staff are becoming a rare commodity, which is why we are looking for talent.

I would like to inform committee members that a very significant amount of the talent Canada needs and wants to attract and retain can be found closer to home than we think. Canada has major potential. You know as well as we do, Madam Chair, that according to the OECD, only 34% of Canadians 25 to 34 years of age have a university degree. That's 15 percentage points less than the leaders in this category.

Rather than expand on that failing, we propose to consider the opportunity that we should seize. Canada has a real and tremendous potential to expand our ranks of highly qualified personnel. A transformative approach to attracting and retaining talent would thus be to develop and support homegrown talent. This choice is a win-win because these people already have roots in our communities, which reduces the retention problem.

In other words, and this is the main message of our remarks today, Canada has an enormous pool of resources within its borders, one in which it can choose to invest. To do that, it must mobilize all Canadian universities, including those of small or medium size, and those situated outside the country's major urban centres. The privileged ties between our universities and the communities in which they are rooted, as well as the access to superior teaching that they facilitate for the populations of their cities and regions, are major assets in developing talent and science in Canada.

The Université du Québec's network is living proof of this, and I could cite many examples during our discussion. The potential for transformation that the talents we are developing represent is all the greater as we are training emerging researchers through the research being conducted at those universities.

The research being done in Canada, which is truly international in scope, and that being conducted at most Canadian institutions, is embodied in critical scientific themes for the communities that constitute Canada. Our researchers at the Université du Québec, for example, excel in fields such as coastal erosion and climate change, suicide prevention in northern communities, artificial intelligence in the mining sector, the development of wood products, indigenous knowledge and rural health care, to name only a few.

There are two angles of approach: the training of highly qualified personnel and research. We have enormous capacity for both, with some 100 active universities across the country. However, in recent years, we have observed that investment in science and research is characterized by an imbalance that may undermine that capacity. While the budgets of the granting councils have flatlined, funding programs offering limited numbers of grants, though many of very high value and for very targeted subjects, have been introduced in recent years.

Those grants have benefited very few individuals and institutions. As a result, year after year, barely 10% of Canadian researchers receive between 50% and 80% of public research funding, depending on the field.

This type of science policy, the limits of which are noted in the Naylor report, has an immediate impact on the capacities of many dozens of universities. It raises obstacles for thousands of researchers who are capable of fully participating in research and scientific development. As a few large cities or major institutions absorb most of the resources, the situation has a real impact on the development of territories and regional populations, thus diminishing their ability to attract and develop talent. We fear this may have a long-term effect on our collective ability to meet the many challenges facing all the country's sectors and regions.

We therefore suggest that this approach be revised so that we invest in programs based on three major principles: developing potential talent wherever it is across the country; supporting that potential early in students' careers; and ensuring that all sectors across the country can rely on highly qualified personnel whose scientific culture is essential to the transformations required to meet the challenges of tomorrow.

Thank you.

● (1950)

The Chair: Thank you very much.

[*English*]

I'd like to thank all of the witnesses for joining us tonight. Now we are going to go to questions.

I know our members are eager to learn from you. You have a really committed group here.

We will start with the six-minute rounds, beginning with Monsieur Lehoux.

The floor is yours.

[*Translation*]

You have six minutes.

Mr. Richard Lehoux: Thank you, Madam Chair.

Thanks to the witnesses for being here with us.

My first question is for Ms. Poncelin de Raucourt.

I think it's important that we go back over a number of points you mentioned, particularly the fact that we have a lot of talent in Canada that isn't being maximized.

Would you please provide more details on how to attract talent to the regions?

Mrs. Céline Poncelin de Raucourt: The network of the Université du Québec was established to promote access to post-secondary education regardless of geographic barriers. Several years ago, a federal government statistician showed that regional populations tend not to pursue post-secondary education when the closest university is located 70 kilometres away.

Consequently, lower levels of education are observed in certain regions. We also know that, far more so than family income, one of the determinants of enrolment in institutions of higher learning is "educational capital", whether or not the parents attended a college or university.

For example, nearly 60% of students at some of our institutions are what are called "first-generation students".

The fact that full-fledged universities conduct research and training in various regions of Quebec really helps to recruit talented people where they live. We know that young people tend to underestimate their worth, and the proximity of institutions of higher learning can encourage them to take advantage of them.

● (1955)

Mr. Richard Lehoux: Thank you.

Would you have any recommendations to make to the committee on grants and how to use them more appropriately?

Mrs. Céline Poncelin de Raucourt: One of the messages we regularly send out is that you should be very careful not to focus funding on one particular discipline. During the pandemic, for example, major investments were made in institutions involved in medical research. Even though that was an excellent initiative, it contributed to a further concentration of funding.

Lately, no investments have been made in research on anything other than the medical aspects of the pandemic, such as its impact on mental health and the adaptation of local ecosystems.

Some 15 Canadian universities receive 72% of public research funding. We aren't at all opposed to the idea of investing in centres of excellence because that has to be done. However, we must have a living ecosystem in which the capacity for innovation is spread across the country. As I was saying, the proximity of a university attracts talent but also enables the local ecosystem to innovate thanks to the involvement of researchers who clearly understand the situation and are present on the ground.

Mr. Richard Lehoux: That's the point I wanted to discuss further.

If we move universities closer to learning environments, we can develop them more effectively and enable students to contribute to them. I think research and its application are very important for science, but we have to be able to put them to use on the ground as quickly as possible.

What's your opinion on that?

Mrs. Céline Poncelin de Raucourt: That's exactly it. We have university centres developing through partnerships with those environments. They might be a coastal environment or a mining environment, for example. Research develops from that and contributes to a whole ecosystem. Research then expands beyond local realities and attracts businesses from other sectors, and that then diversifies a region's economy.

This originates from local concerns and research and then stimulates creativity, which leads to new areas of expertise and excellence in regions that aren't merely major urban centres.

Mr. Richard Lehoux: Madam Chair, how much time do I have left?

