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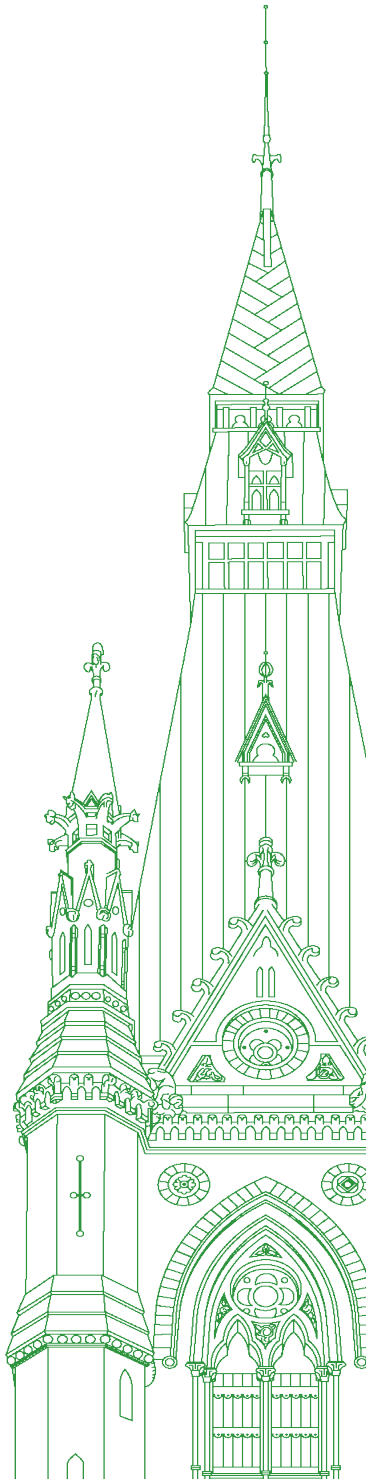

Chair: The Honourable Kirsty Duncan

Standing Committee on Science and Research

Thursday, February 17, 2022

● (1835)

[*English*]

The Chair (Hon. Kirsty Duncan (Etobicoke North, Lib.)): Colleagues, I call this meeting to order.

[*Translation*]

Welcome to meeting No. 6 of the Standing Committee on Science and Research.

[*English*]

As you all know, the Board of Internal Economy requires that committees adhere to the health protocols that are in effect until March 11, 2022. As chair, I will enforce these measures, and I thank you all for your co-operation.

Today's meeting is taking place in a hybrid format, pursuant to the House order of November 24, 2021.

I would like to outline a few rules to follow.

Interpretation services are available for this meeting, and if there are interpretation difficulties, please let me know as soon as possible. You may speak in the official language of your choice. At the bottom of your screen, you may choose to hear floor audio, English or French. The "raise hand" feature is on the main toolbar, should you wish to speak.

As a reminder, all comments should be addressed through the chair. When you are not speaking, your microphone must be muted. The committee clerk and I will maintain a speaking list for all members.

Colleagues, we have two panels tonight. On the first panel, we have Dr. Nipun Vats, assistant deputy minister, science and research sector, Innovation, Science and Economic Development; and from the National Research Council of Canada we have Dr. Danial Wayner, departmental science adviser; and Dr. Shannon Quinn, secretary general.

Colleagues, you will have five minutes to speak. At four and a half minutes, I will hold up a yellow card, and I'll move on to the next speaker at the five-minute mark.

We'll go to Dr. Vats. Welcome.

Dr. Nipun Vats (Assistant Deputy Minister, Science and Research Sector, Department of Industry): Madam Chair, thank you for the invitation today.

As you mentioned, I'm the assistant deputy minister for the science and research sector at Innovation, Science and Economic Development Canada. It's a pleasure to appear before the committee on this important topic that you are discussing.

[*Translation*]

I would like to provide a brief overview of the role of Innovation, Science and Economic Development Canada, or ISED, in supporting Canadian science and research, explain how it delivers on this role and then outline some of the key opportunities on the horizon.

[*English*]

The Minister of Innovation, Science and Industry is mandated to guide strategic investments in science and research as well as to support the government's science and technology policy agenda. ISED supports this mandate in a number of ways.

First, we work with the granting councils, NSERC, SSHRC and the Canada Foundation for Innovation, to help ensure that granting council programs align with the government's policy objectives.

[*Translation*]

In 2021-22, they are providing approximately $2.4 billion to support university and college research and training. Funding assists more than 33,000 academic researchers; approximately 40,000 students, post-doctoral fellows and trainees; and thousands of non-academic collaborators.

[*English*]

Second, ISED provides funding through contribution agreements with third party organizations involved in funding and conducting research and training, and in the promotion of science. These organizations are a key part of Canada's science and research ecosystem, and range from world-leading basic research institutions such as the Perimeter Institute for Theoretical Physics, to Let's Talk Science, which works with colleges and universities to provide STEM outreach to youth.

Finally, the department plays a convenor role by bringing together different parts of the research ecosystem. This includes engaging with colleges and universities to identify challenges and opportunities; enhancing connections between the research community and downstream commercial opportunities, including through ISED's innovation programming; working with provincial and international S and T partners to identify opportunities to enhance our mutual research, training and downstream economic outcomes; and working with the federal community of science-based departments and agencies on horizontal science and innovation priorities and to connect government and academic science efforts.

[*Translation*]

Alongside a range of investments the government has made in the last several years to enhance support for science and research, strides have also been made to advance equity, diversity and inclusion. Evidence shows that a more diverse research community is a more creative and innovative one, as it brings a broader range of experience and insights to the table. Actions taken within the ISED portfolio include the dimensions charter, which encourages organizations to take actions to foster a more diverse research environment.

[*English*]

In addition to supporting a strong base of investigator-led research, it is important to ensure that we can capitalize on areas of Canadian opportunity that emerge from our research strengths. As you likely know, thanks to past investments in research, Canada is already at the forefront of some key emerging technologies, such as quantum AI and genomics, and is viewed as a global leader in these areas.

There is an ongoing effort to secure a strong talent base and maintain a globally competitive position in AI through the pan-Canadian AI strategy. The second phase of this strategy, announced in the 2021 budget, focuses on commercialization and adoption, attracting and retaining top academic talent, and enhancing computing capacity and the development of standards that support the implementation of socially responsible AI.

[*Translation*]

Budget 2021 also announced funding for a national quantum strategy and a pan-Canadian genomics strategy to support research, talent and commercialization in these areas, to build on our globally competitive positions and create long-term economic benefits for Canada.

[*English*]

Finally, science will be essential to tackling some of the major horizontal issues facing Canada and the world, such as climate change, sustainable growth and lagging competitiveness. Given this, Canada's approach to supporting science and research will need to continue to be globally competitive, and a well-connected, agile and interdisciplinary research ecosystem will be all the more important. The work of this committee will be a valuable input into this effort, and I look forward to your deliberations.

Thank you, Madam Chair, for the opportunity to provide this overview. I would be pleased to answer questions.

The Chair: Thank you so much, Dr. Vats. We are delighted to have you, and we thank you for your time and effort.

Now we will go to the National Research Council. I'm not sure who is speaking, but it's over to the National Research Council, please.

Dr. Danial Wayner (Departmental Science Advisor, National Research Council of Canada): Thank you, Madam Chair, for the invitation to speak to you today about the National Research Council of Canada, as part of your study on success, challenges and opportunities for science in Canada.

We would like to begin by acknowledging that the National Research Council's facilities are on the traditional unceded territories of many first nations, Inuit and Métis people. We recognize our privilege to be able to conduct research and drive innovation on these lands and pay respect to the peoples who were here before us.

My name is Dr. Dan Wayner. I am the departmental science adviser at the NRC. In this capacity, I'm responsible for encouraging research excellence among the NRC's 2,250 scientific and technical staff, and for leading dialogue around our scientific direction. During my 37-year career at NRC, I've held a variety of roles: scientist, director general, vice-president of emerging technology and now departmental science adviser.

I'm joined today by my colleague, Dr. Shannon Quinn. Dr. Quinn is the secretary general at the National Research Council of Canada, serving as the lead VP for policy and NRC's support of government priorities. She has an extensive background in science and technology in both the private and public sectors. Prior to joining the NRC, she served as the VP of science, technology and commercial oversight at Atomic Energy of Canada Limited.

As you know, the NRC is Canada's largest federal research and development organization, with a national footprint that includes laboratories in 22 locations spread across every province in the country. Our scientists, engineers and business experts partner with universities, colleges and Canadian industry to take research and technology from the lab to the marketplace. We serve a unique role in connecting the diverse parts of Canada's research ecosystem, responding to public policy priorities and creating opportunities that benefit all Canadians.

Over the past five years, we have implemented a plan to revitalize and sustain the NRC's role at the forefront of research and innovation. This has resulted in the creation of nine collaboration centres with university and other partners in areas such as quantum photonics, ocean technologies, green energy, AI and cybersecurity. In addition, we are pursuing research excellence through support for exploratory research in select disruptive technologies, ensuring a more diverse workforce, revitalizing our NRC research environment and aligning with industrial priorities in key innovation clusters.

As the largest federal science organization, at the onset of the COVID-19 pandemic, the NRC quickly pivoted its capabilities to support the Government of Canada's response to the crisis. The NRC's pandemic response challenge program was up and running within 18 days of its announcement on March 20, 2020. As of today, we have supported 67 projects.

From the beginning, the NRC worked collaboratively to secure the supply chain for several key components used in molecular diagnostic procedures for COVID-19 testing, reducing Canada's dependence on other countries for critical testing supplies during the pandemic. About 120 million PPE items have been assessed to make sure they meet the necessary standards as they enter the Canadian marketplace, thanks to the support provided by our NRC testing facilities.

