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Wednesday, May 28, 2008

Chair

Mr. James Rajotte

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● (1415)

[*English*]

The Chair (Mr. James Rajotte (Edmonton—Leduc, CPC)): We'll call to order the 41st meeting of the Standing Committee on Industry, Science and Technology.

The committee is here in beautiful Saskatoon. We had a wonderful morning, starting with breakfast with Genome Prairie. Then we went off to the synchrotron and had an excellent tour there. We went to Agriculture and Agri-Food Canada. We went to the research centre. The campus of the University of Saskatchewan was another excellent visit.

We have two panels this afternoon, the first panel dealing with agricultural biotech and the second panel dealing with higher education, government, and innovation support.

We have four organizations represented in the first panel. First of all, from Ag-West Biotech Incorporated we have the president and CEO, Mr. Perry Lidster, and second, we have the vice-president, biofuels and bioproducts, Mr. Ron Kehrig. From Genome Prairie we have Jerome Konecsni, the president and CEO.

Did I pronounce that correctly?

Mr. Jerome Konecsni (President and Chief Executive Officer, Genome Prairie): You were close; it's Konecsni.

The Chair: Oh, I wasn't close at all.

Voices: Oh, oh!

The Chair: Second, we have the director of communications, government relations, Ms. Carol Reynolds. From the National Research Council of Canada, we have Mr. Roman Szumski, vice-president life sciences—welcome again—then we have the acting director general, Plant Biotechnology Institute, Mr. Wilfred Keller. From the University of Saskatchewan we have the director of business development, vaccine and infectious disease organization, International Vaccine Centre, Dr. Paul Hodgson.

We have up to five minutes for each organization for an opening presentation. We'll start with Ag-West Biotech and work our way down the panel. Then we will go to questions from members.

Mr. Lidster, Mr. Kehrig, who's speaking on your behalf?

Okay, Mr. Lidster, you may begin at any time.

Mr. Perry Lidster (President and Chief Executive Officer, Ag-West Biotech Inc.): Thank you.

First of all, we'd like to express our thanks for having the opportunity to address the standing committee on the topic of biotechnology in support of agriculture.

The agriculture-biotech economy is one of the fastest-growing and innovative sectors in this province, a combination of public and private entities networked to incubate scientific advancement and develop commercial opportunity.

Organizations such as Ag-West Biotech represent a unique model of capitalizing on the commercial opportunity resulting from research developed in these clusters.

The structure of Ag-West Biotech Inc. is that of a not-for-profit, international membership-based organization that promotes and facilitates the application of life sciences and technologies for the benefit of Saskatchewan and Canada. Ag-West Biotech is an independent, arm's-length organization that supports the commercialization of biotechnology, which makes us unique.

We actively seek funding from the Saskatchewan Ministry of Agriculture and federal, and other provincial, sources. Ag-West operates on a $900,000 per annum operating budget, which is a contribution from Sask Agriculture.

Our commercialization activities are centred around agricultural biotechnology, human health and wellness, animal health and nutrition, and biofuels and bioproducts. Ag-West serves as a catalyst to build partnerships and develop alliances among industry, research, and producer groups, with the objective of commercializing innovative products or processes.

We're able to provide direct investments. We have a $4.6 million seed capital fund that facilitates co-investment and provides venture support to start-ups or expanding small- and medium-sized enterprises. We're able to lever in other funds from other areas.

The company champions equitable regulatory policies that allow companies to remain competitive.

So we're pretty much a full-service organization in the commercialization train for the technology.

We have a track record that goes back to 1989. Ag-West has invested $10.4 million in 57 projects involving 45 companies, creating approximately 1,268 person-years of employment during those 19 years. Ag-West investments have allowed investee firms to leverage an additional $74.3 million from other sources.

The total aggregate GDP-impact of Ag-West Biotech in those 19 years and $10.4 million in investment was approximately $760 million since 1989. In our time of existence, we've generated an economic ratio of return of $55 for every $1 invested, and we produce a tax-recovery ratio of approximately 8.3:1. Those returns do not reflect the fact that most of the start-up biotech firms do not make a profit for the first 7 to 10 years; so we have another 7 or 10 years of investments coming to fruition.

The challenges of technology commercialization, from benchtop to profitable company, are many—and we try to deal with as many of those as we can. Early-stage technology companies require financing, some mentoring, path-finding, and the support of an equitable regulatory environment.

Early-stage technology companies are usually under-capitalized, and in fact are almost always under-capitalized, both in terms of human and financial support. They rely on risk capital and granting sources for funding their research and development activities. Small firms rely on family members, grants, and venture capitalists.

Those organizations that rely on venture capital often lose control of their company by the second or third round of financing, or will sell their emerging company to a larger entity with patient capital behind them. Often these processes mean that the full value of the commercialized technology is not captured within Canada, but taken to another jurisdiction.

The federal government can be instrumental in facilitating a higher level of success through strengthening the existing non-partisan organizations, such as Ag-West Biotech Inc., and partnering with them to strategically provide financial support to start-up companies. The mechanism for support already exists within such organizations to administer programs and projects.

The availability of risk capital, particularly at the pre-beta site testing stage, and going on into scale-up operations, needs to be increased. With additional federal support, networking opportunities will obviously increase.

Each year, Ag-West reviews 25 to 30 investment prospects, but due to limited resources, it can only invest in one or two per year. We feel that the hit ratio could be much greater; it could be 20% to 25%, if the resources were available for us to do that.

● (1420)

Ag-West's future strategy is to facilitate a continuum of investment to support SMEs, small and medium-sized enterprises, to develop technology from laboratory to commercialization. We want to get the technology as near to commercialization as we possibly can without seeking venture capital and other public sources of investment.

Our recommendation is that the federal government departments have an opportunity to provide much-needed incremental financing to the growth and development of biotechnology, based on SMEs. Ag-West Biotech Inc. recommends that incremental financial investment capital be provided on a long-term basis, that is, for 10-plus years, using existing mechanisms and infrastructure with a proven record of success. Investment capital should apply to beta testing and early commercialization activities specifically used to support proof of concept, scale-up, and development of manufacturing processes.

I thank you for the opportunity to make this presentation.

The Chair: Thank you very much, Mr. Lidster, for your presentation.

Who will be presenting for Genome Prairie?

[*Translation*]

Mr. Jerome Konecsni: Thank you very much, Mr. Chair.

Good afternoon, ladies and gentlemen.

[*English*]

We would like to thank the chair and the committee for the invitation to appear at this meeting. I am joined by Carol Reynolds, our director of communications and government relations.

Genome Prairie is one of six regional genome centres established by Genome Canada in 2000. Our corporate office is located in Saskatoon, and we also have an office in Winnipeg, Manitoba. We manage and support large-scale or big-science genomics projects in Manitoba and Saskatchewan.

With our partners, Genome Prairie has supported more than $160-million worth of research projects since the year 2000, and this has generated nearly 3,000 person years of knowledge-based jobs and training opportunities in agriculture, animal and human genomics, bioinformatics, instrumentation development, and bioethics. We work with all levels of government, universities, industry, our partners across the Genome Canada network, and not-for-profit organizations in implementing this national strategy and approach to genomics and proteomics that is catching worldwide attention for its innovative approach to managing large-scale research. As well as managing the research, we are committed to providing public education and awareness services to the general public.

Genome Prairie's role as a regional centre involves provincial fundraising as well as providing international linkages and collaborations. To date we've been successful in establishing research connections with New Zealand, the United States, Australia, the Netherlands, China, Taiwan, and India.

Mirroring Genome Canada's innovative business model in fundraising and approach to large scale, we facilitate the development of genomic networks in areas where our region has a particular scientific strength and capacity, such as plant and animal genomics, infectious diseases, and, yes, human health. In the role of facilitator, Genome Prairie brings together industry, government ministries and agencies, universities, research organizations, and the public, in support of strategic priorities to the Canadian public and the global community.

Regionally, Genome Prairie works with many of our colleagues who are seated with us at this table: the University of Saskatchewan, the University of Regina, the University of Manitoba, Agriculture Canada, VIDO, the National Research Council, PBI, the provinces of Manitoba and Saskatchewan, and the ministries that are in support of research.

One of the key observations and recommendations we'd like to make today is that Canada's agricultural biotechnology cluster is poised to claim a leadership role in crop genomics research. In a recent international review of position papers, which are strategy documents identified by scientific teams and their partners across Canada—they're called Genome Canada's "position papers"—the two top-rated papers were on crop genomics for a healthier Canada and bioproducts. This verifies the bias we have sitting on this side of the table for the importance of agricultural biotechnology to Canada. A panel of 27 international experts who are economists, scientists, and policy analysts agreed with the case that was made for the socio-economic benefits for a significant investment in agricultural biotechnology and the application of genomics. But also what it validated to us was that there is a Canadian advantage. That was one of the things the committee recognized: there is a Canadian advantage in this area. It was well articulated in those position papers.

Based on this Canadian advantage and the significant social and economic benefits that could be derived from Canada, we see it as imperative and important that the federal and provincial governments work collectively and collaboratively to support research projects and the infrastructure, so we maintain and build on our leadership role. It is a very competitive environment globally and we'll talk about that a little bit. I'm sure some of my colleagues will reinforce that message.

Genomics tools can be applied to address world issues such as global food and energy shortages, climate change challenges, and environmental sustainability. By fostering research networks and commercialization partnerships, organizations like Genome Prairie, Agriculture and Agri-Food Canada, PBI, the University of Saskatchewan, producer groups, and many Saskatchewan and internationally based companies are encouraging the translation of this research into real products and real crop varieties.

● (1425)

This is an example of our entrepreneurial advantage—the fact that a collaborative spirit and a strong sense of teamwork have been established in this cluster. And it's growing and improving year by year.

In order to maintain Canada's agricultural leadership in the production of crops that are important to Canada, it is important that Canada takes a leadership role. I'm talking about crops like canola and flax that are very significant and important to Canada. Genomics and proteome research are necessary to improve the productivity, durability, and healthy nature of these products. For example, we can accelerate the development of this research by the implementation of a new facility, like a plant accelerator, that will move the research more quickly into new crop varieties.

On our competition in this area, facilities like this exist in Europe, and there's a new facility being built in Australia. They will have the advantage of being able to move research more quickly into new varieties. So it's imperative that we maintain our competitive advantage and keep up with our competitors.

The Saskatchewan research infrastructure is a strong one. We've talked about it here. This is our knowledge advantage.

I talked a bit about the number of jobs that have been created by this genomic research. An estimated 3,000 post-doctoral grad students have been involved in these projects since 2000.

By promoting and funding world-class excellence in agricultural research—Genome Canada will only fund projects that receive an excellent rating by an international peer review—we have consistently proven that the infrastructure here is at a level of excellence. But the research and investment are ongoing. Crop research is a continual effort, and we face continuing challenges in adapting to climate change.