[*English*]

The Chair: You have about a minute and a half.

[*Translation*]

Mr. Richard Lehoux: Thank you very much, Ms. Poncelin de Raucourt. I hope we'll have a chance to consider the recommendations the committee may make and include that aspect, the development of our expertise in the regions, which I think is very important.

[*English*]

The Chair: Thank you so much, Monsieur Lehoux. We're really happy you've joined us tonight.

We'll now go to Ms. Diab for six minutes.

[*Translation*]

Ms. Lena Metlege Diab (Halifax West, Lib.): Thank you very much, Madam Chair. I would like to thank all the witnesses who are here this evening.

[*English*]

Thank you very much to all our witnesses tonight as we continue our study on top talent, research and innovation.

For me, as an east coaster and the MP for Halifax West, I'm always really pleased and happy to see somebody from Nova Scotia, from Atlantic Canada, take part in these discussions.

Thank you very much, Dr. Aiken, for appearing with us tonight. Let me first acknowledge your service with the forces and your long record of support to our veterans and service members. Thank you very much for that.

Let me begin by saying that it's not a secret that, in Nova Scotia and in Atlantic Canada, we have some of our most aging population. Can you tell us if that would be true of the community of scientists and researchers as well from your perspective? I would then ask: How do we ensure we attract and retain the best and brightest? Do we have enough in our domestic supply? How do we ensure that the ones we do have in Canada we keep in Canada?

We heard in previous testimony—and those are facts—that it's always more expensive, and it costs more to the researcher, to anybody coming from outside Canada, to get to know our system, how to deal with it and to build on the successes of people who are already here. Then the follow-up is: Do we have enough here? How do we do that? How do we then go and search for international students and for the brightest internationally, from your experience, from Dalhousie's and from the east coast's?

● (2000)

Dr. Alice Aiken: Thank you, Ms. Diab. I'm also thrilled to be here.

While Nova Scotia does have a disproportionately aging population compared to many other provinces, I wouldn't say that's true of the professoriate in our post-secondary sector. As you know, we have 10 universities and a community college. We are able to attract and retain a lot of talent. In fact in Nova Scotia, Halifax in particular is one of the top 10 cities in North America for the proportion of the population who are post-secondary educated.

I do actually think that we produce a lot of talent. While Dalhousie attracts a lot of students from outside of the province, many of the other universities attract more people from within the province. We are tending to grow a lot of our own talent.

That said, people do travel across Canada and around the world. How we attract and retain top talent is a great question. Part of it is the ecosystem. There's something very attractive about the research ecosystem in Canada, in that unlike in the U.S., professors don't pay themselves out of their research grants. It actually costs less to do the same amount of research here because you're not paying all of the professors who are part of the research grant. It costs less to do research here than it does in the U.S. We're often able to attract big grants from the U.S. to do research here. That's one very attractive thing about Canada. A lot of U.S. professors find it very attractive. They actually have to find part of their salary through their grants. In Canada, we generally do not. Professors are generally salaried. It's an attractive environment from that perspective.

You are correct, moving to a new ecosystem for research can be very difficult and a steep learning curve, if you're not familiar with it.

I think Canadian researchers want to stay in Canada. We know that Canadian students want to stay in Canada. In fact, we have a problem with them not wanting to go and do placements internationally because we live in a good, safe country. I think that is even more important right now. I do believe we have the right environment to keep our researchers here, but we need to have the money for them to be able to pursue their interests. We really do. That is what it comes down to, quite critically.

Ms. Lena Metlege Diab: Thank you very much for that. I really appreciate it for my colleagues on the panel. We don't often have somebody from Nova Scotia or eastern Canada. I appreciate getting that perspective from you.

You're right. For a province of a million people, we have 10 universities in Nova Scotia and a community college that has 13 campuses. I know that full well, having been the minister of advanced education when I did my provincial....

I also know that Nova Scotia has been very active in attracting and retaining international students. As well, quite frankly, we don't have to do much, but we've been attracting a lot of students from within Canada as well. Of course, Dalhousie's been a very big recipient of all the good things that are happening.

At Dalhousie, what proportion of students or researchers would you say we attract from within Canada?

● (2005)

The Chair: Ms. Diab, you are done, I'm afraid.

You might want to ask Dr. Aiken if she wants to table an answer.

Ms. Lena Metlege Diab: Sure. If there's any information that you'd like to supply us with that we don't have time today for, we would love to have it sent to us.

Thank you.

Dr. Alice Aiken: I'm happy to do that.

The Chair: Thank you, Ms. Diab.

[*Translation*]

Mr. Blanchette-Joncas, you have the floor for six minutes.

Mr. Maxime Blanchette-Joncas: Thank you very much, Madam Chair. Greetings to the witnesses who have joined us this evening.

My questions are for Ms. Poncelin de Raucourt.

Ms. Poncelin de Raucourt, you've provided an overview of Quebec's university system, which is the largest university system in Canada.

How can universities such as yours develop talent in Canada.

Mrs. Céline Poncelin de Raucourt: As I mentioned earlier, the fact that universities are located in a place encourages students to enrol there and enables people in the labour force to go back to university to develop their talent if they so wish.

I also mentioned the population of students whose parents never went to university. The presence of those institutions is important for that population. Furthermore, when someone trains in a particular geographic region, that enhances the retention of that talent and of highly skilled personnel.

Here are some figures on this.

Approximately 100,000 students are enrolled at one university that's part of the Université du Québec system. According to an internal study, nearly 30% of students say they would never have gone to university if there hadn't been one nearby.

Furthermore, follow-up data on graduates show that students who have studied in their region generally pursue careers there. I'm thinking, for example, of nursing talent. The universities of Trois-Rivières, Rimouski and d'Abitibi-Témiscamingue offer nursing programs. Between 80% and 95% of professionals trained by those universities remain and work in those regions.

Talent is trained because a university is there, together with all its attributes: its educational mission, its research mission and its community service mission.

Mr. Maxime Blanchette-Joncas: Thank you very much for clarifying those points.