The NRC industrial research assistance program, or NRC IRAP, has invested $81 million to support 14 made-in-Canada vaccine and therapeutic developers. Through NRC IRAP, we supported 2,200 innovative businesses, helping them weather the pandemic and preserve over 26,000 jobs in Canada. We also completed construction of the biologics manufacturing centre in Montreal in June 2021, to provide Canadian vaccine and therapy production capacity.

I'm here to speak to my role in NRC's recent undertaking of a horizon-scanning initiative to identify key economic and societal challenges of significance for Canada over the next 10 to 15 years. Six broad subject areas were explored: climate change, resource futures, big data and artificial intelligence, cybersecurity and privacy, health care futures and new models of innovation. The next phase, which is currently under way, is intended to show the potential of horizon scanning to identify the capabilities needed to respond to these challenges.

While the NRC has a role in identifying where science is going and where science can help to meet public good objectives, part of what NRC provides is a ready base of skills, knowledge and infrastructure that can be mobilized to address a variety of urgent, emergent and long-term needs of Canada. We are an instrument of government that can deploy dedicated interdisciplinary teams to advance long-term challenges yet remain nimble enough to respond in a crisis.

With that, I'd like to thank you for your time. We're pleased to answer any questions.

● (1840)

The Chair: Thank you so much, Dr. Wayner and Dr. Quinn. We are delighted to have you both.

We thank all our witnesses, and we welcome you. As you know, this is a new committee, and there's real interest among our committee members.

Now we will go to the first round of questioning, for six minutes.

Our first member will be Mr. Tochor.

Mr. Corey Tochor (Saskatoon—University, CPC): Thank you so much, Madam Chair, and thank you to our witnesses tonight.

To start, Dr. Wayner, it sounds like you have been at the NRC for a while. I thank you for your public service in, it sounds like, different roles.

Looking back, though, it's important sometimes to know what we should be looking for into the future. If you went back in time, say, 20 years and could advise the person who had your role 20 years ago, what advice would you give them on what's going to happen at NRC and the challenges we face as a society? What would that advice sound like?

● (1845)

Dr. Danial Wayner: Thank you, Madam Chair, for an intriguing question.

You're asking what I would advise the science adviser of the day. As I look back, what I see is that when I was a young researcher, science and technology moved much more slowly than they do today. They are accelerating at a pace that means we must continue to build this bridge between understanding what is happening at the frontiers of science, which is carried out mostly in an academic environment, and the current and emerging needs of Canadian industry. We can and should continue to play that bridge.

If Canada is going to have, for example, a quantum industry, and if the NRC is going to play that role, we must be involved in the science and quantum science at one side, and we must also be able to work collectively and directly with companies that have the potential to adopt and commercialize those products. We do that, not just through our own R and D, but also with the help of our IRAP group, which provides both support for innovation and business advice to Canada's SME communities.

Mr. Corey Tochor: To paraphrase, it's a bit on the speed of things. In the last 20 years, things have sped up, and as things double in technology, I suspect that's a pattern that's going to continue.

Switching over to Mr. Vats on quantum AI, could you unwrap a little what kind of security concerns you have in the international setting with quantum AI?

Dr. Nipun Vats: It's certainly the case that AI technologies, and maybe even more so quantum technologies, are sensitive from the perspective of being potentially used in sensitive security areas. What we have been doing within our programs is starting to implement some tools and practices that help to better protect Canadian research.

For example, over the last couple of years, we have been working with the university community and the security agencies to develop guidance to enable researchers to better understand the risks associated with their research being potentially stolen by foreign actors. We have had a fair bit of discussion with university researchers and university administrators about how to better safeguard their research. We put up a whole website called Safeguarding Your Research to better inform them of the risks while being sensitive to the fact that success in areas even like AI and quantum require that we be as open as possible but as secure as necessary, because collaboration is a pretty important part of making advances in those fields.

There have also been policy statements by the Minister of Innovation, Science and Industry, the Minister of Public Safety and the Minister of Health, who also has a role with respect to health research, basically asking for government to work with the university community to implement more stringent due diligence processes in federal granting programs that are, in particular, partnership programs between industry and university researchers.

Those have been brought into place with respect to the NSERC alliance program, which is the primary vehicle for national science and engineering collaborations between university researchers and private sector actors. That's also a next step in terms of ensuring that there's an appropriate understanding of who your partners are and what risks they might imply, so that researchers themselves are in control of deciding who they share their research with and that we do more to protect sensitive research from being lost.

● (1850)

Mr. Corey Tochor: I'm going to be running out of time here shortly, so I'll go quickly back to Dr. Wayner about the NRC facility. I represent Saskatoon—University and I'm very proud of the work we do at the NRC facility in our province.

I'd like to know what percentage of the budget was spent the past fiscal year in Saskatchewan. Do you do any calculations on per capita funding for facilities, or is it a needs-based assessment in terms of where that funding would flow within the NRC?

Dr. Danial Wayner: I can't give you the direct numbers, but I can ensure, Madam Chair, that we'll provide those numbers to the member and this committee.

Mr. Corey Tochor: Okay, endeavour to have those documents tabled. Thank you.

The Chair: Thank you so much, Dr. Wayner, and thank you so much, Mr. Tochor.

Those documents will be tabled.

Mr. McKinnon, you have six minutes.

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

I get quite excited when I hear you all talk about AI, quantum computing and so forth.

I note that the NRC spoke about photonics. My understanding of photonics is that it's really where we segue our technology away from electrons into photons. I suspect there is a lot of crossover with quantum and AI and so forth.

Could both organizations expand on the importance of these areas and what we're doing as a government and as a country, to promote and expand research in these areas?

We could start with Dr. Vats.

Dr. Nipun Vats: With respect to AI, photonics doesn't figure quite so prominently with respect to AI research, but there are applications of AI in a whole range of different areas, including developing new materials and new technologies, so I think there is a crosswalk there.

With respect to what the government's doing, it has had for a number of years something called the pan-Canadian AI strategy, which to date has been delivered through CIFAR, the Canadian Institute for Advanced Research. The main focus of that has been on making sure that we can attract and retain top talent and train more talent in the field of AI. When it comes to AI technologies, it's really about a talent pipeline that you can produce that can lead to new advances in AI but can also help support industry in terms of adopting these new approaches that could really improve the efficiency of their processes, their ability to create new materials or new products or services.

In the last budget the government renewed that talent play, but also added to it some more focused efforts to try to encourage commercialization of innovations in AI, as well as to help Canadian industry adopt these technologies. The technologies really are making the best use of the data that companies have at hand to optimize what they do and provide greater computing power for the research. It's a very specialized kind of technology, the computing that's needed for AI.

On the quantum side, Canada's been investing fairly strongly in quantum technologies over a number of years. Over the past 10 or 11 years, we've spent upwards of a billion dollars in research funding in various forms for quantum. It's really meant that when you go around the world and you talk to researchers about quantum, they know Canada and they know Canadian researchers. We also have a fairly rich nascent start-up community of Canadian companies in a range of areas that relate to quantum technologies.

Building off of that strength that's been built in the last budget, the government committed to a national quantum strategy for Canada, which focuses on research, commercialization and talent. We've done consultations in that area and are in the process of developing the strategy, which would try to help accelerate what we've already built in Canada so we can stay ahead of the curve internationally.

The NRC might have some things to add on that, if there's enough time. I'm sorry I've taken so much time, but there might be some things that Dan or Shannon may wish to add.

● (1855)

Mr. Ron McKinnon: Thank you for your answer. I appreciate that.

We do have two minutes, Dr. Wayner and Dr. Quinn, if you'd like to fill that in, and I have more questions if you have time.

Dr. Danial Wayner: Thank you, Madam Chair, for that question.

The NRC is in fact a leader in photonics research and development. The Canadian Photonics Fabrication Centre, the CPFC, is actually the world's best pure play fab for the production of photonic devices. We are very grateful for the generous investment of $90 million to revitalize our CPFC, which will allow Canada to continue to be a world leader for the next generation.

In terms of what Dr. Vats said, I can say that there is, of course, an intersection between photonics and optical telecom and those various technologies and emerging areas of quantum. Some forms of quantum technologies will in fact use photons in order to transmit the information. The NRC is well positioned. We're a world leader in an area we'll call silicon photonics, which involves the ability to build photonic devices inside of silicon chips.

I also want to stress the importance of collaboration. Canada really has a world-class ecosystem in photonics and in quantum science. The NRC plays a role in contributing to Canada's leadership, so thank you, Madam Chair, for the opportunity to speak to this.

Mr. Ron McKinnon: Thank you, doctors, for your answers. I look forward to the opportunity down the road to drill into these areas more deeply. I think they're fascinating areas of inquiry.

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

Again, we're so pleased to have Dr. Vats, Dr. Wayner and Dr. Quinn with us.

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

[*Translation*]

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

First of all, allow me to welcome all of the witnesses joining us.

My first questions will be directed to Mr. Vats.

Mr. Vats, last week, we welcomed chief science advisor Mona Nemer as a witness.

I asked her a question about a recommendation in the Naylor report to create a national advisory council on research and innovation. The government started recruitment in 2019, but to date, we have no news about what progress has been made in recent years.

Is your department aware of the creation of this national advisory council on research and innovation?

[*English*]

Dr. Nipun Vats: With regard to the Council on Science and Innovation, as you mentioned, there was a call for potential membership in 2019. I can't speak to the government's intentions with respect to when to move forward with that, although I would observe that the pandemic has obviously been a very big focus for government policy, but it has also drawn on a lot of expert advice. If you look at what's happened over the last couple of years, there's been a lot of focus on the creation of expert committees to inform in areas such as vaccine investments or public health measures. We're seeing that when it comes to drawing on expert scientific advice, there have been a number of ad hoc committees of experts that have been integral to decisions that have been made with respect to government actions on research and public health policy.