Thank you very much.

● (1430)

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

Now I'll go to the National Research Council.

[*Translation*]

Mr. Roman Szumski (Vice-President, Life Sciences, National Research Council Canada): Thank you, Mr. Rajotte.

I thank the committee for inviting the Plant Biotechnology Institute of the National Research Council to give this short presentation on agricultural biotechnology.

[*English*]

For over 90 years, the National Research Council has successfully played a leadership role in providing scientific knowledge and innovation to meet the constantly changing needs of Canadians and Canadian industry. Dedicated to enhancing Canada's economic growth and the public good, NRC anticipates and performs research and development of an international calibre.

We promote scientific cooperation and act as a catalyst that levers research and development funding from all sectors. We transfer our technologies to industry through licensing agreements, create spinoff companies, and we incubate new firms.

This year, the National Research Council is celebrating its 60th year of research and innovation in Saskatoon, and we are proud of our contributions to the well-being of Canadians. Some of these contributions include the development of canola in partnership with Agriculture and Agri-Food Canada, the University of Manitoba, and the University of Saskatchewan. The Canadian canola industry is now valued at over $11 billion annually—as it provides a nutritionally superior edible oil—and it's playing an increasingly important role in the reduction of transfats in our diets.

The contributions include the development of biotechnologies that can be employed in crop improvement. As an example, we partnered with AgrEvo—which is now Bayer CropScience—and Agriculture and Agri-Food Canada in the development of herbicide-tolerant canola. These new canola varieties are now grown on more than 90% of Canada's canola acreage, and have generated a positive economic impact in excess of $500 million.

In partnership with Agriculture and Agri-Food Canada, we have recently generated and publicly released the world's largest canola genomics database, which comprises over half a million gene tags. We are currently an active member of an international consortium that is doing the complete genome sequence of one of the three plant species that comprise canola.

Our research and commercialization strategy is very closely aligned with the Government of Canada's science and technology strategy, particularly as it relates to the creation of an entrepreneurial advantage and a knowledge advantage. For example, NRC-PBI is engaged in research to enhance crop productivity and yield to address the rapidly rising global demand for food. Using cutting-edge genomics technology, our scientists have identified genes that appear to be associated with drought tolerance, enhanced vigour, and nutrient use efficiency, thereby reducing requirements for costly fertilizers.

We are developing environmentally friendly renewable bioproducts, such as vegetable oil products that can be developed into advanced polymers, lubricants, and biofuels. We're also committed to employing research strategies to further enhance the health of Canada's citizens. For example, we are identifying natural bioactive substances in plants that can reduce the incidence of neurodegenerative diseases, such as Alzheimer's.

We are a strong believer in the power of partnerships to achieve national goals for innovation and competitiveness. We believe that networking at the regional, national, and international levels is essential for success. For instance, NRC has developed a proactive policy for international collaborations. Through formal agreements that have been established with India, China, and Germany, NRC researchers are studying oil seeds, pulses, and natural bioactive compounds to enhance human health and wellness. NRC is an active player in the Saskatoon ag-biotech cluster where complementarity is established through collaboration, reducing duplication.

NRC-PBI has established a 10-year strategic alliance with Dow AgroSciences Canada to improve the seed and oil quality of canola. As a result of this, Dow is now expanding its R and D efforts in Saskatoon by more than 50%. It's another example of where sustained federal investment leads to private sector confidence and investment in a region.

NRC is working in partnership with Agriculture and Agri-Food Canada in developing a national bioproducts program that will include the development of biofuels, biomaterials, polymers, and other chemicals from agricultural biomass.

NRC-PBI established an industry partnership facility in 2003, which now houses seven innovative small companies developing a range of new products and technologies. We also strongly believe in nourishing small and medium-sized enterprises who play an essential role in Canada's innovation system, as you well know.

● (1435)

For example, our work on analyzing the chemical components of plants has resulted in the creation of a new company, Saponin Incorporated, which is pioneering the development of a potential new bioindustrial and biopharmaceutical crop referred to as the “Prairie Carnation”.

As you can see, Canada is very well positioned to capture the tremendous potential offered through research and development on agricultural crops. Our strengths as a nation reside in the fact that we possess more than 60 million hectares of arable land, which places Canada in the enviable position of being able to produce a wide range of foods, environmentally friendly bioproducts, biofuels, and biopharmaceuticals beyond the needs of our own citizens. We thus have the opportunity to export products and contribute to a global bioeconomy that has been valued in excess of $500 billion.

In order for Canada—

The Chair: I'm sorry, Mr. Szumski, but we're going to have to ask you to wrap up here. We're about a minute over our time already.

Mr. Roman Szumski: I apologize; I'll do this very quickly.

The issues that warrant consideration are that we need to continue to invest in the development and application of the latest technologies and cutting-edge sciences, as these will be essential to the development of products beyond the year 2020; the federal labs must operate as effective partners with university and private sector organizations; small companies require sufficient support to work with universities and public institutions to commercialize research discoveries; and a number of strategic Canadian crops, such as flax, lentils, and oats, will require strong public investment, as large industry does not actively pursue the development of such crops.

Thank you for your attention. *Merci*.

The Chair: Thank you very much.

We'll go to Mr. Hodgson now, please.

Dr. Paul Hodgson (Director of Business Development, Vaccine and Infectious Disease Organization / International Vaccine Centre (InterVac), University of Saskatchewan): Thank you, Mr. Chair.

On behalf of the Vaccine and Infectious Disease Organization, I would like to thank the committee for the opportunity to present the history of our organization as well as its past successes, future challenges, and associated opportunities.

The Vaccine and Infectious Disease Organization, or VIDO, is one of Canada's pre-eminent vaccine research institutes. VIDO currently employs more than 150 people representing 20 countries. Our vision is aggressive: protecting the world from infectious diseases.

Historically we focused on veterinary infectious diseases, and our original name was actually the Veterinary Infectious Disease Organization. However, with the convergence-

The Chair: Mr. Hodgson, just for the translation, could we get you to slow down a bit? We won't dock your time.

Dr. Paul Hodgson: My apologies. I'm going to go overtime now for sure.

Voices: Oh, oh!

Dr. Paul Hodgson: Historically we have focused on veterinary diseases. However, the convergence of human and animal health has expanded our mission to the health of all species. This expertise was recently recognized by funding from the Bill and Melinda Gates Foundation for a single-shot vaccine for tuberculosis.

Since our inception, VIDO has helped Canadian producers compete globally and ensure the safety of our food supply by applied research into animal diseases and, more importantly, the commercial development of the resulting discoveries.

VIDO's success is quantified by several factors. First, we actually have seven vaccine products in the marketplace, including five world firsts for agricultural diseases of animals. One of these, termed Pneumostar, was the first recombinant vaccine for cattle—actually, for all animals. From 1975 to 2000, a total investment of $65 million into VIDO has resulted in economic savings of approximately $1.3 billion.

Recently we partnered with UBC and Bioniche Life Sciences Inc. in the development of a vaccine for cattle against E. coli 0157:H7. This is the bacteria that was implicated in the Walkerton water tragedy. In 2007, this vaccine was recognized internationally as the best new veterinary product for livestock as part of the Animal Pharm Industry Excellence Awards. It crosses the bridge between human and animal health, because the bacteria does not cause disease in cattle, only humans.

To complement this, we've had over 450 different research agreements since 2000, worth more than $55 million, and more than 80 U.S. patents issued. Most of these are licensed to major biotech and pharmaceutical companies, such as Merrell, Schering, Pfizer, Novartis, and Wyeth.

VIDO is also an active player in the Saskatchewan ag-biotech cluster. We have spun off three companies and helped several start-up agricultural companies get established. One of these was already mentioned, Saponin Inc. We are also partnering with international initiatives, particularly right now with India and China.

With the convergence of human and animal health, our research and development is focusing on platform technologies that apply to these species. Moving forward, VIDO will continue with our strategic vision through a combination of new initiatives. Some of these examples include the International Vaccine Centre. This $146 million biosafety level 3 facility will allow Canada to respond to emerging infectious diseases and enhance Canada's international reputation for vaccine research.

Recent reports suggest that between 60% and 80% of disease outbreaks have animal origins. This includes agricultural animals. InterVac will be one of the most advanced facilities in the world and, certainly, one of the top five in Canada. The annual operating funds required for VIDO InterVac are expected to exceed $20 million.

The Pan-Provincial Vaccine Enterprise, PREVENT, was incorporated after a successful application to the Networks of Centres of Excellence for Commercialization and Research. Its success demonstrates the close alignment between VIDO's strategic objectives and Canada's science and technology strategy. PREVENT will enhance the commercialization of vaccines by moving the technologies further along the value chain and reducing the risk for potential licensors, filling the so-called funding gap. By helping take innovations from the lab to the market, society as a whole benefits. VIDO's role will be focused on vaccines for food and water safety.

The Research Alliance for the Prevention of Infectious Disease, RAPID, was recently funded by the Saskatchewan Health Research Foundation. RAPID has links to prevalent diseases, particularly in high-risk populations. One such disease with direct animal associations is the West Nile virus.

It is my thought that the government has been visionary in its funding of large-scale capital projects for science. However, there are challenges associated with these projects. For example, the cost of capital projects in western Canada has increased dramatically. Specifically, the cost of InterVac increased over two and a half times, and we now have a funding shortfall approaching $20 million.

In addition, it is essential to implement a mechanism for providing secured operating funds for these facilities, such as VIDO InterVac, if they are to be effective in promoting Canada's science and technology strategy. It is not practical to expect these facilities to function at maximum capacity through traditional competitive operating grants.

In closing, I would suggest that VIDO is one of the foremost vaccine research organizations in the world, regardless of the way you determine success. The addition of InterVac will strengthen Canada's competitive advantage in vaccine and infectious disease research, an area identified as strategically important to our country.

● (1440)

Thank you, Mr. Chair.

The Chair: Thank you, Mr. Hodgson, for your presentation.

We will now go to questions from members. The first round will be six minutes for each member, and the second round will be five minutes. It is a very short period of time for questions and answers, so we ask you to be as brief as possible. Also, if the question is not directed to you, but you would like to answer, please indicate that to me, and I will ensure that you get an opportunity to do so.

We'll start with Mr. Simard, for six minutes.

Hon. Raymond Simard (Saint Boniface, Lib.): Thank you, Mr. Chair.

I'd like to welcome the panellists here this afternoon. I had the pleasure of having breakfast with four of the panellists, actually, this morning, and most of my questions were probably answered. But there are some things that are still not clear.

I'd like to start with Mr. Lidster. You've spoken about Ag-West Biotech being unique. I agree, it is something that is different. I'd like to understand it a little better. You've indicated, I believe, that this organization has invested $760 million since 1989. Is that correct?