In your remarks, you said something quite striking about the concentration of funding.

It's a good thing we reinvest in science, in research, but there are also downsides to concentrating funding. You mentioned that researchers get the largest share of funding, a phenomenon you call funding concentration.

Would you please give us some examples of that?

Mrs. Céline Poncelin de Raucourt: Yes, absolutely.

Major investments are being made in super clusters and areas of advanced expertise through the Canada first research excellence fund, the Canada excellence research chairs program and the new frontiers in research fund.

These are extremely promising investments that help in developing advanced areas. However, they also create an imbalance. In addition to funding, there has to be a genuine investment in granting councils that have mechanisms to ensure diversity and fairness in research funding.

I'd like to cite another figure.

We talked about talent. Talent is developed through student participation in research, by training the next generation. Students are supported by scholarships but also research grants awarded to researchers who then hire those students.

A study conducted in 2017 showed that 56% of students, more than half, are trained at universities where only one quarter of resources are allocated to research. The concentration of funding in the hands of researchers will also cause an imbalance in the ability of students who aren't in those major areas to participate in projects.

Mr. Maxime Blanchette-Joncas: Thank you.

Here's a stunning number: some 15 Canadian universities received 72% of public research funding in 2021.

We understand that the imbalance you refer to affects universities. Apart from research funding, are there any other aspects that may affect actual research?

Mrs. Céline Poncelin de Raucourt: Yes. Apart from research funding, institutions must be able to provide a research environment conducive to talent retention. That's critical. Allow me to explain. We say we want to attract, develop and support talent everywhere, but universities must have the means to achieve their ambitions. The ecosystem must support them as well. As we all know, the research environment is increasingly demanding.

To do their work and secure grants, researchers are increasingly required to demonstrate that they meet criteria respecting diversity, equity and inclusion, the management of research data and national security aspects of their research. Research and the requirements researchers are must meet to obtain research grants are thus becoming more complex.

Researchers often require support teams if they want to succeed in obtaining those grants. Those teams are a central service and help researchers write their applications and explain how they meet those requirements.

There are fewer teams helping researchers secure grants at institutions that receive fewer research grants. As a result, it's possible that two individuals may have to perform all those tasks and have expert knowledge of the requirements. The task becomes impossible.

Securing funding to support researchers, equivalent funding from one institution to another, is thus a very important issue. What's important is that the institutions have access to capacity-building grants.

Once diversity, equity and inclusion were extensively developed, the granting councils introduced programs to enable smaller institutions, for example, to build their capacity to develop expertise in diversity, equity and inclusion in order to provide better support so researchers could transform their practice in those areas.

Support for the research environment is thus a divisive factor in developing research across the country.

● (2010)

Mr. Maxime Blanchette-Joncas: Thank you very much.

I believe I've used up all my time, Madam Chair.

[*English*]

The Chair: Yes, you did, my friend.

Thank you, Monsieur Blanchette-Joncas and thank you to all of our witnesses.

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

Ms. Leah Gazan: Thank you so much, Chair, and thank you to all the witnesses for your testimony today.

My first question is for Dr. Breznitz.

Could you please speak about the gendered impacts of limiting funding and support for entrepreneurs and researchers.

Dr. Shiri Marom Breznitz: I'm not sure I can answer that question.

In terms of the impact on entrepreneurship itself—on entrepreneurship education, which is what I presented—we see there's still a difference. There's always been a difference between females and males in entrepreneurship. Usually we see more males in entrepreneurship. What we find, nonetheless, is that if we look at returnees to Canada who actually establish firms, we find more females.

On that level, you can see the impact on entrepreneurship. When we think about whom we need to approach to recruit back, that would be more female entrepreneurs than male entrepreneurs.

Ms. Leah Gazan: Thank you so much.

Dr. Aiken, you served as the vice-chair of the Canadian Institutes of Health Research. I know one of the goals of your tri-agency on equity, diversity and inclusion is to support equitable access to funding opportunities for all members of the research community.

What are some of the key barriers to fully realizing this goal? What are some initiatives that the federal government could take to support this goal better?

Dr. Alice Aiken: Thank you for that question.

I am, in fact, currently the interim chair of the governing council of the CIHR, which was the first granting agency to declare that 4% of the funds would go to indigenous researchers because 4% of the population of Canada are indigenous. They were the first ones to make that sort of equitable statement. I believe that has worked very well. It's not only 4%, but a minimum of 4%.

In the last budget, we saw money specifically for Black Canadian researchers. I believe it was $24 million, but you would know better than I. I think actually having population-based targets for research funding is one of the measures that can be taken.

Where I think we still struggle as a country.... It's nobody's fault, but we saw during the pandemic that women were really disproportionately affected. It was in all areas, but really in research it was quite astonishing. The number of publications submitted by women researchers dropped and the number of publications submitted by male researchers skyrocketed. That's true in most disciplines.

The number of grant applications we saw from women was substantially reduced and the number for men was increased.

While we thought we were making good strides as a country generally, I think that really shone a light on areas where we perhaps aren't as equitable as we think we are. I would love to have that answer for you, but I don't. I do think it is something that we as a country really need to come to terms with.

● (2015)

Ms. Leah Gazan: Thank you so much for that.

The other question I have for you is related to foreign academic credentials. In terms of credentialing and accepting foreign credentials, this is a huge issue in the riding that I represent.

What do you think the federal government could do to ensure that foreign academic credentials can be made more transferrable to Canadian industries and needs and ensure that the job market is more attractive to recruit researchers and innovators?

Dr. Alice Aiken: It's a great question.

I certainly think if we were talking Ph.D.'s and researchers straightly, people know the institutions. If somebody has Ph.D. from another country, we know the institution and it's accepted.

It's interesting to me that professional degrees—M.D.'s, engineering and those kinds of degrees—aren't immediately accepted. Obviously, each country has its standards. In Canada, each province has its standards that we have to meet for professional accreditation, but it really should be much faster.