I would say, without going too far down the road of speculating, that given the level of activity in terms of expert advice that's been going on with respect to pandemic responses, it may well be that it hasn't been as high a priority to move forward with a broader kind of advisory committee, but it's really—

[*Translation*]

Mr. Maxime Blanchette-Joncas: Thank you for those comments, Mr. Vats.

Can you explain the obstacles and the reasons for the delay?

The process was launched nearly three years ago. Can you tell us what has been happening on your end?

● (1900)

[*English*]

Dr. Nipun Vats: I don't know if I can speak to specifics in terms of delays. The process of selection for these types of committees does take a period of time. There has been a lot of activity, as I mentioned, with respect to drawing on expert advice over the last couple of years, but as regards the timing of appointing such a committee, I'm not really in a position to say.

[*Translation*]

Mr. Maxime Blanchette-Joncas: That's perfect, Mr. Vats.

The council was therefore never created. There was a recruitment process, but no committee was created.

Is that correct?

[*English*]

Dr. Nipun Vats: That's right. There are no members appointed to—

[*Translation*]

Mr. Maxime Blanchette-Joncas: Do you know when the selection process will be completed?

It has been three years.

[*English*]

Dr. Nipun Vats: I'm afraid I don't have any information on that.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Perfect. I would like to receive a written response from your department on the matter, Mr. Vats.

I would now like to hear your opinion on the crux of the issue, according to many stakeholders in science and research: funding.

The committee heard from Mr. Patry, the representative of the U15 Group of Canadian Research Universities. He told us that Canada is losing ground on science and research, particularly in research and development.

In your opinion, what percentage of GDP should the government invest to be truly competitive on the international stage?

[*English*]

Dr. Nipun Vats: If you look at the federal government's investment in higher education research, we are actually quite strong. I believe we're first in the G7 with respect to the share of GDP that we invest in research.

The area where Canada is relatively weak, which has a really big impact on our overall research intensity, is private sector investment in R and D. Canada is quite a bit lower than our comparative nations. There has been a long-term question about how to encourage greater R and D within the private sector. A number of efforts have been made in that regard. There's no single magic bullet to address that. Some of it is a function of our industrial structure. Some of it is about strengthening the relationships between our research institutions and the private sector. There is more to be done in that space.

Organizations like the NRC, for example, are trying to strengthen those links when it comes to R and D. It is one of the core things that we think about—

[*Translation*]

Mr. Maxime Blanchette-Joncas: I must interrupt you, Mr. Vats, because time is short.

Can you tell us what percentage of GDP Canada currently invests in science and also in research and development?

[*English*]

Dr. Nipun Vats: I can certainly provide those figures to the committee.

[*Translation*]

Mr. Maxime Blanchette-Joncas: I would ask you to send us the response in writing.

I can tell you that the pre-budget brief by the U15 Group of Canadian Research Universities states that Canada is currently investing 1.57% of its GDP, which is well below the average invested by OECD countries. The United States invests 2.9% of its GDP.

As you know, Canada is the only G7 country to have decreased investments in research and development over the past 20 years. Canada is also the only G7 country to have lost researchers in recent years.

You talk about the private sector...

[*English*]

The Chair: Monsieur Joncas, that's six minutes.

We'll get you a quick response from one of the witnesses. Answer very quickly, please.

Dr. Nipun Vats: I think what you're referring to is the total investment in R and D as a function of GDP.

The reason I was talking about the private sector is that it's an aggregate of business R and D, government-performed R and D and higher education R and D. You have to look at the three components to understand the cause of Canada's aggregate R and D intensity being low. If you look at that, the biggest difference from other countries is on the private sector side. That was the essence of my answer.

The Chair: Thank you, Dr. Vats, and Monsieur Blanchette-Joncas.

Thank you to all of our witnesses.

We will now go to Mr. Cannings for six minutes.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you very much, Madam Chair, and thank you to the witnesses for being here tonight.

I'll start with Dr. Wayner and Dr. Quinn from the National Research Council, just because it seems like such an interesting agency. I think you said you have 22 labs across the country—disciplinary teams.

The one NRC facility I know very well is the Dominion Radio Astrophysical Observatory near Penticton, in my riding. That's been around for the last seven years or so. I know Dr. Duncan, our chair, has been there. That is an NRC facility that has a very pure research focus. It's almost like an academic institution looking at deep space and that sort of thing, but I know NRC also does very applied work. Some work I've heard about through my time on the natural resources committee was experiments they did with the flammability of building materials, specifically around mass timber construction, looking at how safe those materials were.

I'm just curious as to how the agency is structured, what these 22 labs or locations do, and how permanent they are. Perhaps you could start there. I have other questions, but I just want to get a broader sense of how the NRC is set up, how it decides to do what, and whether to keep on doing it or not.

● (1905)

Dr. Danial Wayner: I'll try to answer this very succinctly.

The NRC has 14 research centres that occupy those 22 sites across the country. We are divided into engineering divisions that have a very applied focus, that have very strong connections with industry and in many cases are working directly with industry sectors. That might cover automotive, aerospace, construction as you've already mentioned, and others.

We have life science institutes that are focused on a range of things, from medical devices to ag biotech to human health. We have research centres focused on emerging technologies, which would cover advanced materials and photonics, and so now this is where astronomy comes in.

It's really important to recognize that although on the surface it looks like our astronomy group is doing very academic work, what we actually do is enable academics to gain access to world-class telescopes where Canada has some ownership. In fact, the majority of what we do is actually engineering, building next-generation instrumentation for emerging observatories, and of course we have observational astronomers who work hand in hand with academics.

Since you mentioned DRAO, you will also know that CHIME, which is a university-owned facility, is hosted on the DRAO site, and there's a very strong collaboration with NRC.

That's a very high level, but of course we're very happy to send to the chair a more detailed overview of NRC's structure and operations.

Mr. Richard Cannings: Thank you for that. It was very informative.

I know about CHIME. I did some of the environmental impact work when that was being built. It was great to see that emerge, and I know it's done remarkable, game-changing work on a world scale.

You talked about the engineering divisions that work closely with industry. Can you explain how decisions are made on what to do there? Do industries come to you and say they have an important question? This is a very valuable government organization we're talking about here, and I just want to know how you decide what to put these scientists and engineers to work on.

Dr. Danial Wayner: We have, of course, infrastructure that has been developed over decades and decades of R and D at the National Research Council, so much of our current infrastructure and the expertise of our engineers, if we want to focus on engineers, actually come from this historical background in areas related to oceans, automotive, aerospace, construction, and also environmental and energy.

Our role is to create a base of expertise. We collaborate with academics to ensure that we're staying at the forefront of our fields, and we are present to work directly with industry or groups within an industry sector in order to understand their current and emerging needs. We have facilities where they can come to do testing in order to advance their own innovations, and we have opportunities to work more collaboratively with them to forge new frontiers of innovation that will increase their competitiveness in the future. It is very much the case that we have a strategic perspective on Canada's manufacturing economy in particular, and our research centres are positioned to support them.

● (1910)

The Chair: Thank you, Dr. Wayner. Thank you, Mr. Cannings.

Before we go to the second round, I would just like to acknowledge our interpreters, our clerk, our analyst and everyone who supports this committee and works so hard.

We will now go to our second round. We're going to do a five-minute round, then two and a half minutes.

To begin, it will be five minutes to Mr. Williams.

Mr. Ryan Williams (Bay of Quinte, CPC): Thank you, Madam Chair, and thank you to everyone attending tonight.

I'll start with Mr. Vats, and I'm going to follow up on some earlier questions. We all want Canada to be a leader in science, research and innovation. I've been looking at the targets in the 2021-22 departmental plan and I've seen some phrases like “higher than OECD average” and “improve or maintain rank” litter the targets. I know you've talked tonight about how we're the leader in Canada on quantum AI and genomics and I'm wondering, to be at the top of the list, what are the next three you think we can be the best at or Canada can improve on?

Dr. Nipun Vats: Just so I understand, do you mean areas of focus in terms of technology or something?

Mr. Ryan Williams: Yes, to be the top of the world. We know where we're the top three, so what are the next three we could really focus on to improve?

Dr. Nipun Vats: That's a question we struggle to answer, because if we knew where the puck was going, we'd be able to chase it down. I can give you only some general observations. First of all, there are organizations that do studies with respect to where we're strong in research. For example, the Council of Canadian Academies has done a study in this area. There's also a distinction between basic research and applied technologies, which is an area where government tends to focus its investments more. I think you have to have that base of basic investigator-led research to make it happen.

An example of an area that has come up a lot is in terms of materials, the development of new materials and using new approaches, including AI, to see if you can design materials, chemicals and a range of things that would be used in a whole bunch of different sectors. I know the NRC is involved in research in this area as well. It's an area where we have the combination of research talent and an industrial base to potentially be even stronger in that space. There are areas around stem cell technologies where Canada's been a leader. It's very hard for me to pick just three. It's a combination of looking at what our research base is like, what the international context is, and whether there's a receptor capacity in Canada to grow it here from an industrial perspective.

Mr. Ryan Williams: Thank you very much, sir.

Dr. Wayner, in an appearance before the industry committee in 2015, you talked about the NRC's role in supporting disruptive innovations and technologies, and I find this concept extremely interesting. What kinds of disruptive innovations has the NRC helped create in the past seven years?

Dr. Danial Wayner: That's an interesting challenge for me to respond to, after so many years. Part of the challenge, of course, is recognizing that disruptions are really [*Technical difficulty—Editor*] at the level of innovation and not really at the level of technology.

We have seen advances in, for example, silicon photonics, that are poised to be revolutionary. We have developed quantum dot-based lasers that actually can support carrying many signals over a single fibre and increase the capacity.

We are working with a company at the NRC to advance and deliver those technologies. Those very much have the potential to be really disruptive, both for long-haul communications and inside of data centres, where the energy load in running optical fibres for communications will be much less than running through copper. That's one thing that jumps to my mind.