Mr. Perry Lidster: The investment was $10.4 million, I believe. We had $10.4 million and 57 projects.

Hon. Raymond Simard: Is this 100% provincial funding?

Mr. Perry Lidster: At this time, yes. We do draw in small amounts from other organizations. But it's primarily provincial funding, yes.

Hon. Raymond Simard: Basically, the province has formed an arm's-length corporation to look at the different projects, and then it assists with these smaller companies, these start-ups and growing companies.

Mr. Perry Lidster: That's correct, and we have the opportunity to grow our capital seed fund, depending on the return on any of our investment, although we're non-profit.

Hon. Raymond Simard: Is part of your objective to try to leverage private funding?

Mr. Perry Lidster: Yes, it certainly will be. We're looking at developing a continuum of funding and support for technology, and that will include publicly raised money and privately raised money.

Hon. Raymond Simard: One of the things we discussed this morning, and it was actually very troubling, was that yesterday, in Manitoba, we were told that Canada usually raises about $4 billion in venture capital, and this year it is down to $1 billion. For me, that's obviously a bad sign.

I'd like to ask anybody on the panel where we are going with this. This is a very scary thing. What do we have to do as an industry committee? What do we recommend to the government to modify this behaviour? We've heard all kinds of things. Maybe there should be some tax cuts. Are there recommendations that anybody on the board here could make?

● (1445)

Mr. Perry Lidster: Venture capital is only one source of funds. There are many other sources of funds. In some cases, venture capital is not the appropriate vehicle for funding. It is worrisome, particularly for people who rely on venture capital. A reduction from $4 billion to $1 billion is huge. But for us, if we're taking the technology from the laboratory to a semi-commercial stage, we can find other sources of funding.

The Chair: Mr. Konecsni.

Mr. Jerome Konecsni: Further to your question, one of the things we can do to excite and encourage more private investment is to have mechanisms to take the research that is done at the universities and in the federal labs further down the value chain. A good example is crop research. I gave you the example of the plant accelerator. A lot of the gene discoveries that are made are not taken up by industry, because they're still early stage and there's still a lot of risk involved. So they're not willing to take that risk. It's too early. If we can move it further down and generate field data....

Right now, having data that is proof of the concept in a greenhouse is one thing. But that's not going to be enough to entice a company to invest millions of dollars to commercialize it. So with an investment that can be supported by the public sector, I think we can greatly accelerate the development of new crop varieties and the commercialization of our research. They will invest when they see that the opportunities are there and when the risk is at the appropriate level.

Hon. Raymond Simard: We've just been to the ag station—I guess that's what it's called—and it's actually an amazing place. But I'd like to ask a few questions about that. Although they're doing some absolutely phenomenal, world-class things, it seems to me that last year, or a couple of years ago, Europe was planning on boycotting anything that was genetically modified.

I wonder if I could get some feedback on that. If we're going in that direction at 100 miles an hour, and nobody is going to buy our product, why are we doing this?

Mr. Jerome Konecsni: I found the article I talked to you about earlier this morning, and I'll give you a copy. It provides excellent data on genetically engineered crops and the social, economic, and humanitarian benefits. In the 12 years since genetically engineered crops were introduced, the growth in acreage has been double-digit.

I'll quote from the article:

> This very high adoption rate by farmers reflects the fact that biotech crops have consistently performed well and delivered significant economic, environmental, health and social benefits to both small and large farmers in developing and industrial countries.

There are now 23 countries worldwide that are growing GM crops, and 12 of them are developing countries.Ten million poor farmers have been growing GM crops in those developing countries. And they have enhanced their farm income significantly and have improved their economic condition dramatically.

Hon. Raymond Simard: We assume that Europe is not, for the most part.

Mr. Jerome Konecsni: If you look at the data in this article, it will show you that there is some GM crop, but it's very small. Canada is fourth in acreage growing GM crops. The United States is first. China and India are after Canada. Argentina and Brazil are second and third.

Hon. Raymond Simard: We found that leadership is extremely important, that the person who is heading an organization can be absolutely critical. What do we need to do to attract the best and brightest to lead some of these organizations?

Mr. Jerome Konecsni: You need to have policies that will attract the best and the brightest by compensation. A lot of organizations are restricted in their ability to attract and pay. They have an idea of whom they want, but the pay scale is restricted by public policy or whatever, and that is a big factor.

The Chair: Madam Brunelle.

[*Translation*]

Ms. Paule Brunelle (Trois-Rivières, BQ): Good afternoon.

I was very impressed with the two tours we had this morning at the Synchrotron and at Agriculture and Agri-Food Canada. I was fascinated to see the huge financial outlay and the wealth of patience that are needed to do research. Believe me when I say that I admire your work greatly.

I have a question for Genome Prairie. You certainly caught my attention with one of your key observations, namely that genomics tools can be applied to address world issues such as global food and energy shortages, climate change challenges, and environmental sustainability.

If we as politicians could solve just a tiny part of those problems, it would be a considerable achievement. With all the scientists in the world who are doing research into the same issues, to what extent does Canada have the economic capacity and the scientific resources to get involved and to make its mark?

It is a considerable challenge and you may well tell me that you are excited by it. But what can we as politicians do to move research forward so that it produces results? What do we do about the impression that budgets for the area are bottomless pits and that we will never have the population base to sustain them?

● (1450)

[*English*]

Mr. Jerome Konecsni: The position papers were written by a team of scientists together with their partners from industry and the funding mechanisms. There is a compelling argument for why Canada has the capacity and how we can, with a reasonable investment, make a significant impact on all those issues—the energy shortage, climate change, and so on. You as politicians can support the strategic advancement. We will see at least 10 projects that will be awarded funding by Genome Canada in the next year. They will be moving some of this research forward.

What we need is a strategic and coordinated effort to develop a Canadian crop strategy to address climatic change and improvement of the food quality. Next year, there is additional funding coming through Genome Canada. This was provided by the federal government, and it was one of the most significant investments in science and technology that the government made last year. It was based on a well-stated socio-economic argument for why Canada can do this. They set targets: achieving a 25% crop yield improvement, addressing climate change and stress, making crops more robust, making crops so that we can use marginal land to produce food. These are all very real.

One of the gentlemen sitting with us today is a foremost scientist in this area. He is leading a team of 20 scientists at PBI, and they are just one component of a cluster who could lead Canadian efforts in this area.

[*Translation*]

Ms. Paule Brunelle: In your opinion, what is Canada's competitive advantage in this research? What cards can we put in the hand of a researcher such as yourself, Mr. Hodgson? Is there something that we can provide? We know that cutting edge researchers value their services in the millions of dollars, a little like star hockey players. Apparently, we have to look all over the world for people of that calibre. But maybe that is not the solution either. We also have some very fine people at home. What can we offer to researchers like that? Do we have the structure to attract them?

[*English*]

Dr. Paul Hodgson: One of the principal ways we can address that is by creating a corporate culture that's friendly to the scientists. Alberta has started doing that with the Alberta Ingenuity Fund. VIDO has done it for about 30 years with our scientists, and we've been very successful in recruiting some of the best scientists in the world. We've had scientists from about 20 different nations.

Canada has established some programs, such as the Canada research chairs, to ensure laboratory funding and the ability of those scientists to become established and remain here. Ultimately that's our competitive advantage. Canada is one of the best countries to live in. The scientists are world-class. Our former director used to always say that one of the biggest challenges is that Canada doesn't think big enough. There's no reason why we can't be the best in the world.

● (1455)

The Chair: Mr. Keller.

Dr. Wilfred Keller (Acting Director General, Plant Biotechnology Institute, National Research Council Canada): Thank you.

I might add that the investment in genomics initiated in Canada is very critical in developing the basis of knowledge for generating new technologies and eventually new products. A good example for us is canola. We have critical mass, and if we use these new technologies, invest in them, and develop the appropriate partnerships, we can be in a very strong and competitive position. That needs to include the federal labs, universities, and companies so there is a pipeline that takes us from knowledge through to innovative products, commercial results, and economic well-being. It requires long-term, appropriate investment and focus in key areas that are of national interest to us.

The Chair: Merci, Madame Brunelle.

We'll go to Mr. Carrie, please.

Mr. Colin Carrie (Oshawa, CPC): Thank you very much, Mr. Chair.

I want to thank the witnesses for being here today.

I'm extremely impressed with Saskatchewan. As a kid growing up, I always thought it was all about wheat. But I listened to the Prime Minister say that Canada should be an energy superpower. Looking at Saskatchewan, I see you have oil and uranium, and the potential for biofuels is unbelievable.

Can you explain to the committee the status of the biofuels sector here in Canada? How does it relate to the rest of the world? More importantly, if we're developing this new biofuels sector for the world, how can we as Canadians keep those jobs throughout the value-added chain right here in Canada?

For example, when we signed agreements on natural gas in the past, they weren't exactly in Canada's best interest. But in this exciting new field of ethanol and biodiesel, what's the status of the sector right now? How do we relate to the rest of the world, and how can we keep those value-added jobs here?

Mr. Jerome Konecsni: I think the most knowledgeable person to answer would be Ron.

Mr. Ron Kehrig (Vice-President, Biofuels and Bioproducts, Ag-West Biotech Inc.): First of all, I would say that Canada does have a rapidly growing biofuels industry, as do many other countries in the world. Biofuels and sustainable energy are going to play an important role worldwide. Unfortunately, there is no magic bullet to our energy needs as we move forward, but certainly conservation and other aspects are important.

With respect to biofuels, our capacity in this province is in the order of 342 million litres, counting the plants that are in construction and commissioning stages. Another 160 million-litres capacity in second-generation biofuels is in the offing, both through a thermal process with the group at Nipawin, and also in hopes that Iogen Corporation would select a site within Canada that is within our province, and that would move us forward.

We see the first-generation biofuels under the renewable fuels standard being an important first step, but clearly the move is towards biomass to energy, and second- and third-generation fuels are going to be extremely important in Canada.

We have a research cluster actively focused on biofuels development. Really, we view biofuels as being part of a biorefinery, integrated into food production and feed production. Our utilization of our land base is very important. I think we have to look at the environmental footprint of production and processing, and care for ecologically sensitive lands as we move forward.

I think Canada has a very strong record of stewardship on that front. I don't see any reason to think that our move towards the biofuel sector can't be managed and handled appropriately in that context.

● (1500)

Mr. Colin Carrie: Do you have specific recommendations for a strategy to keep the value-added jobs here?

I loved your comment, Mr. Hodgson, that Canada doesn't think big enough. We have this great potential. As legislators, can the federal government do anything at this early stage, or at this stage now, to keep those value-added jobs and products here?

Mr. Ron Kehrig: I think it's quite clear that we have the resources. It's always a challenge for Canada in any sector to move beyond being a supplier of raw resources to the world, and move into value-added. Some of the initiatives towards research and development, second- and third-generation biofuels, and certainly biorefinery research are critically important in that.