We're a country of immigrants. Aside from first nations, we were all immigrants at some point. I do believe this is an area that we could really work on to improve professional employment and entrepreneurship.

Interestingly, the entrepreneurs often aren't as affected. If they come and start their own business, whether it's an engineering business or whatever, they often aren't as affected as professionals who have to obtain licenses.

Ms. Leah Gazan: Thank you so much.

The Chair: Thank you, Ms. Gazan. I'm afraid that's the end there.

Again, we really want to thank our witnesses and the committee for all the good questions.

We will now go to our five-minute round.

Mr. Soroka, please.

Mr. Gerald Soroka (Yellowhead, CPC): Thank you, Madam Chair, and thank you to all the witnesses for coming tonight.

I want to ask a question of Dr. Breznitz first.

You talked about entrepreneurs, but how important is it to have the private sector to assist the new entrepreneurs? Are they creating brand new areas where they don't have any reliance on the private sector?

Dr. Shiri Marom Breznitz: Of course, they have reliance on the private sector. There's no reason for them to start a business in a certain area unless there is already some kind of industry here.

You would like to see the relationship. The importance here is in the agencies and those public-private partnerships that we see sometimes in incubators and accelerators where you see the private sector play a role in helping with networking and helping them come in and connect with the local industry, or come back in, if you like, especially if we're talking about students coming back into Canada.

Networking has been proven to be one of the most important tools for the success of small and medium-sized enterprises. That's where I mostly see the role of the private sector.

Mr. Gerald Soroka: Are we doing enough to attract private industries to the universities, or are we quite maxed out right now? In what areas do we need to improve that?

● (2020)

Dr. Shiri Marom Breznitz: That's a different question. If you are talking about contract research—and I'm sure Professor Aiken can probably say more about that—it's much easier for the larger companies to go in for contracts with universities. It's pretty expensive. That's a place for the government to help and to reduce the risks for small and medium-sized enterprises to come in on large research projects.

I'm sure there are a lot of small companies in the area that would love to go into a research project with the lab of professor Dan, but they probably can't afford to go in. It's expensive. That's partly where we can actually help them because a lot of our local, smaller companies don't have money to do extra research. We talked a little bit about the research that is done in Canada. We are low on the BERD; we are very low on business R and D. It's partly because we don't encourage them to do business R and D.

You see direct funding for research R and D of the businesses, especially in the U.S. and Europe. We know from research that when the government provides direct funding for research, private companies will actually invest more in research than they would have done without the support of the government.

Mr. Gerald Soroka: That's very important because we always talk about how the Government of Canada needs to contribute more. That's kind of the general theme, but you're right that there is a direct link between private industry investing as well. Thank you for that.

I will move on to Dr. Aiken.

A concern of mine was our lack of funding for students, universities, or even the facilities for that matter. I was worried that by attracting people...because of the stigma that we don't have enough money to assist with the research. You're telling me that's not the case. It sounds like people still want to come to our universities and they are still doing so.

Is the only real drawback right now financial or are there other factors we need to consider?

Dr. Alice Aiken: It's a great question.

I think universities have tried to become more entrepreneurial, as Professor Breznitz was saying. We see a student body that is much more savvy than, for instance, when I went to university. They ask questions about where this going to take them and what their degree is going to do for them.

I think by having innovation and entrepreneurship programming, we link them with the community where they'll work and perhaps give them an entrepreneurial mindset. They may or may not start a business, but they'll be a better employee if they get that kind of education.

For attracting research talent here, we don't have as much money as other countries. I do think it is partially financial. However, there's a lot to like about coming to Canada as a researcher as well.

I see the chair is going to kick me off the mike.

The Chair: Thank you, Dr. Aiken, and thank you, Mr. Soroka.

We'll now go to Mr. Collins for five minutes, please.

Mr. Chad Collins (Hamilton East—Stoney Creek, Lib.): Thank you, Madam Chair, and thanks to all the witnesses for attending tonight.

Dr. Aiken, I'll start with you, please.

Last year, the United States invested, I think, $250 billion in science research and innovation. Part of that was to compensate for the brain drain they experienced during the Trump years—not to be partisan about anything. I think we all witnessed the impact their archaic and, in some forms, discriminatory immigration policies had on attracting top talent in all sectors and how they experienced a brain drain of those who felt some discomfort with those policies and left the country for other destinations.

Can you comment on how our country's immigration policies can assist with our efforts to attract top talent? Are there things we can do to tweak the current system to make it easier for universities across Canada to facilitate the migration of students or others to our learning institutions?

Dr. Alice Aiken: That's a great question.

As I said earlier, we are a country of immigrants. I'm the child of immigrants. I think Canada has excellent immigration policies and we have for a long time. We are very welcoming to people. I happen to work at a university that is given top marks in the rankings for the international nature of our faculty. We attract people to Canada because we have good immigration policies.

I am not an expert in that, so I can't speak to any detail of the immigration policies, but as I mentioned earlier, we recognize academic credentials from other universities. If somebody's coming in with a Ph.D. as a researcher, we know the university. We know it's legitimate and we're able to bring that person in.

We are really able to attract talent from other countries and we do retain a lot of our own talent because Canada's a pretty great place to live. It's reasonably safe. For all that we love to complain about it, there's not a single Canadian who would give up our health care system. We have outstanding education systems as well.

I do think that we do what we can. Our policies are good. I also think the policy for students being able to stay for up to two years after they finish their program in Canada has been remarkable for attracting international students here. I think that's been a great policy.

● (2025)

Mr. Chad Collins: Thanks, Dr. Aiken.

Madam Chair, through you, to Dr. Poncelin de Raucourt, the question I have is on how the pandemic impacted the university.

Dr. Aiken gave a snapshot earlier on some of the trends they witnessed at Dalhousie relating to the pandemic. For your university, how has the pandemic impacted your operation as it relates to attracting top talent?

What are your most pressing priorities in terms of government support in a post-pandemic world?