The nature of disruption is that it doesn't happen very often. I am comfortable pointing out just one area where we've really forged a completely new technological approach to deal with a telecom challenge.

● (1915)

Mr. Ryan Williams: Thank you.

Maybe I can get this in writing, as I have 15 seconds left. How would we improve the process of supporting disruptive innovations in technologies, either at the NRC or potentially, as we're looking toward it, CARPA?

Dr. Danial Wayner: I can give a 15-second or less answer. The opportunity is in collaboration. We actually defined ways to get government labs that have key facilities and leadership, universities that have emerging ideas that are really disruptive, and industry that has the potential to actually advance them into products.

NRC's challenge programs, which we're happy to talk about later, are intending to bring together those three components.

The Chair: Thank you, Dr. Wayner, and thank you, Mr. Williams.

We will now go to Monsieur Lauzon.

[*Translation*]

You have five minutes.

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

I would also like to take this opportunity to thank the witnesses, whose testimony is very enriching.

Mr. Wayne and Ms. Quinn, I had the opportunity to do some subcontracting for some of your laboratories in my previous life, and I have very positive memories of the experience. I was pleasantly surprised by the expertise and professionalism within your laboratories.

I would like to direct a question to Ms. Quinn.

In your strategic plan, you mention that you and the 28 research centres must update their operational plans and priorities annually under their strategic commitment.

Can you explain how the pandemic has disrupted your operational plans and priorities with respect to the achievement of your strategic commitments?

[*English*]

Dr. Shannon Quinn (Secretary General, National Research Council of Canada): Part of the value of having a National Research Council, an instrument of government that is based in science, is that while we undertake strategic prioritization and day-to-day research that is responsive to the broad needs of Canada, part of the value of maintaining that base of expertise and a base of foundational scientific capability is that you can have it pivot in an instant to be responsive to emerging crises like pandemics, but not exclusively pandemics. The next emerging crisis may or may not be a pandemic, but I can tell you that the NRC, like it did with the current pandemic, will take its foundational scientific capabilities—both expertise and facilities—and bring them to bear.

In answer to your question, there is no doubt that some of the priorities of the NRC shifted. The activities shifted. As a concrete example, in our metrology labs, we used the capabilities that we have there for a totally different purpose during the pandemic. We produced reagents that were needed in order to undertake the scale of PCR testing that was needed in this country when the supply chains were not able to deliver that reagent.

That is exactly part of the value of maintaining this kind of scientific capability, because, at its core, science is science, so where you have that expertise that one day may be looking at maintaining our base of metrology for the nation, the next day you can use it to produce reagents.

I would say that some of the day-to-day activities shifted, but our raison d'être actually came to the fore. It did not change, I don't think, where we're going in the long term, which is to equally continue our focus on some of the broad existential questions of our day—climate change and the long-term health of Canadians—while still trying to maintain what has always been a core of foundational expertise and facilities that can be brought to bear, whatever the government's need of the day might be.

● (1920)

[*Translation*]

Mr. Stéphane Lauzon: Thank you for that thorough response.

I hope that I have a bit of time left.

Mr. Vats, in responding to one of the questions, you spoke about artificial intelligence security. Many countries, Canada included, have recently announced significant investments in emerging technologies like artificial intelligence, quantum mechanics and genomics.

What do we do to ensure that we remain competitive in these emerging fields in Canada?

[*English*]

Dr. Nipun Vats: The government has been trying to build off the strengths, as we say, in some of these areas where we are global leaders, through some of these strategies that I mentioned earlier in my remarks.

If you look at quantum, you see that the investments we made through large-scale research funding programs have created these really strong centres of expertise within Canada. They're actually complementary and are positioned across the country. The next stage of investment here is to try to really help to amplify their efforts as research centres, but also to connect them to talent, to our emerging private sector and the players in the quantum sector, and also to work with the NRC in terms of better collaboration with government—

The Chair: Dr. Vats, I'm sorry that we're having to move on.

Thank you, Monsieur Lauzon, and thank you, Dr. Vats.

We will now go for two and a half minutes to Monsieur Blanchette-Joncas.

[*Translation*]

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

I will now also turn to Mr. Vats.

In the minister's mandate letter, the federal government mentioned the creation of a research fund on high-impact illnesses, with a view to developing vaccines.

It is now nearly two years since we were thrown into this pandemic, and we have lived through some hard times. How does Canada explain the fact that it is the only G7 country that has not been able to produce its own vaccine?

[*English*]

Dr. Nipun Vats: There has been a fairly big effort over the last couple of years to look at how we can build on our strengths on the research side when it comes to vaccines, where we have very strong capabilities to make sure that we can produce vaccines at scale.

If you look at what the government did in the last budget to invest in a biomanufacturing and life sciences strategy for Canada, it tries to amplify what we've been able to do on the research side, which has been critical to the development of things like mRNA vaccines, but coupled with more strength with respect to our capabilities on the downstream side in terms of having the production facilities at scale, having the talent pipeline you need to make sure that you can actually support these facilities. You've seen a number of efforts to build on what's here, to make sure we can be better prepared for future pandemics.

The reality is that in the middle of an emergency you are looking for supply to make sure that your public is safe, so the focus there was to procure vaccines as quickly as possible from wherever they were produced. However, over the long run, I think there's a real effort being made to try to make sure we actually have the capacity at all steps of the supply chain that we need, to make sure we can produce vaccines at scale here in Canada.

● (1925)

The Chair: Monsieur Blanchette-Joncas, that's the time, unless you have a very quick, 10-second question.

[*Translation*]

Mr. Maxime Blanchette-Joncas: Madam Chair, I will ask a brief question, and Mr. Vats can send us a response in writing.

The action plans on equity, diversity and inclusion of the three federal granting agencies include measures. What indicators were used to measure the plan's progress?

[*English*]

The Chair: Monsieur Blanchette-Joncas, that is your time. I apologize.

With that, I'll have to go to Mr. Cannings for two and a half minutes.

Mr. Richard Cannings: Thank you. I'll stay with Dr. Vats, just to maybe get some other angles.

This might be touching on questions you've already answered, but from a little higher elevation, perhaps.

You mentioned in your opening remarks that your group works with the granting councils to...I forget the exact words, but it was something about to make sure they're working towards the government objectives.

I wonder how that works and especially when a lot of the granting council work, certainly in NSERC, is really that pure, fundamental research that's so important. You mentioned the mRNA vaccines. A lot of the work that was so critical for that came from funding from the federal government that was really at a blue-sky level. I don't know how you can set a government objective on fundamental research other than that it's well thought out and good science.

I want to come back that. What are the government objectives, and how do you direct tri-council to work towards them?

Dr. Nipun Vats: It's a good question. When I say we help to advance policy objectives and to make sure the granting councils' programs are aligned with government policy objectives, the first thing to say is that when it comes to decisions around granting awards, the government plays no role in that. That's done through a peer-reviewed process to ensure that the best research gets funded, and there's an arm's-length relationship with respect to funding decisions.

The second thing is that part of what the government looks to do with respect to funding to the granting councils is just what you'd mentioned, which is to make sure there is an appropriate level of funding for that investigator-led, curiosity-based research, which is the foundation of the science ecosystem.

Beyond that, there are a number of other objectives that the government may seek to advance through the programs, such as equity, diversity and inclusion objectives, but also there are some programs that are more focused with respect to their objectives, such as large-scale programs like the Canada first research excellence fund. That fund tries to support large-scale investment in world-class research at institutions around a set of priority areas.

Again, in all these areas—

The Chair: Dr. Vats, I'm sorry to do this. It's such a good discussion. You have such interested members.

Colleagues, with your agreement, I would like to give all our members a chance to speak. If we could go to Mr. Tochor for two and a half minutes, and then to Ms. Bradford for two and a half minutes, would that be agreeable?

Some hon. members: Agreed.

The Chair: Terrific.

We'll go to Mr. Tochor, for two and a half minutes, please.

Mr. Corey Tochor: I would like to go back to Dr. Vats on the vaccine production. We talk about having capacity in the country, and that's important, but as far as we know, of the two main vaccines, have they been produced in a government- or state-run facility anywhere in the world, or is it all in private facilities?

● (1930)

Dr. Nipun Vats: I have to admit I'm not an expert on vaccine production, but to my understanding, private firms have produced those vaccines. There may be some countries where the AstraZeneca vaccine may have had some government involvement in the production, but with respect to the two mRNA vaccines, I believe they're private sector vaccines.

Mr. Corey Tochor: Would any production in-house, with government, not have helped during this pandemic?

Dr. Nipun Vats: To be honest, I don't know if I can say that definitively. There may be special arrangements with respect to vaccine production, where, if you have facilities that can produce at scale that are government facilities, there may be opportunities to do so. I have to admit I'm not very well positioned to speak to that area.

Mr. Corey Tochor: On increasing the manufacturing capacity in vaccines within Canada, would it be more focused? I know this isn't your realm of expertise, but if the marketplace were attractive for pharmaceutical companies to invest in facilities, it would ultimately and hopefully produce the vaccines we need in the future.

Dr. Nipun Vats: That would definitely be a very important part of the plan to do so. You need to have companies that can produce at scale, and not only for the Canadian market. The Canadian market is relatively small, and that's part of the challenge. If you're trying to produce at an economical scale, you'd be producing for Canada but also for other countries. You need companies that can produce at that scale.

Mr. Corey Tochor: Just quickly on the capacity that we have. What do we have that has been announced? I'm thinking of the facility in Montreal that could be producing the newly approved vaccine, but we already have contracts out for that to be provided to Canada. Is that correct?

Dr. Nipun Vats: I would turn to my colleagues at the NRC on this.

Dr. Shannon Quinn: Specifically to your question about capacity, the new biologics manufacturing centre in Montreal has two lines. It can be producing two different vaccines or biologics at the same time. The capacity to produce depends very much on the specific vaccine that you're producing, but approximately two million doses a month is what we can talk about, in general.