We see the Department of Energy in the United States putting a tremendous amount of funds into the development of that south of our border. I think there is a role for public sector funding increasingly towards research or second- and third-generation biofuels, particularly those that are from biomass or lignocellulosic material—really forestry—in which Canada would have a natural advantage.

The Chair: Mr. Konecsni.

Mr. Jerome Konecsni: The only comment I would like to add is that one way we can improve in this and keep the jobs here and create a better position for Canada is to focus. When we pick areas that we think we can win in and in which we have an advantage, then we need to sustain that investment, and we have to make sure that our capabilities are the world's best.

If you're not prepared to be the world's best at something, don't get started at it. I think that's what we need to do. You see countries that have been successful. Australia created six national priorities in their science and technology infrastructure, and all of their funds flow to those six priorities. It can make a huge difference.

Mr. Colin Carrie: You mentioned something as well, and I was wondering if you could explain it in 30 seconds, about a plant accelerator, I think. Could you explain that a little bit more?

Mr. Jerome Konecsni: This is a facility that basically helps the development. Plant breeding and developing new crop varieties is a very long process. It takes 10, 15, or 20 years to develop new crop varieties. That's where genomics can help. They can identify markers that will accelerate and help screen out the plants that you don't want. That's really what plant breeding is about—selecting the plants that you want.

A plant accelerator enables you, through automation and computer technologies, to identify the phenotypes or the physical properties that you want in a trait in a plant early on, through the use of automation and technology, so you can get to the targeted plants and the traits you want more quickly.

That's what Australia is doing. They're building a $25 million facility in Adelaide, Australia, that will accelerate the analysis of these crop varieties. So they'll more quickly develop varieties that are going to grow in Canada, and guess what? The big companies are going to say, “Hey, I can grow my new exciting varieties that have improved traits in Australia.” And Australia is developing plants that are going to grow in Australia, not in Canada. So if we don't do that in Canada, we're at a disadvantage.

The Chair: Thank you, Mr. Carrie. We'll go to Mr. McTeague.

Hon. Dan McTeague (Pickering—Scarborough East, Lib.): Mr. Chair, in the interest of getting in as many questions as I can, I'm probably going to take about a minute and a half and you can then pass to other members. We'll try to work at this cooperatively.

Thank you all for being here. It's been a fascinating and eye-opening experience, and I think I speak fairly safely for all members of the committee.

I have one simple question, which may take us off on the issue of commercialization. The concerns that have been raised very quietly by some of you and others have been with respect to facilitating and expediting Canada's immigration policy with respect to accreditation. Would anyone like to comment?

That's my only question, Mr. Chair.

The Chair: Who'd like to take that one?

Hon. Dan McTeague: Perhaps they could send some comments later in writing.

The Chair: Thank you very much, Mr. McTeague. We'll go to Mr. Stanton.

Mr. Bruce Stanton (Simcoe North, CPC): Thank you, Mr. Chair. I have a couple of questions.

First of all, thank you to those of you who in some way participated in this morning's breakfast. Thank you for that. It's great to be here in Saskatchewan.

One of the recurring themes we've come across, not just on this trip but also in committee prior to this week, is the ability to bridge the gap. There's the recognition that the Government of Canada is investing significant dollars in the front end of the research lineage, particularly with its own in-house research, the granting councils and so on, and universities. But then we begin to lose a bit of effectiveness as we get into the early stage of the technology and the development of moving those discoveries closer to commercialization.

I suppose I would direct this to Mr. Hodgson or Mr. Lidster: in what way can we do a better job mobilizing that early-stage investment? Yesterday someone made a comment that more needs to be done at that early stage so that angel investors and venture capital companies would have the comfort level to take on some of these projects. But there's a gap at the front end, and I wonder if you might have some specific comments and recommendations on what we could do to help that initial stage.

It sounds like both of your organizations are involved at that level.

● (1505)

Dr. Paul Hodgson: I guess from VIDO's perspective we're in a somewhat enviable position of having interacted with companies for approximately 35 years. That's created a reputation for us with these companies. I mentioned we had 80 patents. Patents by themselves are nothing but a money sink. When you license those patents that's when it becomes valuable. So the enviable position we're in is that when I work with companies now, especially the big pharmaceutical companies, most of the applied research VIDO does—because we tend to be very applied—is already licensed before a discovery is made. As we move that forward, not only are the pharmaceutical companies paying for the research or granting them an option to take over that research at the same time, but we're passing the patent cost to them. So that's one strategy VIDO has used.

We've also remained very focused. I think that's key. VIDO knows what it's good at, and tends not to drift from that strategy or strategic focus.

From a company perspective I think one of the things I mentioned was that the new NCE, or the Networks of Centres of Excellence, has changed its approach somewhat in recognizing that there seems to be this funding gap and the whole purpose of the Pan-Provincial Vaccine Enterprise is to take the later-stage vaccine research and add value to that. By adding value we're moving it along the value chain and reducing the risk to pharmaceutical companies. Vaccines are a little bit different from traditional drugs because the only population you're concerned with is healthy. At this point there is no therapeutic vaccine. It's all prophylactic or disease-preventing vaccine.

So that's very challenging for a pharmaceutical company to look at. Until recently it's been a relatively unattractive market because the only purchasers are governments, which, especially in Canada, have been very effective in reducing their costs. Until recently Prevnar and the HPV vaccine have come forward, and they tend to be at a much higher cost. I think the HPV vaccine from Merck is about $380.

The other thing Canada could do to potentially enhance that commercialization for vaccines that are of public health importance is something New Zealand did. Again, I think Canada sits back too much and says we're not big enough. Why not? New Zealand had a problem with meningococcal infections in their children, and the government did an advance market commitment with Novartis. They had a vaccine developed for that specific population relatively rapidly.

With respect to commercialization, I think that can happen if the government's willing to support initiatives for new vaccines with some sort of advance market commitment that would encourage the companies to come in a little bit earlier.

Mr. Bruce Stanton: What do you mean by “advance market commitment”?

Dr. Paul Hodgson: We will buy 50 million doses of this vaccine over the next 10 years.

Mr. Bruce Stanton: Okay, thank you.

Is there time for Mr. Lidster?

The Chair: Make it brief, Mr. Lidster.

Mr. Perry Lidster: The three things you can manage are time, money, and people, and that applies to commercialization of a technology. It's time-sensitive; it's money-sensitive. If you have unencumbered capital and unencumbered organizations that can invest in a good business case on a sound business proposal, those are the things that are going to facilitate the efficiencies of using money and time.

What we find within university-industrial liaison offices is that they operate within a bureaucracy. I spent time within the government, and we tried to do a business development office for Agriculture Canada. We were all operating within bureaucracies, which doesn't facilitate good and timely business decisions.

You need somebody on the outside, in the business sector, looking in and taking the technologies out and doing a very good business case and a proposal for commercialization.

● (1510)

The Chair: Thank you, Mr. Stanton.

We'll go to Monsieur Vincent.

[*Translation*]

Mr. Robert Vincent (Shefford, BQ): Thank you, Mr. Chair.

I feel quite inadequate sitting opposite all the experts before me. I have a hard time making plants grow in my house; they all die. The only thing I have grown successfully is dandelions.

We have been talking about canola and flax for two days. Farmers often say that they have to rotate their crops. With biofuel and all the products derived from canola and flax, what is going to happen given that crops need to be rotated? Are there going to be shortages? Will people want to change? What will happen to the soil? Has something been done, have studies been done on that?

[*English*]

Dr. Wilfred Keller: Indeed, as crops become popular, there may be a desire to see increased acreage or cultivation of these, but in Canada, where we have some 68 million hectares of land, we have a very large base for crop rotation. All crop systems in eastern and western Canada are rotated. Soybean alternates with corn, canola alternates with wheat and barley and oats and flax. We also grow many pulse crops, nitrogen-fixing crops: soybeans, lentils, peas, chick peas, and various types of beans.

So there is a very active rotation, and I think it's important that our research emphasis on our key crops keeps developing, using genomic sciences and genetic sciences to develop the best and most competitive varieties so that the producers have a very good choice of which crops they want to use.

So we do not have a monoculture now; we have a good mix.

For example, canola is not grown on the same land consistently; only once every third year is it grown. Even with biofuel demand, the potential canola acreage is such that we can supply oil for edible use as well as for biofuel. The biofuels needs, according to the government's mandate for 2% biodiesel by the year 2012, would require about 15% of the canola acreage. Because we have such a large land resource, we have the capability of meeting these different markets.

[*Translation*]

Mr. Robert Vincent: This morning, I think I gathered that 45% of Canada's production is done here in Saskatchewan. If the most profitable product is grown once every three years and all your technology here is concentrated on one crop, canola, will there be other crops that are equally profitable for farmers? Biofuel may be the most profitable process, but you tell me that it is once every three years. What happens in the other two years? Do people make less money? Will the land be less productive for farmers? What is going to happen?

[*English*]

Dr. Wilfred Keller: I should clarify that while an individual producer only grows canola on a given field every third year, within the country as a whole on the order of 14 million to 15 million acres are grown on a consistent basis, because there is such a large land base. We have about 150 million acres of land, and 10% of it is used in any one year for canola. It moves around.

Secondly, I should mention that we have given canola only as an example. There are very good advances in cereal crops. We have very high-quality durum wheat; we're the largest producer of wheat for pasta. We're the world's largest producer of mustard seed, for condiment mustard. We're a very large exporter of flax. We have an excellent reputation for producing lentils and chick peas; we are a major exporter of these to India, for example. So there is diversity.

But I would emphasize that we must continue to do research on these key crops so that we remain competitive and have a market base and can diversify and rotate.

● (1515)

The Chair: Okay, *trente secondes*.

[*Translation*]

Mr. Robert Vincent: You say that you are having difficulty finding new investors so that you can develop new discoveries. What about intellectual property? Are you going to keep a part of the intellectual property after your discoveries, or are you going to give it directly to the new companies that want to get into the market with the new technologies that you develop?

[*English*]

Mr. Jerome Konecsni: I think this is clearly one of the areas that the research community here, the cluster, is talking about: finding ways to more effectively manage intellectual property and work with industry.

We talked earlier in my presentation about genomic networks. These networks include scientists like Dr. Keller. They include canola producers, flax producers, wheat producers, and they also include companies that are involved in the processing. When we put together projects and priorities, all of them participate in brainstorming, developing the project ideas, and prioritizing them, so the ideas that are brought forward include a full market perspective—science as well as the business perspective.

When we put together these research project teams, part of the discussion is how we manage the intellectual property, how we do it in such a way that it enables the optimization of the research so the biggest return is received from our public investment in that research. There are ways to do that. At the precompetitive stage the research can be accessible to all. Then, when individual companies invest in their own particular discoveries, they own that right. There are many different models, ways to bundle the ITs. That's done in the context of project ideas and teamwork. One of the solutions we have to managing the commercialization process and getting more private investment is having them involved from the beginning, while these project ideas are being developed.