[*Translation*]

Mrs. Céline Poncelin de Raucourt: Thank you very much.

I'd lean toward what Ms. Aiken said. One of the major consequences we've unfortunately observed is an impressive decline in the research activity and publications of women and young parents at universities. Given the weight that the care of children has represented for women and young parents during the pandemic, the impact on families has been significant. Professors and researchers have had to focus all their energy on making abrupt changes to the way they teach and on putting all teaching online. That has absorbed a lot of their energy for nearly two full years and had a definite impact on research activity.

In addition, it has definitely had a significant impact on the internationalization of research, since migratory flows completely halted during that time. Earlier we discussed immigration problems. A recent study by the Standing Committee on Citizenship and Immigration shows that there have been barriers and a certain amount of dysfunction in that area. It's important that we address this issue if we want to restart the international migratory flows in better conditions for Canada as a whole.

[*English*]

Mr. Chad Collins: Thank you very much.

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

Friends, I am cognizant of time. We have two minutes left. To be fair to Monsieur Blanchette-Joncas and Ms. Gazan, can you each ask a very short question and give short answers?

[*Translation*]

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

My question is for Mr. Carbonneau.

Would you please tell us about the balance between internal development and immigration?

I'm referring specifically to the figures that François Deschênes reported, according to which approximately 35% of researchers who have earned a doctorate can't get funding.

Mr. Etienne Carbonneau (Executive Advisor, Governmental Relations, Université du Québec): Canada's capacity to provide its new generation of trained talent, particularly at the doctoral level, with the necessary conditions to conduct research properly represents a challenge. The chancellor of the Université du Québec à Rimouski, François Deschênes, was right to mention this. We ultimately abandon some of our talent by not providing them with the necessary resources to conduct their research, which is promising and would have a definite impact on Canada's capacity to forge ahead in the scientific field. That was a short answer.

● (2030)

[*English*]

The Chair: Thank you both. That was very short.

Ms. Gazan, I would ask you for a very short question, and then a short answer, please.

Ms. Leah Gazan: My last question is for Dr. Céline Poncelin de Raucourt.

You spoke about the importance of providing post-secondary opportunities that are community-based. I would agree with that. It's very difficult for students to have to be taken away from their family's and loved ones' support to get a post-secondary education.

Could you expand on that a little bit more?

[*Translation*]

Mrs. Céline Poncelin de Raucourt: Yes, absolutely. As I've said a number of times, the presence of a university is a major factor in developing a diverse range of talents that can contemplate pursuing post-secondary studies, then having careers and carrying on their profession in the place where they studied.

Universities are also the place where industries, socioeconomic environments, researchers and students come together. The presence of a university in a place is thus a driver of research, innovation and culture that revitalizes an entire region and makes it grow. I think that having many of these centres of excellence is vital to ensuring that an entire country thrives.

[*English*]

The Chair: Thank you both for being so gracious with the time.

Let me thank all of our witnesses. We appreciate your time, your effort and your expertise this evening.

We will briefly suspend and then our committee will go in camera.

I'm sorry, I've jumped ahead. We have one more witness. We will say goodbye to these witnesses and we will welcome one last panel.

● (2030)

_____(Pause)_____

● (2030)

The Chair: Dear colleagues, I'll welcome you back. This is our last panel this evening. We have the Canadian Association of Postdoctoral Scholars, and our witness is the chair, Dr. Edris Madadian.

Welcome. We will hear from you for five minutes and then we will have one round of questions from each of the parties for six minutes. The floor is yours.

Dr. Edris Madadian (Chair, Canadian Association of Postdoctoral Scholars): Thank you, Madam Chair, and distinguished members of the committee.

[*Translation*]

Thank you for inviting me to appear before the committee.

My name is Edris Madadian, and I am the chair of the Canadian Association of Postdoctoral Scholars. I'm also a postdoctoral fellow at the University of Waterloo, funded by the AMTD Waterloo Global Talent foundation. I am a first-generation immigrant, a scientist and an advocate for Canadian postdoctoral fellows.

● (2035)

[*English*]

At the very outset, and on behalf of the executive council of the Canadian Association of Postdoctoral Scholars, I would like to acknowledge the enduring presence and deep traditional knowledge, laws and philosophies of the indigenous people with whom we are sharing this land today. We are all treaty people with a responsibility to honour all our relations.

I would like to start my remarks by raising a question. Do you know someone who is extremely talented, has immense knowledge in his or her field and has made great accomplishments, yet has run into systematic problems that prevent them from fully exploiting their capacity?

Today I would like to speak about those people, the post-doctoral scholars, and their role in promoting the research and innovation ecosystem of Canada. Before that, though, let me explain who we are. CAPS/ACPP is a non-profit professional association that advocates on behalf of Canadian post-doctoral scholars. We advocate for a range of career paths. CAPS/ACPP was established in 2009 with a mandate to improve the lives, training and work experience of all Canadian post-docs. The vision that guides this mandate is one of a strong community in which all Canadian post-docs are provided with fair and reasonable compensation, benefits, rights, privileges and protection as well as a supportive social network and effective support, training and career-development opportunities.

Currently, there are reportedly over 10,000 post-doctoral scholars in Canada, and around 30% of them are members of CAPS. A post-doc is a temporary position that allows Ph.D.'s to continue their training as researchers and to gain skills and experience that will prepare them for their academic careers. Post-doctoral scholars are highly skilled and motivated individuals who support research-intensive universities to drive academic research in Canada while also building local networks of intellectual capital. Post-doctoral scholars have demonstrated their high-achieving tendencies and abilities by earning a Ph.D. degree. They are important human capital in knowledge-based economies and they're major contributors to research, innovation, arts, culture, science and policy-making throughout the world.

In addition to going on to academic positions, these individuals frequently fill roles in a variety of fields, including working in the burgeoning industries and establishing new start-ups. In this way, post-doctoral scholars represent the future innovation ecosystem of Canada. However, due to legislative ambiguity around these positions—the nature of post-doctoral positions is not defined in any provincial legislation document—some individuals find themselves in unfavourable positions, being denied all employment benefits and, in some cases, even being denied access to mandated employment protections.