The Chair: Thank you so much, Dr. Quinn

I'm afraid your time is up, Mr. Tochor.

We have a really interested committee here.

We'll now go to Ms. Bradford, for two and a half minutes.

Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.): Thank you so much. You've taken us on a wonderful scientific journey tonight. I really appreciate it, and we so appreciate the research capability that we have here in Canada.

Actually, MP Tochor gave a good lead-in to my question. It's going to be for Dr. Quinn. I want to ask you about that new biologics manufacturing centre in Montreal. It was built very quickly, and I know these facilities are so specialized that they take a while to bring online.

Was it already partly constructed? How long did it take from start to finish to bring this on board?

Dr. Shannon Quinn: No, this was a greenfield facility, so it was started from scratch. The facility itself was constructed in just under a year, which is very quick. Part of the reason that's possible is that it was on land that the NRC already owned. It took advantage of the expertise that already existed in our health laboratories.

I want to clarify. The first phase is constructing the facility, which is complete. Then there are multiple licences that are required from Health Canada in order to actually produce a vaccine. Work is well under way towards good manufacturing practice certification, which ultimately leads to the required licensing of the facility. The specific vaccine also needs to be licensed, and then there's a licence for the vaccine in the facility. Work is under way towards all of that.

● (1935)

Ms. Valerie Bradford: Very quickly—I know I'm literally on borrowed time here—is the goal to use your researchers to develop and manufacture vaccines there, or to partner up with private sector investors to do that?

Dr. Shannon Quinn: It's our facility, but the idea is that it would be partnering with others in order to produce their vaccines.

Ms. Valerie Bradford: Thank you very much, Dr. Quinn.

Thank you Chair, for allowing me the opportunity.

The Chair: Thank you so much.

With that, I'm going to thank our tremendous witnesses. We are so grateful for your expertise.

The committee will suspend for two minutes while we sound check for our next panel.

Thank you all.

● (1935)

_____(Pause)_____

● (1940)

The Chair: Colleagues, I bring our meeting back to order.

For the second panel, we have Genome Canada, Universities Canada and the Vaccine and Infectious Disease Organization.

We will hear five-minute statements, beginning with Genome Canada. We have Dr. Robert Annan, president and chief executive officer, and Pari Johnston, vice-president, policy and public affairs.

I will let the witnesses know that at the four and a half minute mark you will see a yellow card. You will have 30 seconds after that.

Welcome. We're delighted to have you, Dr. Annan.

Dr. Robert Annan (President and Chief Executive Officer, Genome Canada): Wonderful. Thank you, Madam Chair.

Good evening. I'm happy to be joining you tonight from Ottawa on the unceded traditional land of the Anishinabe Algonquin people.

Thank you for the invitation to participate in this historic study on the state of science in Canada.

First, I'd like to salute the leadership of Dr. Kirsty Duncan in the establishment of this important committee, and to thank all of you for your commitment to this important subject. I am very pleased to be here on behalf of Genome Canada, joined by my colleague Pari Johnston.

Genome Canada is a national, non-profit organization that was created 20 years ago in the shadow of the Human Genome Project. Canada was not a member of the international consortium that completed this historic moonshot achievement. This led a group of Canadian scientists to convince Parliament that Canada risked being left behind and missing the benefits of this exciting new research. They knew that investments in what was then cutting-edge science would be essential for Canada's future. How right they were.

Genomics has since grown from a discovery science based on sequencing a single genome to a wide-ranging platform technology that has an impact across broad sectors of Canadian society. It drives innovation across precision health and agriculture and the development of novel therapeutics and cutting-edge approaches to forestry, energy and natural resources. We've built a national genomics ecosystem that includes six regional genome centres and works with university researchers, hospitals, government scientists and companies, many of which are in your ridings.

In the last 20 years, we've supported over $4 billion in applied research and innovation from coast to coast to coast, with more than half of that coming from private industry, provincial governments and other non-federal sources. We now have strong, world-class genomics researchers, trainees, companies and infrastructure that are leaders on the global stage. We at Genome Canada are deeply committed to a strong science system that will benefit Canada.

Science, especially the life sciences, stepped up in a big way during COVID. In April 2020, with the support of the federal government, Genome Canada launched CanCOGeN, a national network involving universities, public health labs, hospitals and private industry to build a national surveillance system to track viral transmission, the variants of concern and their impact on Canadians. This system has been a cornerstone of our national pandemic response, providing real-time information for public health decision-makers and contributing to a global understanding of the virus.

The Canadian genomics community responded quickly. It was a rapid response 20 years in the making, possible because visionary governments had made prior investments in capacity, talent and infrastructure that could be mobilized quickly to respond to this urgent, shared challenge.

As we emerge from this pandemic, there is no shortage of other urgent, shared challenges. There's climate change, food security, antimicrobial resistance and economic growth. Science can help drive solutions to these challenges, but we need to learn from our COVID experience, so that we have a science system that is up to the task.

What have we learned? First, we've learned that we have immense strengths. We have a diverse and distributed research system built on strong universities and colleges. Our researchers are world-class, and they train thoughtful, ambitious graduates. We have cutting-edge research infrastructure and strength in important technology platforms like genomics, AI and quantum. We also have a committed community of research and policy leaders with a diverse suite of programs to support the ecosystem.

However, we must also be honest about our challenges. Our system is fragmented and often misaligned, and we suffer from persistent coordination challenges in crucial areas like data sharing and research commercialization. We don't have a culture of policy innovation in the research and science space, which is in need of fresh, new approaches. We suffer from chronic underinvestment in R and D by the private sector. Perhaps most importantly, we do not have well-defined national strategic objectives for science.

Many of the ingredients for success are present, but we can't tackle the challenges separately or in isolation. We really need an ecosystem approach.

First, we need strong, stable investment in fundamental research and talent development. This is the base upon which everything rests.

Second, we need coordinated, system-wide approaches that can marshal this research strength into impact, for instance, through mission- or challenge-driven initiatives.

Third, we need strategic leadership to focus our efforts and resources. We need to be honest about where Canada can lead, where we must invest and where we can have the greatest impact. We think a lot about this at Genome Canada. We are seized with the opportunity of our current moment, the beginning of a biorevolution that will fundamentally transform our health, our economy and our environment.

Genome Canada employs a challenge-driven approach to harnessing this potential and ensuring that our capabilities in science generate positive impacts for Canadians. We know this approach will have a positive impact, and we know there are many other examples of great research happening in Canada.

● (1945)

As we come out of the pandemic, we in Canada have an opportunity to refresh our approach and re-energize our science and innovation ecosystem, ensuring that it will benefit all Canadians.

Thank you for your attention.

The Chair: Thank you so much, Dr. Annan. We really appreciate your comments.

We will now go to Universities Canada. We have Paul Davidson, president and chief executive officer, and Ann Mainville-Neeson, vice-president of policy and government relations.

You have five minutes. The floor is yours.

Mr. Paul Davidson (President and Chief Executive Officer, Universities Canada): Thank you very much, Madam Chair.

It's a great pleasure to be with you, with all members of the committee, and with colleague witnesses, with whom we work all the time. Thanks for the invitation to participate in this important study and for the extraordinary work that all parliamentarians are doing in this very challenging time.

With me today is Ann Mainville-Neeson, our vice-president of policy and government relations.

Universities Canada represents 96 universities across the country. Taken together, Canada's universities are a $38-billion enterprise. Universities employ more than 300,000 people, and are often the largest employer in their communities.

During the pandemic, Canada's universities have delivered. They've delivered on their educational mission by enabling 1.4 million learners to move online within days, offering hybrid instruction and returning to in-person instruction as soon as it's safe. Enrolment is up, retention is up and completion is up. There's a generation of graduates ready to put their shoulder to the wheel for Canada.

Universities have delivered on their research mission. Decades of discovery research at Canadian universities, including the work of UBC's Pieter Cullis, have been instrumental in creating vaccines and saving lives. Universities have delivered, both as stabilizers for communities across Canada beset by disruption and as catalysts for social and economic renewal.

This new standing committee is an exciting opportunity for Canada to take stock of the state of research capabilities and to build a broad consensus about the value of research.

It's worth highlighting how these capabilities have been built over the decades with the support of parliamentary champions. I'm thinking tonight of Peter Adams, who served as the member of Parliament for Peterborough for over a decade. While never in cabinet, he was the key driver behind the major research investments in the late 1990s and early 2000s that Rob Annan just spoke of. James Rajotte, the former member for Edmonton—Leduc, was a tireless supporter of the research community through the years of the Harper government. Bloc and NDP members have also made valuable contributions over the decades. Of course, I'm also thinking of the work of this committee's chair, Ms. Duncan, and her continued advocacy, first in opposition and later in government.

My hope for this committee is that it will model best practice in the world for non-partisan, evidence-based championing of science and research. Canada has world-class universities, research facilities, and talent, but we face steep global competition. We need your help. With science and research on the front page for the last two years, our allies and competitors are seizing the moment to massively reinvest in their research ecosystem.

Germany has committed to grow R and D investment to 3.5% of GDP by 2025. The United Kingdom's target is 2.4% of GDP. Its recent foreign policy framework puts sustaining advantages in science and technology as the first of four elements in its vision for global leadership—not as an appendix or an afterthought, but as the first pillar. In the United States, the National Science Foundation for the Future Act, which proposes doubling the budget of the NSF, received the support of all Democrats in the House and 134 Republicans. Political parties in Finland have reached a bipartisan agreement to raise R and D spending to 4% of GDP by 2030.

Canada needs comparable ambition. Currently, we rank 18th out of 37 OECD countries on these measures, spending only 1.5% of GDP on R and D. Last fall the Senate's prosperity action group proposed a target of 2.5% of GDP by 2030, or about the OECD average. I hope we can do better than that, but the first step is setting a target. The window of opportunity for this is now. The fundamental science review was published five years ago, and the associated investments are flattening out. Canadian research talent from the graduate level and up, the backbone of our innovation economy, is at risk of being lured abroad.