You have the whole value chain represented in those networks. The farmers won't grow a crop if it's not going to get anywhere. They have to be able to make money. This industry has to make money.

The Chair: *Merci, Monsieur Vincent.*

We'll go to Mr. Arthur.

Mr. André Arthur (Portneuf—Jacques-Cartier, Ind.): Thank you, Mr. Chair.

This visit out west is quite an education for the Quebecker-living-in-a-city that I am. To hear people describe the wonderful possibilities that science is going to give Canada is kind of exciting; it *is* very exciting.

One aspect of all this stands out in my mind. I was a communicator in a former life—I worked in radio for 35 years—and I think in terms of the ability of the scientific community to join with the politicians to sell what you're doing to Joe Canadian, you fail miserably.

The Government of Canada spends or invests or loses, whatever word you might use, billions of dollars every year in science, innovation, research, be it grants, investment in infrastructure, all kinds of things. This is money that leaves the pocket of somebody who has earned it—Joe Canadian—goes to the federal treasury, and ends up in the scientific community. Please give me something for my money.

I have not heard one single person since the beginning of this study not asking for more money. Everybody thinks they would be better and they would find even more marvellous things if they had better tools, better toys. And as far as toys go, we saw the synchrotron this morning. The difference between a young guy and a man is the price of the toys; there we met a real man.

I would like to hear, from those of you who would like to reflect publicly on that, about the performance of the scientific community in selling its importance, its results, its pride, to the Joe Canadian who pays for it.

● (1520)

The Chair: Go ahead, Ms. Reynolds.

Ms. Carol Reynolds (Director, Communications and Government Relations, Genome Prairie): [*Technical difficulty—Editor*]...I think we need to put more time and effort into educating the general public. We need to put more time and effort into educating politicians. I'm hearing today very candid comments from MPs saying that they don't have a science background, that they don't understand, that the experts are up here, and that you're looking to us to tell you what we do and why it's important—to spell out what it means to climate change, what genomics has to do with world hunger, and how we can help solve some of these issues.

I think we need to concentrate on doing what we're good at, but communicating that as well. That's something the entire science community across Canada needs to really focus on.

Mr. André Arthur: What do you plan on doing? How will you change? How will you make it necessary for the government to subsidize your work? If Joe Canadian does not ask his government to do it, the government is not going to do it—not for a long time.

Mr. Perry Lidster: I may be a little different from some of the panel members who are here, but we didn't ask for money. We asked for enhanced investment, and we can document the return on your investment as very much a business case. It's capturing the value of much of the science that is already out there. From our perspective, we're not asking for anything, other than to capture the value of the restriction technology from it.

Mr. André Arthur: You have been one hell of an exception, sir.

Mr. Perry Lidster: Yes, well, we aim to be.

The Chair: You have one minute.

Mr. André Arthur: That's it. Thank you.

The Chair: Go ahead, Mr. Hodgson.

Dr. Paul Hodgson: Unfortunately, I agree 100%. The majority of scientists have failed drastically in their ability to communicate their research to the general public. I was a scientist in my past life.

VIDO has been somewhat of an exception in that, and we take several fronts to try to translate what I'll call our knowledge to Joe Canada.

One of the first things we do is bring multiple high school students into VIDO for hand-on-hand training with the scientists at a very early age, starting in grade 9. They work with the scientists in an effort to teach them basic science and bring it back and relay that knowledge to their parents.

From a more direct applied agricultural perspective, VIDO has two technical groups, called the VIDO beef technical group and the VIDO swine technical group. Members of those groups average between 14 and 20 and are literally producers across Canada. The VIDO beef technical group is made up beef feeders, finishers, and raisers across Canada who come to VIDO. We have meetings four times a year in which we relay the science going on at VIDO to them. It's not only that; we take papers published in the scientific journals, translate them into more user-friendly knowledge, and communicate that to them. We actually have two websites specifically for that.

We've started to tackle the problem, but there still remains a lot to be done.

The Chair: We are over time, so please be brief.

Mr. Jerome Konecsni: I would like to give you some hope that there is an awareness, and that there is an interest in and a need for communication. Genome Canada and genome centres dedicate a certain percentage of their budgets to communications and public awareness. I think they have recognized the importance of having communications skills in your organization.

I'd like to use myself as a personal example of organizations recognizing the need. I am not a scientist. My background is as a communications instructor and a public relations consultant. I got into managing science because of my ability to communicate the benefits of science to non-technical audiences like yours. There is awareness that is needed.

The Chair: Okay, thank you.

We'll go to Mr. McTeague and then Mr. Simard.

Hon. Dan McTeague: I'm sorry, Mr. Chair, is that Mr. Van Kesteren...?

The Chair: No, Mr. Van Kesteren is next.

Hon. Dan McTeague: Thank you; then I will ask the question I wanted to ask a little earlier.

There is a current crisis in credit in the United States and perhaps in a bit of Canada, to the extent that there has been some concern raised about the prospect of not providing funding. We've talked about venture capital. We've talked about the concern about how you take a product.... Mr. Hodgson, you talked about how successful you've been, but we've also heard from many who have not.

In your estimation, how difficult is it right now in the current credit environment to gain credit or to gain funding to get from the point of discovery to the point where you can commercialize? We see it very much on this side as an investment, Mr. Lidster, so don't worry; our concern here is to have you specifically identify areas in which the federally regulated industries can do a much better job of ensuring that we maximize new ideas and get them to market.

Do you want to have a go, Mr. Hodgson?

● (1525)

Dr. Paul Hodgson: The Vaccine Infectious Disease Organization is part of the University of Saskatchewan, so we tend not to deal with that early-stage investment, where most of our discoveries or inventions are pre-licensed to some of the large pharma and biotechnology companies. So I'd have difficulty commenting on some of the challenges faced by the young start-up companies.

The Chair: Mr. Kehrig.

Mr. Ron Kehrig: The investment community, as it relates to emerging areas and emerging technologies, like everyone else wants to invest in areas that are familiar to it, whether it's angel investment or venture capital. The problem or the challenge faced by the small to medium-sized enterprises in new areas, in new technology developments, is there aren't those seasoned investors with a good knowledge of that sector or application, so the familiarity is sometimes an issue with the investment community in terms of the opportunities and where to go. There isn't that receptive capacity within the venture capital community, so it can be extremely challenging.

I think there is money in Canada for good ideas. There are certainly a lot of other opportunities in real estate and investment opportunities that are out there presented to investors, so the technology sector has to hold itself up against the other opportunities for capital markets.

Hon. Dan McTeague: How does it do that in the context where you have all the money in this country heading to either oil or to potash—no offence, because many of you here are making an example of where that doesn't happen—to health sciences, the production of things like canola, which ultimately either deals with biodiesels, or food? We see rising food prices, we see rising energy prices, and we see a handful who are very successful and a whole lot of other potentials that are not.

I realize this is beyond the scope of some of you who are here, but it's a real crisis that we believe this committee is going to have to address beyond the success stories. We have to talk about the failures, not so much the success stories. We can model ourselves after the success stories, but we also have to recognize there's a dearth of examples of people who have actually been able to commercialize and get beyond the success stories you've had, recognizing that many of you are, in one way or another, institutions that have been supported one way or another by government or by the state.

Mr. Perry Lidster: You're quite right to point that out. The competition for investment capital is extreme. Right now you have huge returns on mining investments, oil investments, and that's what's drawing off the big money, the really big money.

We've taken the opportunity to look at Asia for funding. We're not dealing with the same kind of megaproject that they're doing with oil and mining, but we can find pots of money so that we can get by.

The Chair: Thank you.

Mr. Szumski.

Mr. Roman Szumski: When you have areas with a focus that are not too broadly set, such as biosciences and life sciences, but rather get a specific focus like agricultural biotechnology here in Saskatoon, that raises investor confidence. If you have the mechanisms in place to achieve a certain level of technology maturation so that it's investment-ready, you can have successes in these places.

We mentioned one company earlier, Saponin, that is raising capital and is successful at getting investment made in it. Part of the reason it has achieved that state is that the technology has gone from the early-stage research done in a government lab, at the right time turned into a company, and that company is given a location to incubate. All of this comes together to the point that they can now go out to private investors and attract investment. They have the confidence to invest because they're within this community that they know is surrounded by the university, the PBI, the kinds of investments that are available from Genome Prairie. The HQP are going to be here.

Canada has the capacity to win in these areas as long as it does the focus thing. The part we get into trouble with is if we try to do a general spreading of the activity around all the different possibilities. You have to narrow it down. I think we know that Saskatoon is a very successful cluster because it's focused.

● (1530)

The Chair: Thank you.

We'll go to Mr. Van Kesteren.

Mr. Dave Van Kesteren (Chatham-Kent—Essex, CPC): Thank you, panel, for coming. It has been a very educational day.

I want to understand something. We talked an awful lot about the crops that you're growing and the advancements you've made. I'm from southwestern Ontario, and my wife's parents are about 100 miles north of that. I remember how excited everybody was when soybeans were beginning to be planted.

I think, Mr. Keller, you said soybeans are planted in this area.

Dr. Wilfred Keller: No, no, in Ontario.

Mr. Dave Van Kesteren: Is there work being done in genetics with global warming? I know that it depends mostly on heat units. I see you have an awful lot of sun here and I understand that you need your frost-free date, but is that starting to happen here in Saskatchewan too? Is corn starting to move up? Is soybean not far behind? Can that be enhanced with genetic modification?

Dr. Wilfred Keller: We have evidence, certainly, that there is increasing acreage of corn and soybean in southern Manitoba, very little in Saskatchewan. There's talk of soybean and corn as possibly being alternatives under a global warming kind of scenario. We see a strategy that is more important, I think, in that we have to adopt prairie-type crops to drier, warmer climates.

Soybean and corn do very well in the Ontario area, where you have very warm nights. This is a continental climate; we have cold nights. We don't have the heat units that you're referring to. There are low heat-unit corn and soybean varieties that have been developed, but it would be a significant step to get them into this area because of our moisture restraints and our low temperatures.

It could very well be a mix of some of that, as well as adaptation to the canola and the wheat and the barleys that we already grow and can grow in a continental climate like this; so perhaps on balance.

Mr. Dave Van Kesteren: Then with genetically modified foods too.... I asked this question this morning. I don't know if I got an answer. I understand the mechanics and what is done from one plant to the other, but what about cross-species? I read about this a number of years ago. Is that something that is still being experimented with? The genes of a fish, maybe, from the Arctic Ocean, to make it a little more....