A CAPS' survey has shown that the position of post-docs in Canadian universities is highly variable and precarious. Sources of funding will oftentimes dictate how a post-doc is embedded within an academic institute, resulting in highly variable access or no access to important social infrastructures such as health care or parental leave for post-docs within the same institute.

As a result of this situation and the relatively short nature of post-doc contracts, post-docs are often overlooked when it comes to creating supportive policies. The high degree of uncertainty and precarity for a post-doc may be attributed to the following factors, which may act as deterrents to attracting and retaining talent.

Number one, post-docs are described and treated as students and trainees when they are actually qualified professionals. Number two, Canadian post-docs' average compensation is not keeping up with global trends, and, number three, career opportunities for Ph.D.'s in Canada are not in line with the number of Ph.D.'s produced by Canadian universities.

I will pass you the summary of my speech, but before I conclude my remarks, I would be remiss if I did not say thank you for the kind and generous support we have received over the past few years from the tri-council funding agencies—NSERC, SSHRC and CIHR—the Burroughs Wellcome Fund and all the members of CAPS across Canada.

Once again, I thank you for this invitation and I look forward to our discussion.

The Chair: Thank you so much, Dr. Madadian. You're the first person who's come and really spoken from the post-doctoral position. We thank you for joining us. You have an eager committee that's going to want to ask you questions.

We're going to go to each party once for six minutes. We begin with Ms. Gladu.

● (2040)

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

Thank you to our witness.

We have heard a lot of testimony about how, if Canada wants to attract top talent, we need to be competitive in terms of salary and that currently the scholarships we offer for post-docs and the salaries we're offering are not competitive. Would you agree with that?

Dr. Edris Madadian: Absolutely.

When it comes to worldwide standards, they're not competitive. In fact, CAPS has done four national surveys with post-docs, and what we have found so far is that the average salary is $52,000 and 25% of post-docs are earning less than $44,000, which is not at all competitive with the post-docs in other countries. For example, in Australia the post-docs are earning more than $80,000 per year. In the U.S., it's not as high as in Australia but it is still higher than in Canada.

That could be one reason why it's a little bit frustrating when they cannot get an academic position, and they are just desperately looking for other options, because the salary's literally not enough to pay the bills with.

Ms. Marilyn Gladu: Exactly. Thank you.

We talked about how people come for top science. Really, that's what attracts the top talent. Are there areas of top science that we're neglecting in Canada that would allow us to attract more top talent?

Dr. Edris Madadian: Based on the responses we got in our survey, we believe that 40% of our post-docs are in life science; 35% are in physics and engineering, and, I think, 10% or 11% are in social science. Social science, I would say, needs more investment, especially when it comes to post-docs. Sometimes we can see that it is completely ignored or neglected. That's something we need to focus on.

Otherwise, in engineering and health sciences, I would say, based on the capacity that Canada has shown so far, there are equal supports for the two groups of post-docs.

Ms. Marilyn Gladu: Do you think there are other barriers that keep us from attracting and retaining the best talent in terms of post-docs?

Dr. Edris Madadian: Absolutely. Thank you for this question.

It was actually part of the summary of my talk, but I didn't want to go over five minutes, so I'll take advantage of this question to go through that.

There are five top ways, we believe, to help retain post-docs as a top talent group of Canadians or immigrants in Canada. Number one is to increase average post-doc salaries, as we just talked about.

Number two is to universally recognize post-docs as professional researchers, not as students or trainees. The fact is that doing that affects the immigration process. There are a lot of benefits they cannot take advantage of.

Number three is to ensure that post-docs have access to critical protections like CPP and employment insurance as well as workplace benefits like health insurance. Eighteen per cent of the post-docs in our survey indicated that they didn't even have access to provincial health care, which is very concerning.

Number four is to harmonize legislation pertaining to post-docs at the federal level in such sectors as immigration, employment and taxation. I know a post-doc who was earning $50,000 in a fellowship. Because that wasn't his salary or it wasn't something that we considered one, there was no record of it as such that a bank could accept.

Number five is to increase federal spending in research, specifically for early-career researchers like post-docs who are at the cutting edge of their field, which will increase opportunities for innovation in academic settings.

Ms. Marilyn Gladu: Finally, are there things we need to do, from a gender lens or an intersectional lens point of view, when it comes to post-docs here in Canada?

● (2045)

Dr. Edris Madadian: Well, the fact is based on the numbers that we have. We have observed that we have almost the identical rate of acceptance for post-docs for women and men.

However, the fact is, what is the next step? The post-doc is a temporary position. Most of the people who want to do post-docs want to get into an academic career, even though some people believe, which I also advocate, that they do not necessarily want to become a professor but they want to have their own research-based institution, start-up, or something similar.

When it comes to that point, there are the programs that the government has been working on for a long time, which are the CERC and CRC, Canada research chair and Canada excellence researchers. Based on the numbers that I read, those are supporting the women-side of the post-docs, which is absolutely great, to be entering the universities for longer terms.

In terms of the post-docs, I don't see any difference exactly between the men and women.

Ms. Marilyn Gladu: Excellent. I want to thank you for your testimony tonight.

Dr. Edris Madadian: Thank you.

The Chair: I know you've made special efforts to be here, and we're pleased to see you tonight.

Thank you, again, to the witnesses.

[*Translation*]

Mr. Lauzon, you have the floor for six minutes.

Mr. Stéphane Lauzon: Thank you, Madam Chair.

I'd like to thank Mr. Madadian for being here this evening.

I didn't know much about the Canadian Association of Postdoctoral Scholars, but I'm pleased to see that such an association exists for students leaving the universities.

I also learned that you've submitted pre-budget briefs to the federal government, the last of which, on investing in the Canadian postdoctoral training system, dates back to 2019. That report was submitted just before the pandemic.

I'd like to know what has changed during the pandemic since you submitted your last report in 2019.