We need to invest in a diverse range of research, including social sciences and humanities. As Vivek Goel, president of the University of Waterloo, recently noted, if the pandemic was simply a biomedical issue, the problem would have been solved a year ago.

Fundamentally, investing in research is about investing in people: the graduate students who are the backbone of our research ecosystem; early-career researchers performing novel and innovative groundbreaking research; ordinary Canadians whose lives are bettered by cutting-edge research; and the communities who prosper from the ideas developed and commercialized from Canadian universities.

● (1950)

To close, I want to reiterate our thanks to the committee for undertaking this study.

I want to strongly encourage the committee to visit local campuses and research facilities when it's possible again. It's a way to both feel decades younger and look decades into the future.

Thank you, again.

The Chair: Thank you so much for your comments, Mr. Davidson.

You really have a committee here that's interested and keen to ask questions.

We will now go to Dr. Volker Gerdts. He's the director and chief executive officer of the Vaccine and Infectious Disease Organization.

Welcome. We're so pleased to have you all.

Dr. Volker Gerdts (Director and Chief Executive Officer, Vaccine and Infectious Disease Organization - International Vaccine Centre): Good evening, Madam Chair and committee members.

Thank you very much for giving me the opportunity to speak to you tonight. I'm speaking to you from Treaty 6 territory and the homeland of the Métis.

As you mentioned, my name is Volker Gerdts. I'm the director of the Vaccine and Infectious Disease Organization, also known as VIDO.

VIDO is a research institute at the University of Saskatchewan here in Saskatoon and one of Canada's largest research infrastructures focused on infectious disease research. We currently operate Canada's largest high-containment laboratory, which is one of the world's largest and most advanced facilities. We have about 170 researchers at the moment, from more than 28 different countries. We're 50% female and have 40% representing visible minorities.

I had an opportunity to address another committee last year. During the pandemic, VIDO was in the news. You might have heard about the work that was going on here. As one of the few such organizations in Canada, we moved a lot of our research onto the pandemic. We were the first in the country to isolate the virus, to develop an animal model and to have a vaccine in clinical testing. We have worked with almost 100 companies over the last almost two years now, testing their technologies, their prototypes, their vaccines and their therapeutics in our models here.

VIDO has really become one of Canada's go-to places for COVID-19 research. It has significantly contributed to the advances that are leading us eventually out of this pandemic.

We have our own vaccine, which is a protein subunit vaccine. You may have seen the news today. Novavax technology is now approved in Canada. VIDO and others are working on technologies like that.

Our own vaccine is moving forward. We have two targets right now. One is to make this vaccine available to Canadians as a booster vaccine to already-authorized vaccines, which we all assume we'll probably need in the future to be able to continue to address COVID.

More importantly, we are also working with African countries—with Uganda and Senegal—on making this technology available to low- and middle-income countries to make sure that those countries and those people around the world who currently don't have access to vaccines will have access to our vaccine. It is a technology that is ideal for use in remote areas such as Africa and remote Saskatchewan, or Canada's north, for that matter.

As a side note here, CEPI, the Coalition for Epidemic Preparedness Innovations, which is the world's largest organization focused on emerging diseases, recently invested $6 million into VIDO's platforms, with the goal of developing these platforms for new COVID variants of concern as they emerge.

It's important to mention that over the last many years now, VIDO has received funding from the federal, provincial and municipal governments. Most important, probably, is the funding for the high-containment laboratory—the InterVac facility. InterVac is one of Canada's 10 major science infrastructures. Currently, we are funded through the MSI program provided through the CFI. It includes funding for our in-house manufacturing facility, which is now almost complete. It also includes funding for the vaccine.

Most recently, in budget 2021, VIDO received funding for what we call the “pandemic centre” and our vision to become Canada's centre for pandemic research. The vision really is to be one of the key research organizations in Canada, to focus on these emerging diseases, and to be able to rapidly respond to any new disease, whether it's a human disease or an animal disease.

Part of that is our in-house manufacturing facility, which will enable us to rapidly develop clinical trial batches that can then go into clinical development. It includes the construction of a new animal facility, which will enable us to house a wide range of exotic species. It is also to upgrade part of our existing containment facility to the highest level—to containment level 4—to enable us to respond to any threat in the future.

This is supported by the federal government, but it's important to note that it's also supported by the provincial government, the City of Saskatoon and many donors that have now provided millions of dollars in support of moving forward with this vision to build Canada's centre for pandemic research in the future.

● (1955)

From my perspective, in terms of what we can learn from the pandemic and where we want to go as a country in the future, it's great to see that Canada is currently developing a life science strategy and a biomanufacturing plan. The vision is to roll this out and make sure that Canada as a country in the future is able to domestically produce vaccine and does not have to depend on other countries for both the research and the manufacturing. It's great to see this vision coming forward.

The four things I'd like to point out before I finish—

The Chair: Dr. Gerdts, I hate to do this. I know the members really want to ask you questions, so hopefully you'll be able to finish that through questioning.

Thank you so very much.

We will now go to our six-minute round, and we'll start with Ryan Williams.

Mr. Ryan Williams: Thank you, Madam Chair, and thank you to all of our panellists. It is incredible to listen to all of you.

I'm going to start with Dr. Annan.

I think I heard you right when you said that half of your funding comes from non-governmental sources. How are you so successful in attracting that kind of funding?

Dr. Robert Annan: First, it's really baked right into our delivery model. We are not a granting organization like the granting councils. We actually proactively build research projects. We do that through the genome centres we have across the country. We have six centres. They are really on the ground, working with university researchers, companies and their provincial governments to find projects that are going to bring together multi-stakeholder groups. This is really a proactive business development.

Second, it's because these are all projects very much in the applied space. The idea here is really to make sure that we're demand-driven. We're going to draw from the great work going on in the universities to help advance specific companies or sectors. We want to make sure they actually put some money in the pot as well.

Finally, as I often say about Genome Canada, we're a national organization rather than a federal one. We receive federal money, but we work really hard to make sure that we're aligning what we do with provincial strategies so that provincial governments are also aligning their research investments with what we do. It's really by design that we end up with that mix.

Mr. Ryan Williams: Thank you, sir. It seems as though we can learn a lot from that organization, so that's great.

Mr. Davidson, in April 2018 you wrote in Policy Options magazine that “Canada has the potential and the strategic opportunity to become a global exemplar of this exchange of people, insight and innovation between communities and universities.”

It's been five years. Can you update us on the progress that has been made by your organization towards realizing this potential?

● (2000)

Mr. Paul Davidson: I will point to a couple of things. Rob and Dr. Gerdts have alluded to them. Research is a global exercise, so we do expressly work across borders and boundaries of all kinds.

In terms of attracting research talent, there have been some significant investments since 2018 to attract new talent to Canada, and that's been a really important development.

The other part of the talent exchange, frankly, is both to draw international students and to send Canadian students abroad. In the 2019 budget there was a major commitment to send 25,000 Canadian students abroad as undergraduates, and that's a really important initiative as well. It means we're not just poaching talent from around the world but also really exchanging ideas and enterprise across borders and boundaries.

Mr. Ryan Williams: Thank you, sir.

Dr. Gerdts, in The Globe and Mail on April 21, 2021, you mentioned that “Canada needs to develop a preparedness strategy that will allow the nation to rapidly respond to any new emerging disease.” You talked about the life science strategy, so perhaps I'll just ask you for an update. Has any of that work started? What does Canada have to do, besides what you have mentioned, to get ready for this kind of work?

Dr. Volker Gerdts: That was kind of what I was trying to address there.

The life science strategy, from what I understand, is really looking at a number of things. It supports research that's happening at the universities and then takes it into clinical development. At the same time, it invests into commercial industry—commercial manufacturers like Sanofi and Biovectra—and the resilience and upsell investments that we have seen recently, to allow commercial manufacturing.

It's a strategy that enables innovation to occur and to go into development. It then ensures that there is enough commercial manufacturing capacity in the country available to then produce those therapeutics and vaccines. It's a very important strategy. If you'll allow me, I'll address a few other points that I think are critical.

As we move forward, it is critical for the country to think about the fact that investment into the infrastructure is effective only if there is also investment into the operating support. The MSI program is one of those arms that obviously works to support those facilities. Unfortunately, for many facilities, that is only 60% of the operating cost, and it doesn't cover the expenses for research or even the researchers who are doing the work.

Another element, as we've heard before, is training. We need to train the next generation of our researchers. We need to have national training programs to ensure that we have enough workers who can do the critical work. During the pandemic, it was very hard for us to even find individuals who were willing to work day and night and weekends in level 3 conditions, which are conditions under which you can't go to the bathroom, you can't eat, you can't drink and so on.

Then the last one is to really ensure that there is good interaction between the manufacturing industry and our universities and small biotech.

I'm sorry for stealing your time.

Mr. Ryan Williams: That's fine; those were great answers.

My last question will be on that manufacturing. I know that at one point you were looking at VIDO for former manufacturing capacity. Have you had that, and how do we reach that in Canada as a whole?

Dr. Volker Gerdts: We are happy to tell you that the construction of the manufacturing facility is almost complete. It's really just a matter of weeks now. The commissioning has begun, and we hope to have the facility commissioned in the summer to then start work in the fall on the first formulations, vaccine projects and so on.

Canada is investing heavily right now. There's the NRC facility in Montreal, but then also others that are moving forward. We want to make sure that as we do that and as we facilitate all of that, there is sustainable operating funding for those facilities in the future to ensure that they are being utilized as they should.

The Chair: Thank you so much, Mr. Williams, for your important questions.

Thank you to our witnesses.