Dr. Wilfred Keller: There was a lot of media hype about that sort of thing 10 or 15 years ago. Indeed, I suppose there were experiments to evaluate different types of genes in terms of things like cold tolerance. But on a much more practical and realistic level, I must emphasize that no commercial product with animal genes in plants has ever been made or commercialized.

What the newer genomics and systems-biology sciences allow researchers and the community to do is to investigate the genetic make-up of a crop, be it soybean or canola, and to be able to understand all the genes involved, to tweak and manage that so that you can use the genetic information that's there and point it in a direction to get better heat tolerance, better drought tolerance.

So in the long term, I don't think you're going to see the idea of having to move a gene from a tropical plant into a crop. I think it's more understanding the genetic base of the crop and making those modifications accordingly. This will allow perhaps a greater level of comfort to society over time.

Mr. Dave Van Kesteren: Have I more time, Mr. Chair?

The Chair: Two minutes.

Mr. Dave Van Kesteren: My friend was a little rough on you, but actually he had some good words about you. We were both commenting on how well you do in the agricultural world, working in conjunction with farmers and with the agricultural community. Actually, he is a very nice guy.

Voices: Oh, oh!

Mr. Dave Van Kesteren: I'm going to disagree only on this one point, because I think he's right. I think you need a salesman more than anything else. And I think that's what you and I discussed too; that's really what he said. You've done an excellent job, I think, but you have to include industry and you have to convince politicians. Unfortunately, we have to get elected and it has to make sense. And you may even get to that point, but if we think, “Boy, the electorate isn't ready for this”, then....

My suggestion would be that you incorporate, as much as possible, people in the business world who do a good job of... because you do have an exciting story to tell. You've done a remarkable job. I think you should be commended for that.

Mr. Keller, I think you wanted to make a statement. Then I have a quick question.

● (1535)

The Chair: Mr. Keller, and then Ms. Reynolds.

Dr. Wilfred Keller: Thank you.

Certainly, I think that is important. Again, using the canola example, the development of these new canola strains indeed was an industry-public partnership. I think it's a good example of how you need that infusion, that integration, to make things happen.

The Chair: Ms. Reynolds.

Ms. Carol Reynolds: Thank you for recognizing that marketing the science is really of extreme importance, and I completely agree. As a communicator, as a former radio announcer as well, I completely agree.

Involving industry in the whole process from the ground up is of extreme importance. That's the model Genome Prairie is currently using. We have a network system in place where we draw together academia, industry, and government representatives. We get them all in a room and say, "What are our priorities? Why do you want to do this? What does each organization want? How can we make these things happen?"

That's the model that we and some other centres across Canada follow, in the west especially. We've been given some funding by WD to make these networks happen.

So those are now getting under way. It's a really exciting model and we're hoping it will catch fire across all other centres across Canada, and other organizations as well.

The Chair: Mr. Simard.

Hon. Raymond Simard: If there's one thing that's become very obvious to me over the last couple of days, it's that the research community realizes the importance of synergies. I can't believe it; you people all know each other and you all work together. In Manitoba, four aerospace companies that don't necessarily compete have formed groups that work together—they're funding a composite centre they can all benefit from. Obviously, you people get this.

Can we say the same for the federal government? We always talk about the silos. My feeling is that they have been disappearing over the last five or ten years. We have Ag Canada, Health Canada, and Industry Canada talking to each other now on this kind of issue. Are the silos disappearing? That's the first question.

Secondly, the provinces are important partners for us. I'm not sure that I've seen a collaborative effort on this with the provinces. I know they're all doing things separately, but I'm not sure that there has been a lot of collaboration between the federal government and the provinces. I've heard that Quebec was doing well at one of our meetings. Is that something you would know? Is there a province we should emulate in its collaboration with the federal government?

Mr. Roman Szumski: In the last couple of years, we've been seeing a breakdown of the silos and a trend towards working together. Certainly Agriculture and Agri-Food Canada and the NRC have a long history of working together. Some of it goes back a long way, but it's much more active recently, with the setting up of a national bioproducts program and the like.

Also, there are a number of examples across the country that have strong provincial participation. The National Institute for Nanotechnology is a 50-50 partnership between the University of Alberta, funded directly by the province, and the National Research Council, funded by the federal government. That's a new model and a novel way of working together.

In Charlottetown there's the Institute for Nutrisciences and Health, which has Ag Canada, NRC, the province, and the University of P.E.I. working together, sharing the same facility. You can't tell by looking at the people who they're working for—they're using the same infrastructure. There definitely is a trend towards working together.

Hon. Raymond Simard: We're funding some of these things through the provinces.

Mr. Roman Szumski: It's always a cart-and-horse game when it comes to who steps in first to make the investment. Sometimes it happens at the same time, as it did in Edmonton with the National Institute of Nanotechnology. In Prince Edward Island, they recently introduced an innovation strategy. They are investing $200 million over five years, which will call for collaborating and working with the feds and with the Institute for Nutrisciences and Health. Sometimes they happen one after another. I think there are examples of the provinces stepping up. They are interested in innovation in their own regions and are starting to work with the feds.

● (1540)

Dr. Wilfred Keller: With respect to your question on dealing with the provinces, we as a federal institution have a close relationship with the provinces in certain strategies—funding research in flax, which is an upcoming crop, and in the pulses such as lentils. We have received direct cash support from the provinces for a genomics global initiative. I think it's another example of how we can build. It also ties into the university system.

Mr. Jerome Konecsni: Genome B.C. and Genome Québec have done an excellent job of working with the federal government in cases where the provincial governments have made an investment, identified their priorities, and then collaborated with the federal government through Genome Canada.

We're trying to move more in that direction in Manitoba and Saskatchewan. We're making progress, though we're not yet where I would like to be. We're using B.C. and Quebec as models for federal-provincial collaboration, at least in the area of genomics research.

Hon. Raymond Simard: With regard to labour-sponsored funds, I know it's not normally a federal issue, but it's important, because some of the smaller provinces really benefited from it in the past.

In Manitoba it's been a total disaster. The Crocus Fund collapsed. The ENSIS fund was bought out by a B.C. firm and is no longer interested in investing in Manitoba.

Some of the smaller provinces are not benefiting from this. As investment sites, they aren't as attractive as Toronto or Montreal. Is there a labour-sponsored fund here in Saskatchewan? How important do you think they are as economic engines for start-ups and small companies?

Mr. Ron Kehrig: Yes, there is labour-sponsored capital in this province as well. Likewise, there's an issue in this province respecting the high technology sector. There are investment opportunities within the province, obviously, in the traditional sectors, and I think that's where the emphasis has been.

As to whether they've been as effective for small and medium-sized technology companies, I guess I would argue that there's definitely room for improvement there.

Hon. Raymond Simard: If the federal government were to come up with its own labour-sponsored funds with a mandate to specifically invest in start-ups and these emerging companies, would that make sense?

Mr. Ron Kehrig: It's great to have more money in the space. Any time you set up another level of bureaucracy and another pot of money, it adds to the complexity out there among sources of funds. We have a lot of funds already. Working with the existing funds and infrastructures is probably better than setting up a new one.

The Chair: Thank you.

We're almost out of time. I think Monsieur Vincent has a brief, 30-second question.

[*Translation*]

Mr. Robert Vincent: Mr. Lidster, you said that you receive submissions for about 25 or 50 projects per year but that you just invest in one. How do you evaluate those projects and how do you choose the one in which you are going to invest? I imagine that everything depends on the investment that you have to make. How do you go about it?

[*English*]

Mr. Perry Lidster: We call for a formal proposal. We will do our own due diligence on the company, we'll do our investigation, we'll ask for a business plan, we'll support them in developing a business plan, which is critical to their success as well as critical to their getting funding. It's a straight business decision on the potential: the likelihood of return and the timing of the return.

The reason we only do one or two is that we're limited in capital. We would probably do five or six, because they all qualify.

And that's really the issue; we're a little bit a victim of our own circumstances, our own success here. The cluster is throwing up technologies at a much faster rate. The cost of supporting them has increased. We would like to raise our cap from $300,000 to $500,000 or $750,000. It would be very advantageous for the company to do that. It's just that there are more good projects, more good technologies out there, and we need to ramp up our activity.

● (1545)

The Chair: Thank you. *Merci*.

I want to wrap up with a couple of questions.

What we hear, certainly in Ottawa and across the country, is that in terms of basic research over the last 11 years, the actions taken by the federal and provincial governments have, in the view of the research community in Canada, reversed a lot of the brain drain. From a basic research point of view, they say that Canada is doing fairly well, just to be very basic, but that from a commercialization point of view we're not doing well. That's certainly what we heard from the panel yesterday in Manitoba.

As a committee, one of the things we're looking for is examples of success: why did they succeed and how do we emulate that success?

To Mr. Hodgson, I've toured VIDO before. Unfortunately, we didn't have time to tour it today. You talked about commercialization successes; vaccine products have been talked about. Can you highlight for the committee why these successes happened? Were there commonalities you can point to there to say that these are some factors involved, that these are things we should emulate, and that these are some policies we as a committee should consider altering?

Can you talk about your successes and how they were actually achieved?

Dr. Paul Hodgson: Certainly.

Again, our institution is about 33 years old. From a very early stage, VIDO recognized the importance of intellectual property and patenting. So I guess from a very early age, if you want to talk of business sustainable, competitive advantage, basically a patent does nothing else but give you the right to sue. So the companies that come in now and work with us feel very comfortable that we've kept the notes, we have the due diligence in place, to actually protect them as they take a product forward.

The seven vaccines I talked about initially were vaccines created some time ago now, over various stages—over the last 20 years, even. VIDO initially started out with a spinoff company called BioStar. BioStar actually marketed and sold those products and actually had a revenue of about $2.6 million a year. They went on to out-licence that and sell that off, primarily to Novartis Animal Health.

So even when I talk about our commercialization success, most of our vaccines are now marketed by international companies, not necessarily Canadian companies. So I think that's still a challenge in Saskatoon. As someone mentioned, we all work together, we all know each other. I think Saskatchewan, and Saskatoon in particular, have done an incredible job of making this cluster work. But I think we're still finding some challenges in bringing larger companies here, and I don't know how we would approach that.

What we can do is really enhance the effectiveness of the start-up companies. The one that's been mentioned a couple of times today is a company called Saponin. They make adjuvants. From a vaccine perspective, there's another company called Prairie Plant Systems that's looking to make vaccines in plants.

I think we can work with those companies to help them succeed, and that's something we try to do. From a success and policy perspective, anything you can do to enhance the success of those companies—whether it's tax breaks for angel investors, whether it's new labour-sponsored funds, or whether it's putting money into that—I think that's going to be incredibly advantageous.

The Chair: Just to clarify, you talked about advance market commitment. We had Bioniche before us in Ottawa, and my recollection here is that they were asking for a $15 million program or something whereby the new vaccine, that I think was developed in concert with VIDO...that some money would be allocated to producers. Producers would then buy the product and apply it to their cattle.