[*English*]

Dr. Edris Madadian: This is an important question that you raised. I believe that a lot of things changed during the pandemic, when you compare it with the pre-budget information you just talked about.

Based on a publication that Nature published recently, the early career researchers, basically post-docs, were the main people harmed as a result of this pandemic. When we look at that, many of the post-docs needed to be productive during their temporary position, because nowadays that is one of the qualifications when they want to apply for jobs, especially academic jobs. They need to have publications. They need to have the experience of the mentorship and mentoring their students. Post-docs are the right spots for it. However, during the pandemic, even for a short period of time, a year or two years, the post-docs saw that the time was going by so fast and they were more worried about it.

In terms of the numbers, I think that was one of the things we tried to advocate for. We touched on that with the tri-agencies, to make sure that there would be an extension for those post-docs who have literally earned this time and could not take advantage of it to be productive.

Of course, depending on the different fields, there will be different outcomes. Some felt they were more comfortable with working from home, so they kept their productivity, but some of them were not. So that's one of the things. One of them was about the budgets....

The other thing is about the inflation. When we want to adjust the salaries for inflation, the post-doc's wage has not changed that much. It's very negligible. For tri-council or other agencies, or private agencies, there is no wage increment for post-docs over the year, not even for 2% or 3%—nothing. It's like $45,000 for first year and $45,000 the second year. That's another thing that has not changed, and it's even worse now that the inflation is higher.

I would say that these are a part.... The pandemic is in part to blame for this. The general problem is with that, and not necessarily relevant to the pandemic.

[*Translation*]

Mr. Stéphane Lauzon: Thank you for that answer.

● (2050)

[*English*]

I've also read that you worked on a report in 2009, 2013 and 2019, and you also had one in 2016, so I'm pretty sure that you're working on one right now.

Can you give us a heads-up—just a couple of lines—about what you're working on right now?

Dr. Edris Madadian: Absolutely. Thank you for asking.

Every four years, we run the national surveys. The last one was in 2016, and we did the 2020, but the fact is, the result was delayed, because many people—again, we are a team of volunteers in CAPS—were affected, so we could not process, and we wanted to have a longitudinal comparison with previous years.

What I can give as an update is that it's almost out. We are going to publish that in the next month. There are definitely comparisons with previous years in terms of the increment in the salaries; the change in the demographics, for instance; the immigration and citizenship situation we have observed in the post-docs compared with 2016 surveys; and, of course, the problem with benefits, as I've explained.

For some of the numbers that I was just talking about, for instance, if 18% of the post-docs do not have access to provincial health care—this is coming from our recent survey that is going to be published—or if we can say that only 20% of the post-docs are being supported by the tri-agencies, it means that 80% of the post-docs are supported internally, which means that the faculty member or the principal investigator of the project is supporting them. When it comes to that end, it becomes a bit tricky, because we don't know what's happening unless the university or the institution has a collective agreement that everything is clear there.

Mr. Stéphane Lauzon: We only have 20 seconds left. I think we'll have to go very fast for this answer.

[*Translation*]

You talked at length about the money these students earn at the end of their studies but said little about the debts they have to repay. What's the average amount of debt they have to repay while not earning big salaries?

[*English*]

The Chair: I'm sorry, Dr. Madadian.

Monsieur Lauzon, perhaps you could ask Mr. Madadian if he could submit it in writing, so that we keep this fair.

Mr. Stéphane Lauzon: You can submit this answer in writing if you want to, absolutely, because we don't have time, and it's a very important question to put in the report.

The Chair: Thank you so much, Monsieur Lauzon. We appreciate those questions.

Now we will go to Ms. Gazan for six minutes.

I'm sorry. It's Monsieur Blanchette-Joncas for six minutes.

[*Translation*]

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

Good evening, Mr. Madadian. It's a pleasure to have you with us.

I read your 2019 pre-budget brief, which, in particular, concerns investment in the Canadian postdoctoral training system. Earlier you discussed your first recommendation, which concerns the status of postdoctoral fellows, particularly as it pertains to employment insurance and the Canada pension plan.

You also recommend establishing a standard national policy on postdoctoral research and training. Would you please provide us with more information on that subject?

[*English*]

Dr. Edris Madadian: That's actually a very important question you raise because, as I said, there is no clear definition of post-doc in any provincial legislation, and that causes a lot of problems when it comes to different universities because the university, or the research institution will decide how to define a post-doc.

I can tell you that there are universities in Quebec that define post-docs as “students”. There are universities in Quebec that call them “faculty”. In B.C. it is the same thing. Some universities call them “faculty”, but still they are not getting the benefits that faculty get. Some of them are called “staff”. Some of them are even classified as part of the administration.

The situation is basically similar in every province we have done this study in. With respect to the post-docs policy, I think it's very important to have a definition about who is a post-doc and what their responsibilities are and, in terms of compensation, what the bare minimum is that the institution needs to consider.

This will cause a lot of precarity and uncertainty, which we see in different universities. I have seen a post-doc being paid only $25,000 per year, which is not even comparable with what a Ph.D. student who is being supported gets.

That's basically all about the policy, but of course there are lots of things. We need to do more surveys. We need to be more aware of things, but CAPS itself is a team of volunteers and we do not have access to permanent funding or annual funding. Whenever we want to do a specific survey, we just reach out to tri-agencies or other agencies to see if we can get funded for it. At a bare minimum, we want to conduct a national survey for post-docs every four years.

● (2055)

[*Translation*]

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

The third recommendation in your brief concerns a permanent monitoring system. That relates to the topic we're exploring this evening, which is recruiting and retaining highly qualified personnel. In that recommendation, you state that no monitoring of employment conditions or postdoctoral policies is conducted at the institutional level.

Would you please tell us more about the impact that may have on the monitoring of the situation of former postdoctoral fellows to assess the reality of the long-term labour market?

[*English*]

Dr. Edris Madadian: Absolutely. Thank you.