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

Mr. Chad Collins (Hamilton East—Stoney Creek, Lib.): Thanks, Madam Chair. My first question will be for Dr. Annan.

Dr. Annan, I heard your opening, when you referenced seizing the opportunity of the moment.

I believe that many witnesses through our study have shared with us the challenges they faced with the pandemic, how their organizations pivoted in the early days and then how they seized the opportunity, as you've referenced. Can you elaborate on that and advise us as to how the federal government might assist with the opportunities that have come about as a result of COVID-19?

● (2005)

Dr. Robert Annan: Like the others that you've spoken with—frankly, like everybody—we've pivoted during the pandemic. What was fascinating about the science and research ecosytem was that COVID provided a very clear, shared sense of purpose. It didn't matter if you were, like Dr. Gerdts, working on actual vaccine development or if you were a social scientist who worked in communications and were suddenly interested in misinformation about COVID. It was really a rallying point for research across the spectrum to really come together and to self-organize, in a sense, around a lot of different initiatives.

What we did in genomics in terms of building a national surveillance system started out as a grassroots movement. There were labs across the country starting to do the work. We pulled that together into a national initiative, then that plugged into other things.

When it comes to what we've learned and what we can build on, that sense of mission is a real opportunity for us to move the needle in some of the areas where we've sometimes struggled. Things sometimes persisted in issues when it came to data sharing or other issues around health research across the country. We're confronting what we call wicked problems and things like climate change, for instance, or food security.

Hopefully we won't have quite the same urgency as we had with COVID, but providing some really clear signals from the federal level to say these are the sorts of things that we need to come together to really tackle....

I think providing strategic leadership is a big, important piece. Also, we saw an injection of funding that allowed the work to happen in the universities and in government research. You can't have one without the other. You need the fuel that drives the car; you need the foundation upon which you build.

Going forward, that sense of both purpose and mission built on a solid foundation will really position us well to confront the other challenges we face.

Mr. Chad Collins: Thanks, Dr. Annan.

My next question, through you, Madam Chair, is for Dr. Gerdts.

Dr. Gerdts, you emphasize the strong relationship between VIDO and all three levels of government. You also talked about the strong relationship you have with the private sector.

What can the government do to assist with forging better relationships between researchers and organizations like yours and the private sector? How do we better connect organizations with the private sector to ensure that we drive innovation to action? Can you help me with that?

Dr. Volker Gerdts: That's a good question. There are a number of elements that are relevant.

Number one, as I talked about, is building the infrastructure, building these centres like VIDO, national facilities that are open to the industry but open also to academic researchers, because that's really where the mixing occurs. That's where the partnerships occur. That's where the collaboration occurs.

Then it's the training programs. I think that's critical. We train academic researchers but many of them actually end up in industry. That is another good way of bringing industry and academia together in making sure that what we do benefits both.

Last, it's really the investment in the research, whether it's funding through the tri-councils or whether it's funding through Genome Canada or many other organizations that promote research where you have the early discovery element but then you bring in the potential commercial partner. You fund both. There's the strategic science fund that's currently available, but you're eligible only—or not only, but it's mainly designed for companies. Then you have your traditional CIHR and so on, that are mainly addressing the academics, and NSERC and so on.

We really want the future to have research programs in which we're funding already the early discovery, but at the same time bringing the commercial partners into this early on, so that we see the seamless transition from discovery to commercial development. That's where Canada is maybe not as effective as other countries that are changing some of their systems, whether it's Germany, the U.K. or other countries, where there is more of a focus on funding discovery research with a potential commercial application and bringing the partners in early on so that the transition occurs rapidly and smoothly.

● (2010)

Mr. Chad Collins: Thank you, Dr. Gerdts.

The Chair: Thank you so much, Mr. Collins, for your important questions.

[*Translation*]

Now let's go to Mr. Blanchette-Joncas for six minutes.

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

First of all, allow me to welcome and thank the witnesses joining us this evening.

My first questions are for Mr. Davidson from Universities Canada.

Mr. Davidson, I carefully read the briefs that you prepared. I even studied the last three, which were prepared for pre-budget consultations in previous years, and I saw that the same recommendations were repeated several years in a row. One of them is more striking; you recommend that the federal government increase investments in Canadian research to remain competitive on the international stage.

Can you tell us how much the federal government should be investing in terms of GDP?

[*English*]

Mr. Paul Davidson: If I may, I'd like to ask Ann Mainville-Neeson to respond to your question.

[*Translation*]

Ms. Ann Mainville-Neeson (Vice-President, Policy and Government Relations, Universities Canada): Thank you very much.

This question is a very important one. You analyzed our briefs. Recent research indicates that Canada has accumulated a deficit of at least $1 billion, simply to reach the competitive level of countries like Germany, Great Britain and Finland. These countries have made significant multi-year investments and investment commitments, which provide greater stability for research funding.

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

Ms. Mainville-Neeson, if you would like to continue on the subject, I would like to hear how this billion dollars could be invested. Do you have any suggestions?

Ms. Ann Mainville-Neeson: Yes, indeed I do have suggestions.

First, we have suggested that more than $770 million be invested in graduate and doctoral scholarships.

We are also proposing an investment of $1.12 billion over five years for the funding agencies, the three granting councils.

Then, we are proposing an investment of $100 million per year to fund research by the new research chairs. A number of new research chairs have been announced, but the funding proposed for them does not really include the money they need for their research itself. So we are proposing that more than $100 million per year be provided to support the research.

We are proposing an investment of $75 million for the commercialization fund.

We have also suggested other funding so that, for example, we can participate in Horizon Europe, a major European fund.

We are also proposing an investment of $135 million per year in security for the research. This is important funding, because new responsibilities are being imposed on the research sector, with a view to ensuring security.

Finally, we are proposing an investment of $500 million over five years for accessibility and for accessible and sustainable campus infrastructure.

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

I would like to continue talking about infrastructure.

To be competitive, we clearly need financial resources, but we must also have infrastructures. You talked about green infrastructures, on the cutting-edge of technology.

What can you tell us about that? What do you suggest so that we can be really competitive?

Ms. Ann Mainville-Neeson: In my opinion, we certainly need investments in order to be, to use your words, on the cutting-edge of technology. The investments must allow us to be competitive on a global scale. If the research infrastructure is not green itself, it will not provide green results.

● (2015)

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

I have another question for you, Ms. Mainville-Neeson.

You represent a number of universities in Canada, some urban, some not.

What do you suggest we do to help universities in less urban centres, so that things are more equitable?

Ms. Ann Mainville-Neeson: If I understand correctly, you come from the region around Rimouski, which has a very good university.

Investment is just as necessary in rural areas as in urban ones. Researchers have to be recruited from all over Canada. We need diversity in the kinds of researchers; if we are to find our brightest and best, we must look for them in both rural and urban communities.

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

The Chair: Thank you for asking those very important questions, Mr. Blanchette-Joncas.

[*English*]

Thank you, Ms. Mainville-Neeson.

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

Mr. Richard Cannings: Thank you, Madam Chair, and thanks again to the witnesses for being here. It's good to see you. It's good to see a couple of faces of old friends—Mr. Davidson and Ms. Johnston. It has been a while and I wish we could be there in person.

This is all very interesting. I have about 45 questions written out here. I'm going to start with Dr. Annan and maybe move to Mr. Davidson.

You mentioned, Dr. Annan, some of the challenges, about some of the research being fragmented and a lack of data sharing. I know from some experience that the academic research especially, and also I'm sure private sector research, is very competitive and cutthroat, and it's difficult to get people to co-operate. However, when we have these wicked problems, sometimes that can be put aside. I know I have seen some remarkable academic papers come out recently on conservation issues, which is my field, written by authors who would almost never talk to each other.

Is there a way that universities or organizations like Genome Canada can develop processes that bring these people together to do the important work that really needs to be done?

Dr. Robert Annan: I might ask Pari to weigh in on this too, because I know she thinks a lot about this.

I will just say that when it comes to fragmentation there are two pieces. One is that at the level of the researchers we find actually that increasingly there's a real appetite for collaboration. Sometimes there are processes that inhibit this, particularly around data and data moving between provinces. For instance, if it touches on health data there are real challenges, as we have all learned during COVID.

There are some challenges there, but we, like other agencies, are working hard to incentivize that. There are also structural challenges, though, around fragmentation. This is an emergent property of, frankly, chronic underfunding, because what ends up happening is researchers are trying to keep their labs going. They are trying to fund really big projects, and they end up taking funding from different places, wherever they can find it, which means you end up with pots that aren't necessarily lining up with shared deliverables, shared timelines and so on. The research tends to be siloed because of that scarcity of funding, as opposed to a situation where a project could be funded in whole by a single agency, allowing that research to be much more coherent in terms of sharing.

Maybe I will ask Pari to say a bit more, especially when it comes to data sharing in Canada.

● (2020)

Ms. Pari Johnston (Vice-President, Policy and Public Affairs, Genome Canada): Thanks, Rob, and thanks, Richard, for your question.

It really is, as you noted, sometimes these wicked problems that can help break some of the bottlenecks that have existed.

On the data-sharing piece, as Rob alluded to, this is certainly one where through the experience of our Canadian COVID-19 Genomics Network we were able, by virtue of coming together around the national challenge of creating a network for viral surveillance, to influence real-time policy decisions in real time.

We created this infrastructure of really important governance committees, which included our public sector partners at the provincial health labs, the academics, and the government funding partners to really come together to develop cross-provincial standards around data sharing that probably would have taken a lot longer, but given the urgency of the COVID challenge needed to be developed urgently. It enabled different sectors that hadn't maybe worked together as much—the public health labs and the academics—to develop a sense of trust, and it built up a sense of common purpose.

Our hope is that this has created some movement of the needle for data sharing that can be, I think, really enhanced. That's a strong priority for Genome Canada in our ongoing work, but that sense of purpose and urgency helped create newer protocols and data-sharing practices that wouldn't have existed otherwise.