Is that different from what you're talking about, in terms of this advance market commitment? It was in response to a question from Mr. Stanton.

Dr. Paul Hodgson: When I spoke of advance market commitment, I was speaking more from a human health perspective. I do not know whether the government as a policy wants to do the same sort of thing for animal health vaccine.

That's a very interesting vaccine, because it's a bacteria that causes no disease in cattle, but we can actually—from a human food and safety perspective—vaccinate the cattle to protect humans. So in that sense, yes, I guess it's something that could be done.

● (1550)

The Chair: But is that what you mean by advance market commitment?

Dr. Paul Hodgson: Basically, yes. That's going to be a government policy issue, though. So West Nile virus—where you would actually vaccinate a human probably—would be something that you could have. Saskatchewan is a very...I won't say susceptible population, but it's a population where the disease is prevalent. Whether the government wants to look at actually subsidizing vaccines to be given to animals—through an advance market commitment to protect humans—is something I can't speak to.

The Chair: The clerk has just told me that my time is up. Although I have a few more questions, I will thank you all for your time here. I think it was an excellent discussion with our committee members.

The only point I would have to make is I that disagree with Monsieur Arthur on something. At one point he said he “used” to be a communicator. He still is a great communicator, in our view.

We certainly enjoyed the discussion. We enjoyed your presentations here today. If you have anything further to add to the committee, please submit it to the clerk and we will ensure all members get it.

Thank you for your time today.

Members, we will take about a five-minute break and we will have the next witnesses come forward. Thank you.

● _____ (Pause) _____ ●

● (1600)

The Chair: Members, we'll welcome our second full panel of guests.

We have with us four organizations again. First of all, from Innovation Place, we have the vice-president of research park operations, Mr. Ken Loeppky; second, from the Saskatchewan Institute of Applied Science and Technology we have president and CEO, Mr. Robert McCulloch, and also we have the executive director, public affairs, Ms. Patricia Gillies; third, from the University of Saskatchewan we have the vice-president of finance and resources, Mr. Richard Florizone, and the managing director, industry liaison office, Mr. Doug Gill; and fourth, from SaskTel, we have the vice-president, corporate counsel and regulatory affairs, Mr. John Meldrum—John, I think you've been before this committee before—and we have the director, regulatory affairs, Mr. Duncan Kroll. Welcome.

We will go in that order, with each organization having up to five minutes for an opening statement, and then we'll go immediately to questions from members.

Mr. Loeppky, we'll start with you.

Mr. Ken Loeppky (Vice-President, Research Park Operations, Innovation Place): Thank you, Mr. Chairman.

I'd just like to give thanks for the opportunity to come and speak in front of this group.

I thought I'd start by talking a little bit about the background of Innovation Place. Innovation Place is a crown corporation wholly owned by the Province of Saskatchewan. It was started with a research park in Saskatoon in 1977 when a lease for land was secured with the University of Saskatchewan. The first building was built in 1980. The research park expanded into Regina in 1998, when a similar agreement was signed with the University of Regina. Today we have 22 buildings on the two parks, 17 in Saskatoon and five in Regina, and the total investment to date is about $230 million.

As I mentioned, the first building was built in 1980 and was occupied by five tenants. There are now 185 tenants in the research parks, who employ about 3,500 people. In 2007 the economic impact from the tenants' operations in the parks was just under $600 million of economic activity for the province of Saskatchewan. Indirect employment is estimated at over 7,000 jobs. Overall, 62% of the clients who work in the research park are in business. And in fact in Saskatoon, as a mature park, it's even higher at just over 85% private sector tenancy. Of those tenants, 71% have fewer than 10 employees, so they are small companies. In 2007 we actually saw the establishment of eight start-up companies in our parks.

Some of our observations are that there are many ways to enhance commercialization. Research parks, we believe, are part of the solution. All university-related research parks in Canada struggle to deliver infrastructure, and primarily the issue is the high cost to deliver the infrastructure to support technology sectors. The business model requires a high rent when you have high input costs. That's not necessarily conducive to small and medium-sized businesses, and definitely not conducive to start-up companies.

We believe we're an example of a successful university-related research park. As a matter of fact, I think we're the only one in Canada that has an ownership structure like ours. We attribute that success to the relationship we have with the two universities here and to the financial support from our provincial government. As I mentioned, that government support is not common across Canada.

We encourage the committee to consider the university research park model as part of the solution for enhanced commercialization in Canada and to consider ways to support growth of research parks.

Thank you.

● (1605)

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

Dr. McCulloch, you have the floor.

Dr. Robert McCulloch (President and Chief Executive Officer, Saskatchewan Institute of Applied Science and Technology): Thank you, Mr. Chair. Like Ken, we very much appreciate the opportunity to speak to the panel today.

I'm speaking on behalf of our organization, SIAST—the acronym more commonly used around here. I'm privileged to serve as the president of a four-campus institution. We have campuses in the beautiful Saskatchewan cities of Prince Albert, Saskatoon, Moose Jaw, and Regina. We serve about 12,000 full-time students, almost 30,000 individual course registrations, and we're very proud that we graduate nearly 4,000 students each year.

I hope our brief builds upon the submission you received from ACCC, the Association of Canadian Community Colleges, back in April, entitled *Making it Work*. I know you can count on SIAST—in fact, as a board member of ACCC, you can count on all of us in the college and institute sector—to work with you on Canada's science and technology plan. We're very proud of our work. Let me just begin with a few brief points that are built upon in our report, beginning perhaps with links to industry.

At our institute we're very proud that we have over 700 people who serve on our industry advisory committees. That gives us a very strong connection to local and regional industry and also some national connections.

I'm proud that we recently had a meeting with three of the leading potash producers in our province—PCS, Mosiac, and Agrium. They were talking not only about their human resource needs but also about their applied research and technology needs. That's what I want the panel to hear, that you can count on the institute and colleges in our province. So the first is industry links.

I hope the panel might also consider the role that colleges and institutes play in applied science. We really are the organization—our faculty and staff—that can take good bench research to the next level. We do a lot of testing of materials, testing of protocols.

We hope the panel might consider direct support to the colleges and institutes. We're pleased to see some changes, for example, with CFI eligibility that have opened the doors to institutes, but perhaps some targeted funding to us would be very helpful in these applied research projects.

The third point that I'd like to build on is really based upon support for students. The ACCC submission highlighted the need for support for internships and co-op students in many areas. Again, we are very proud, and I've been told by Ken's colleagues that almost 40% of the staff at Innovation Place are graduates of technical institutes—the technologists, the lab assistants. These are the foundational staff that really make applied research and general research work. We hope the panel might consider investment in internships and some unique support for co-op kinds of activities.

Finally, as I noted in the document on science, we're really proud of some of the partnerships we've built. We're pleased with the partnerships we have in our provincial institutions, with Dr. Florizone and his colleagues. We have a number of “two plus two” partnerships. But I submit that we've only scratched the surface on those kinds of activities. What I mean by two plus two is building from a technology program into degree programs so that students can explore all sorts of options.

We're pleased with the relationship in our province, but also proud that a number of institutions from outside of Saskatchewan have looked to SIAST for partnerships. We have a number of agreements with Alberta and British Columbia students.

As a subset of that, if I can just build on partnerships, I want the panel to know how proud we are of the partnerships with aboriginal institutions and organizations in the province of Saskatchewan. While the panel is focused on science and applied research, of course, I think we have to, in western Canada, give due consideration to opportunities and the science needs of aboriginal students.

My final comments are that we are delighted that nearly 20% of our student population—with particular emphasis on our Prince Albert Woodland campus, with almost 40% of our students—are of aboriginal ancestry. But this is another area that I urge the panel to build on.

With that handful of comments, other details are in the submission, and I look forward to questions. Thank you.

● (1610)

The Chair: Thank you very much for your presentation.

We'll now go to Mr. Florizone.

Mr. Richard Florizone (Vice-President, Finance and Resources, University of Saskatchewan): Thanks very much.

First off, on behalf of the University of Saskatchewan, welcome to our beautiful city and province, particularly on this wonderful prairie summer day.

Thank you for the opportunity to appear before you. Here with me today is my colleague Doug Gill, who is the managing director of our industry liaison office.

My objective today is to first give you a brief overview of our innovation and science and technology cluster at the University of Saskatchewan. Then I'd like to share some thoughts, as we started to talk about this morning, on what is for us our single largest issue with regard to science and technology, and that is the funding of operating costs for major scientific facilities.

At the University of Saskatchewan we're proud to be in our 101st year. To give you a sense of the scale of the institution, we have over 20,000 students, 7,000 staff, and 13 different colleges. We've created an innovation cluster that is a global leader that we believe will continue to benefit Saskatoon, Saskatchewan, and Canada.

One of the unique elements of our cluster is that we're one of the only universities in the country that has that unique combination of human, animal, and plant sciences with our colleges of medicine, nursing, pharmacy, nutrition, veterinary medicine, and agriculture and bio-resources. Adding to that are, of course, VIDO and our new International Vaccine Centre, together with the biomedical imaging beam lime at the CLS, creating a very unique cluster and capability in the life sciences.

It's those types of combinations that have helped us to be a leader in innovation. Our overall research revenue at the university is now more than $140 million, more than double what it was 10 years ago. So we are in a growth trajectory and seek to continue to build on our success in research.

One of the early successes that paved the way for this level of achievement, and you've heard about it already from Ken Loeppky, is Innovation Place. It's one of the most successful university-related research parks in North America. Ken shared with you some of the stats. With 150 clients, 2,700 employees, it's a very significant entity and a great success story. Actually, as you travel around the world you realize it's one of the early success stories in science and technology parks, having been there in the early eighties. I spent some time in the U.K., and I can say that a lot of countries are probably 10 years behind where we were in Saskatchewan in establishing these types of facilities.

Of course, the other aspect to our cluster, our major science facilities, as we spoke about this morning, is that across the country there are approximately 10 pieces of major science infrastructure, that is, greater than $100 million. Two of them are here in Saskatoon. One is the Canadian Light Source, and the second is the International Vaccine Centre.

As you heard, the CLS is an international facility. It has researchers and funding partners from across Canada and around the world, capital funding from four provinces, active researchers from eight provinces, and, as I understand, we're working on P.E.I. and Newfoundland to get them on board as well. CLS is a very ambitious industrial science program, targeting 25% of its beam time to industrial partners and cost recovery, and we're on track to working towards those goals.

But as I mentioned, the CLS isn't the only major science endeavour. There's also the International Vaccine Centre, the $140 million facility on track to be constructed in 2010. When it is completed it will be the largest containment level 3 research facility in western Canada. What that means is you'll have the capacity to investigate—I think you heard about it already from our colleagues from VIDO—and conduct research on those level 3 diseases that are at the boundaries of animal-human health, some of the hottest topics in public health these days, such as avian influenza, West Nile virus, and SARS.