If I understood you correctly, I believe part of that is the problem with the benefits, such as EI and CPP, and health care, which we talked about. There is a chain of problems that are linked to each other because of the definition of post-doc, as we just talked about.

The other thing is that, according to the survey we have done, only 20% of the people are hired by the universities in the end. Given that we are talking about short-term positions, a person cannot necessarily can get an academic position in the first post-doc. Sometimes they go to the second one, the third one, the fourth one, and in the end sometimes in the fourth one the quality is lower because there is some legislation from the tri-agencies, for instance, that there is an eligibility period, and that they do not accept a Ph.D. or post-doc if the Ph.D. is from more than three years earlier. Those are the problems it causes.

The post-doc wants to reach the point they want to be at but they still have to try, but then the problem is that there is no funding reserve, unless there are universities that want to offer some of the private funding.

Those are the topics I can recall that are related to the item you raised.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you very much.

We've discussed the recommendations concerning the funding and introduction of clear and established policies, but does your organization have any expectations of the federal government?

[*English*]

Dr. Edris Madadian: Thank you.

I believe that in addition to the salary, which is obviously the most important part, and also the benefits we talked about, immigration is very important. As I mentioned in my opening statement, we have over 10,000 post-docs in Canada and 60% of them are international post-docs. That means they need to think about their future. If they are here, they are here for the short term. Again, they go to the next post-docs, but I would say that immigration is another important topic that needs to be clear. Province-by-province legislation, based on what I have heard, seems to be different. Sometimes in terms of administration, people in different universities are not aware of things because of those kinds of ambiguities in the policy. It needs to be defined for post-docs provincially and federally.

Given the number of post-docs, immigration is definitely an important matter to talk about.

The Chair: Thank you.

[*Translation*]

Thank you, Mr. Blanchette-Joncas.

[*English*]

We also recognize your efforts to be here tonight, so thank you.

Dr. Madadian, it's not often that you get all the questions, so I'll just give you a minute to breathe. This is not easy.

With that, we will go to Ms. Gazan for six minutes.

Ms. Leah Gazan: Thank you so much, Madam Chair.

Thank you, Dr. Madadian. I think you've done a really good job of making it very clear how exploitive the academic system has become for scholars, and particularly, in your case, for people who are doing post-doctoral studies.

How have post-doctoral and graduate unions across Canada, like PSAC 77000 at Carleton University, been fighting for post-doctoral scholars' compensation for their teaching and research work? I know that unions are getting involved because the system has become so exploitive. How has that helped?

● (2100)

Dr. Edris Madadian: Thank you for your question.

As a person who has been in different universities from coast to coast in Canada, I have had the experience of working with PSAC as well, so I understand that their support is really important and it's really vital to get things done and moving forward faster, but the fact is, there has to be a union in a university.

If we look at the U15 universities in Canada, out of those U15, we see that two have knowledge of CAPS and 10 have post-doctoral associations and also unions, but five of them do not.

Please remember that is the U15, and that there are 61 institutions in Canada that have post-docs. There are the small universities. If I'm talking about Mount Saint Vincent University in Halifax or the University of Northern British Columbia in Prince George, all of them are smaller universities, and they definitely do not have unions or associations.

That's definitely a problem. In those cases, if PSAC ever reaches out to those people—and maybe they will not, because of the low number of post-docs—it will be a hard job to get a collective agreement established in the university to ensure they are receiving their rights in the right way.

I would say that PSAC is very helpful. I do not have enough knowledge to speak about Carleton, which you just talked about, but I would say that for Dalhousie, where I was before, what we received from PSAC was very important and very supportive. I wish that would be the case for all the provinces in Canada and all the universities.

Ms. Leah Gazan: One of my colleagues asked a question about student debt that you weren't able to answer. As a former post-secondary educator myself, I've been a long-time advocate for no tuition fees. We've seen it in other countries. We know it's the way of getting the best of the best if, first of all, people aren't limited by their financial ability, but also are not limited by the huge amounts of debt they acquire, especially at your level of education.

Can you speak a bit to the impact of student debt, particularly as it relates to low salaries paid to post-doctoral students?

Dr. Edris Madadian: That's a very important topic to talk about.

Many of the post-docs are carrying over with them the debt they had during their Ph.D., so they have to pay it back either to the government or to the university. The fact is that their low income does not allow them to. That's a simple answer, because their priority is paying their bills; it's not the loan, even though the loan is very important. They are not able to pay off such an expense. It's the second or third priority for them.

If it's coming from the university, it's easier, but they still have have to pay the interest, because the university is adding interest over the years. In the end, it depends on whether or not they end up with a well-paid job, so that they will be able to pay off everything.

I would consider that an important issue, even though I would say that many of the post-docs in our surveys have not indicated that, because, again, there is a higher degree of issues in the list, such that they do not even see that at this point, but I'm pretty sure, based on the people who we have been in contact with, that would be an issue. It definitely would be a good item to include to see what exactly are the numbers that we can talk about in our next survey.

Ms. Leah Gazan: Do you think one of the things that would help—again, I find it problematic, particularly with your level of education and commitment to education—would be to have a set wage standard for post-doctoral students?

● (2105)

Dr. Edris Madadian: It's absolutely important, because the number one problem that the post-docs have been reporting is salary. As I said, 25% of the post-docs right now in Canada are receiving less than $45,000, and the average salary is $52,000. It means that we are still far from the standards of the countries we are comparing ourselves with—Australia, the U.S. Many of the post-docs have to go to the U.S., because there are more openings and academic job opportunities there. They are being better paid there compared with in Canada.

That's really important.

The Chair: Thank you so much, Ms. Gazan, for your questions.

I want to thank all of the committee for their questions tonight.

I want to thank Dr. Madadian. It is not easy to come here and have all of these members of Parliament ask you continual questions.

I think all of us recognize the job you did tonight, and we thank you.

We will suspend and come back in camera. We have some work to do.

Thank you, Dr. Madadian.

[*Proceedings continue in camera*]