That's just one example, but we're certainly looking to carry that forward in some of the other challenge areas we have identified in the agricultural space and in climate change genomics, etc.

Mr. Richard Cannings: Just building on that, it's encouraging scientists to go beyond just the basic research work they do. When they have findings, whether health-related or environment-related, or whatever their space is, they take those results and make sure that the public finds out about them, that government policy-makers, decision-makers, are aware of them. It's something scientists aren't well trained at.

Is there some movement in universities or big organizations like Genome Canada to help them with that? I know certain projects that do that, but they're quite isolated. I'm just wondering if there's a general thrust to make sure that if we're investing all this money, we should find out about the results and make sure they're used.

Dr. Robert Annan: Yes. I think from a Genome Canada perspective, we bake that into all of our projects. Because of the way we do research, there has to be a connection into real-world use, and that can include, say, both industry and policy-making.

The Chair: Thank you so much, Dr. Annan, and thank you, Mr. Cannings, for your questions. We are having a really good discussion tonight.

I would like to get one more round in, if possible, giving each of the parties two and a half minutes. We will start with Mr. Baldinelli, please.

Mr. Tony Baldinelli (Niagara Falls, CPC): Thank you, Madam Chair, and thank you to the witnesses for being here this evening for great discussions and presentations.

I just want to follow up on comments from my two colleagues, Mr. Cannings and Mr. Collins, who talked earlier about your comments on the system being fragmented, but also on the point one of them made about using these in the pandemic as an opportunity to look forward.

You mentioned structural challenges. We've been hearing from several witnesses about the foundation, the ecosystem, being critical. It's about some of those changes you would think would need to be made as we go forward, so we can come out of this better positioned to capitalize and support not only our institutions, but also those doing the important research taking place.

Dr. Robert Annan: On this question of fragmentation, if I can follow up, I would say it's a reality. I don't want to overstate the case. The community works really hard to stay aligned. I talk with Paul all the time, and obviously Volker at VIDO and Genome Canada have a lot of intersections. That's true across the board.

With our mindsets, when we think about fragmentation—and maybe this is a policy tendency—we think about how we need more coordinating mechanisms and meetings and committees or whatever, but that really misses the point, which is you can coordinate, but coordinate towards what? Developing some shared sense of what we need to achieve and setting some strategic priorities allows the system to organize and align itself in some ways.

The second piece is this. I talked about this concept of scarcity, which is something one of my kids taught me about a couple of years ago, this scarcity mindset. If there's not enough funding in the system, then the researchers and others are going to be just trying to find the money where they can. That tends to fracture, and it's opposed to a mindset of abundance, where there's enough funding to do what we need to do, so now let's get to the table and figure out how to actually do the work together. It's an unintended consequence of some of the underfunding that's been mentioned, both here and with other witnesses.

● (2025)

Mr. Tony Baldinelli: Other witnesses have mentioned the cumbersomeness of the bureaucracy, and that whole notion. One actually indicated the notion maybe of a single shop. You also talked about a single agency, about supporting that kind of work and avoiding the bureaucracy, as opposed to trying to get the funds in hand to do the important projects and work that need to be done.

Maybe that's something we can look at, moving forward.

The Chair: Mr. Baldinelli, I am so sorry. You always bring forward an interesting perspective, and I apologize for having to do this.

Perhaps we could now go to Ms. Diab for two and half minutes, please.

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

I actually had questions for all of you, but with two and a half minutes, I'm going to really have to limit this.

I come from Nova Scotia, and before coming into the federal public service I was in the provincial government there. We talked a lot about regulatory barriers to data-sharing among provinces and among institutions. I'm really interested to learn from you about how you see that happening. Do you experience that, and how does it affect the research and the work you are doing in your areas? Is it leading to fragmentation?

I'm not really sure which person to.... I don't think you can all answer that, but maybe Universities Canada would be a good one to start with?

Mr. Paul Davidson: Sure. I really appreciate the question, and I also really appreciate the work you did while you were in Nova Scotia.

We should be doing both: investing in research, because it's really important that both the federal and provincial governments and the private sector invest significantly, and also looking at unlocking the potential of our research institutions. That involves some element of deregulating and enabling the researchers to get on with the research. I think we've learned a lot through COVID about what we need to do there.

I guess the other observation I would make is that as we move forward—and Rob's been very good about this—we have a tendency to want to jump to the end of the story, to how this discovery leads to X, Y or Z, but we have to make sure that we invest in that front end. If there's a plea that the universities in the country have right now, it's that as we drive to innovation, to jobs and to economic growth, let's make sure we feed our researchers. Let's invest in our researchers. Let's make sure they have the tools they need.

The pandemic has given us a chance to reflect on what has worked in Canada and what can be done better. I'm so pleased this committee has been structured to look at this over the long term.

Ms. Lena Metlege Diab: We heard you loud and clear when you made your opening remarks and you said that in terms of the value of research—I actually wrote it down—the best approach in the world that you hope for this committee is that it's "evidence-based" and "non-partisan" and really for research and science. That's really our motive here, so we're really excited about that—

The Chair: Ms. Diab, I'm so sorry to stop you. I know how interested you are in the subject area.

With that, we'll go to Monsieur Blanchette-Joncas for two and a half minutes, please.

[*Translation*]

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

Mr. Davidson, in 2017, after the Naylor report, you wrote: "The Naylor report is a historic opportunity to reposition Canada as a global leader in research and discovery."

That report was tabled almost 5 years ago now. What is your analysis of the current situation?

● (2030)

[*English*]

Mr. Paul Davidson: The work that the Naylor report did was important. It was completed five years ago. It sketched a road map for Canada, and there has been some significant action on that. I heard David Naylor's testimony last night, and I think he would concur that for a government report, much has been accomplished.

The landscape has changed in the ensuing five years. Some of the challenges remain the same and some have become more urgent. As I was saying in my opening testimony, some of those initial investments are starting to age out and flatten out. At the same time, our international competitors are reinvesting at new scale with new urgency. We want to make sure people don't think that, well, we did that report five years ago and

[*Translation*]

it's all taken care of.

[*English*]

It's not complete. There's more work to be done, and we need to take into account what we've learned through the pandemic about how we can invest.

If I might take one more minute, I was really pleased by your question about how we make sure that all of Canada benefits from these investments. I have been to the Université du Québec à Rimouski and I've been to the Université du Québec en Abitibi-Témiscamingue, and we can see world-class, first-class research being done in those communities for the benefit of those communities, for the benefit of Quebec and for the benefit of Canada.

[*Translation*]

Mr. Maxime Blanchette-Joncas: A quick answer, Mr. Davidson. If there were one urgent thing to be done following the recommendations of the Naylor report five years ago, what would it be?

[*English*]

Mr. Paul Davidson: Well, I hate to sound like a broken record on this. You've noted our previous recommendations: It has to be sustained, scalable investments that put Canada at the front ranks. I agree with what Rob has said about the need to better coordinate and better align on strategy, but his first message was also that we need to make sure that the base is strong. That's essential to be able to move forward.

[*Translation*]

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

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

[*English*]

We will now go to Mr. Cannings for two and a half minutes, please.

Mr. Richard Cannings: Thank you again.

I'm going to go right to you, Ms. Mainville-Neeson. You mentioned that you had a list of some of the asks that Universities Canada had.

One of them was for $770 million—I think that's per year—for student scholarships for graduate students, for post-docs and so on. I recently met with the Canadian Alliance of Student Associations, and they were asking for an increase of $120 million a year in that pot. Is that the same number? Will an addition of $120 million add up to $770 million or...?

Ms. Ann Mainville-Neeson: Honestly, Mr. Cannings, I'm not sure I can do the math right now on whether we have exactly the same numbers.

We have met with the Canadian Alliance of Student Associations, or CASA, and we very much agree on many platforms.

I'd be happy to provide that information in writing to make sure it's 100% clear for the committee.

Mr. Richard Cannings: That would be good.

We talk a lot about the talent we have to nurture and keep in Canada. Students, graduate students and post-docs are the core of that. I know those funds have been stagnant for many years. For a long time we've needed to increase it.

Ms. Ann Mainville-Neeson: Absolutely. Thank you.

Mr. Richard Cannings: Madam Chair, I'll stop there, because I'm probably close to the time.

Thank you.

The Chair: Thank you, Mr. Cannings. I know this subject area is really important to you.

If the committee would allow me to ask a short question, we will adjourn afterwards.

Mr. Davidson, I wonder if you would be so kind as to tell us whether and how the pandemic has had an impact on equity, diversity and inclusion in our research community.

Mr. Paul Davidson: I've really enjoyed the conversation today, because we can look at the landscape over a decade or two and see that it was really a bold work of parliamentarians to create organizations like Genome Canada and CFI.

One of the more recent ambitions and investments made has been in making sure that our institutions and researchers fully reflect the diversity of Canada, to promote equity, diversity and inclusion. There have been some real strides made there, but the pandemic risked undoing decades of progress in that regard. It had that risk because, particularly for women researchers and researchers from minority communities, the added burdens of managing through the pandemic have interrupted and postponed the trajectory that many of those researchers were on.

There is outstanding research being done by researchers of all kinds in Canada, but one of the things we have conversation with the granting council and others on is how we recognize that two, two and a half or three years out of a researcher's prime have been disrupted by the pandemic? That's probably more a conversation we have with the granting councils than with members of Parliament.

We have made progress on equity, diversity and inclusion. There is more to be done. As we emerge out of the pandemic, this is one of the areas we're going to want to pay special attention to.

● (2035)

The Chair: Thank you for that, Mr. Davidson.

I know our committee would like to thank all our witnesses. This was a wonderful discussion.

I thank all our committee members for their tremendous interest in this subject area.

I thank our clerk, our analysts, our interpreters and everyone who supports this committee.

Thank you all. The meeting is adjourned.