As you've heard from VIDO, the predecessor organization of InterVac, this facility will have an impact well beyond Saskatchewan borders. For example, we know from VIDO that their calf scours livestock vaccine saved an estimated $5 billion in economic losses per year across North America. So it's a very significant economic impact that you can have directly or indirectly through these types of facilities.

That gives you a bit of history of where we've come from as an institution and where we are today in terms of contributing to Canada's research excellence. Looking forward, of course, we see a range of opportunities and barriers to our continued success in research, but the single biggest issue for us is funding the operating costs of major scientific facilities, such as CLS and InterVac.

The Government of Canada's vision for science and technology is really to build a sustainable national competitive advantage in science and technology. I think from your tour this morning you've had a sense of how major facilities like CLS and InterVac will bring that vision to life, creating those critical masses that can bring together people and investment from across the country and around the world.

● (1615)

As you know, we don't have a framework or single agency to deal with operating costs for major scientific facilities. The CLS currently receives funding from a variety of provincial and federal partners, including NSERC, CIHR, NRC, and Western Economic Diversification Canada. And while we're grateful for this, we also recognize that other nations, such as the United States, have a single agency.

So our key recommendation to you, to give you a bit more detail, is that the Government of Canada provide a program of sustainable funding for major scientific facilities like CLS and InterVac.

The program, I think, should have a number of key features, which we can talk a little more about. It should, for example, provide funding over a five-year timeframe, to give some stability. The program should likely include the requirement of some modest provincial contributions. We believe science and technology is primarily a federal responsibility, but requiring some provincial matching would ensure that major labs continue to serve the needs of their local communities. As well, obviously the industrial targets are a very important component of this.

I want to be clear that we're happy working with our current funding partners, but we do see benefits to the public of establishing a single agency such as this. It would provide more focused and effective oversight of the facilities, a little more monitoring of their strategic goals, a potentially stronger link between government strategy and their direction, and perhaps enhance capacity to create industrial partnerships.

I've covered a lot of ground. I know we'll talk more about this in questions, but to summarize, I hope I've left you with a clearer picture of what our cluster is here and some of the major issues and how we might work together to resolve this issue of operating costs for major facilities.

The Chair: Thank you very much.

We'll go now to Mr. Meldrum, please.

Mr. John Meldrum (Vice-President, Corporate Counsel and Regulatory Affairs, SaskTel): On behalf of SaskTel, I would like to thank the committee for inviting us to appear.

Just to orient new members of the committee, SaskTel is the incumbent phone company in the province of Saskatchewan and is owned 100% by the provincial government.

On the launch of its study, the standing committee stated that "Science, research and development underpin Canada's position in the knowledge economy, where strength depends on capacity to innovate and stay ahead of the technological curve." We couldn't agree more. We believe that improvements in our quality of life and standard of living will depend on our increasing success in bringing scientific and technological innovations to life.

In Saskatchewan, with its widely dispersed population and its natural resource base, we understand the implications of the scientific and technological discoveries and applications, and the benefits they provide. Technology and innovation have been at the core of this province since its inception.

SaskTel has taken a lead role in this regard, delivering the world's finest communications technologies to customers and communities across the province. This year SaskTel will have spent 100 years building a world-leading communications network for Saskatchewan, carrying a wealth of information into the households and businesses of this province every day.

Since 1987 we have invested more than $3.1 billion in our Saskatchewan network. And our work continues in 2008, with ongoing efforts to deliver higher bandwidth, expand our cell coverage, and provide the latest communications and entertainment services to our customers.

Looking ahead, most authorities agree that one area of Canadian science and technology strength and opportunity is information and communications technologies, ICT. In 2007 the federal government report, *Mobilizing Science and Technology to Canada's Advantage*, identified the ICT sector as an area to focus more of our energy and resources on. Prior to that, the Telecommunications Policy Review Panel observed that in Canada, and throughout the world, ICTs had emerged as significant drivers of economic and social change. The panel concluded that ubiquitous access to affordable and reliable advanced broadband services should be available in all regions of Canada by 2010, and recommended that it be a central goal of a national ICT strategy. The review panel made it clear that in order to maximize Canada's potential, we need to leverage our geographic and demographic diversities and give everyone an opportunity to contribute to building a stronger, more prosperous country, no matter where they live. Broadband access will be the key to this full participation.

Internet access has become an essential communication tool for people in Saskatchewan. Businesses and residences want access to a range of entertainment, learning, communications, and business functions. Broadband access and greater bandwidth are increasingly being demanded as Saskatchewan experiences unprecedented economic prosperity. For the burgeoning oil and gas, mining, and agricultural sectors, most of which are located in rural and remote areas, broadband is essential in order to improve their productivity and competitiveness.

At SaskTel we believe we are leading the way in Canada in bringing digital cellular and high-speed Internet service to rural areas, but there remain many unserved and underserved areas in Saskatchewan—in particular, many farmers, businesses, and first nations communities in the southern part of this province. However, as is generally agreed, market forces alone will not provide ubiquitous broadband access. Despite private sector involvement, government intervention in the form of subsidies will still be required for many high-cost service areas in rural and remote regions of Saskatchewan.

Canada is rightly proud of its achievements in ensuring universal coverage of local telecommunications services in all regions through its national subsidy fund. Yet, in our view, there is an increasing need for advanced telecommunication services that go beyond the traditional telephone service.

Unlike some parties who argue that the national subsidy fund for rural and remote local service should be eliminated or significantly reduced, SaskTel believes consideration should be given to expanding the subsidy program to include other services, such as rural broadband access and, possibly, rural cellular.

SaskTel notes that in the United States, the FCC is currently reviewing its Universal Service Fund. One larger form under consideration is the creation of three separate funds for rural areas to support broadband, wireless service, and providers of last resort—those providing local service.

SaskTel believes the time for ad hoc programs that achieve partial results is over. Broadband access should be expanded to all parts of Canada, urban, rural, and remote, as rapidly as possible.

● (1620)

Again, we thank the committee, and we'd be pleased to answer any questions.

The Chair: Thank you very much, Mr. Meldrum, for your presentation.

We will now go to questions from members. The first round will be six minutes each. We will go with Mr. Simard first.

Hon. Raymond Simard: Thank you very much, Mr. Chair.

Thank you very much for being here this afternoon.

My first question will be to Mr. Florizone. I've asked this question in Ottawa to some of our granting council representatives a few times, but I'd like to hear it from you. One of the things that seem to be happening is that the granting council seems to be focusing on centres of excellence, so that U of T or UBC is targeted. I've heard from some smaller universities that they feel they may not be getting their fair share. As you continue funding these centres of excellence, like UBC or U of T, the gap continues to grow because you continue funding them on a disproportionate basis.

Is this something that is happening here in Saskatchewan, or are we out to lunch on this?

Mr. Richard Florizone: I think we are maybe a unique example. The quick answer is no. For our size, this university has probably been the most successful in CFI competitions, based on our size, of any university in Canada. So we've been very successful.

I know one of your other panellists in a previous meeting stated that "excellence has no address". Certainly you see concentrations of excellence throughout Canada, but we've done very well in holding our own. Part of that has been to focus on key sectors in the life sciences and in the synchrotron science where we had existing strengths.

● (1625)

Hon. Raymond Simard: Is there a reason why the synchrotron is on the campus as opposed to in the park? I thought it would automatically go in the park.

Mr. Richard Florizone: That's an excellent question. Part of it gets to the original rationale for selecting Saskatoon as the site. You might remember that there is an older facility that acts as the injector to the machine. That is a linear accelerator.

So the short answer is that there was an existing facility to act as an injector to the machine, and that provided cost savings because you could use some existing infrastructure.

Hon. Raymond Simard: Normally would it have gone in the park, or does it matter?

Mr. Richard Florizone: I haven't thought about that point, I suppose. I think the main thing is that you had that infrastructure, so it was the right place to plug in.

If I could just draw on that quickly, there is a broader point there that really what you're seeing is how these investments take place and how they build scale over many generations. You have a history of nuclear physics research at the University of Saskatchewan that goes back many decades and that ultimately led to the synchrotron.

Hon. Raymond Simard: Okay, thanks.

Mr. McCulloch, actually I was very happy to hear you speak about the aboriginal communities. It was the first time today. I'm from Manitoba, so we share some of the same challenges and same opportunities with the aboriginal community, and I think we agree that the way out is probably through education. So I was very happy to hear that.

Is your institute a community college? Could we compare it to that?

Dr. Robert McCulloch: The organization that we belong with is the Association of Canadian Community Colleges. There's a different nomenclature. There's an interesting discussion occurring across the country. Within the terminology now, the terms "polytechnic", etc. are being used. We're a part of that family, with the CEGEPs, the community colleges, and so on.

Hon. Raymond Simard: But you're training people to be tradespeople?

Dr. Robert McCulloch: We have 160 programs, so we do the full array from trades to technologists. We do a lot of work in health care: X-ray technologists, laboratory technologists, right through to degree nursing, in partnership with the University of Saskatchewan.

Hon. Raymond Simard: One of the challenges we're having in Manitoba is that contractors and business people are actually hiring a lot of young people to do their apprenticeship program, but the problem with it is that there are no spots in the community colleges. Do you have the same challenge here?

Dr. Robert McCulloch: We're being pressed significantly. The expectation, for example, moving in 2008-09, is for a 20% increase in trades training. That's the kind of demand we're looking at, and we're trying to make sure we meet that demand. We're renting space all over Saskatoon. We're now in six different facilities across the city. Trying to find teachers is a challenge, but so far so good on that. In the wintertime, working inside with the students rather than being outside is a little easier to sell in Saskatchewan and Manitoba, but that's always a challenge.

Hon. Raymond Simard: Is there a provincial nominee program here in Saskatchewan to bring in targeted people?

Dr. Robert McCulloch: Yes, and frankly, we haven't been able to keep up with Manitoba on that front. They're working on that, I understand. Obviously that's way beyond my purview, but we've been engaged in discussions around that. We have an interesting project that was funded by HRSDC, through which we're working in the Ukraine. We're trying to do some in-country assessment to help with the immigration issue.

So there are lots of activities there. It's another area that requires some focus.

Hon. Raymond Simard: Mr. Loeppky, we had the pleasure of visiting Smartpark at the University of Manitoba yesterday. It's a much smaller version of what you have here, and I'm sure they've probably been inspired by what you've done here in Saskatchewan. One of the things that got them off the ground apparently is that WD funded some of the initial infrastructure to keep some of the costs down. I'm not sure how many buildings they have. How many buildings did you say you have here?

Mr. Ken Loeppky: We have 17 in Saskatoon and five in Regina.

Hon. Raymond Simard: So 22 altogether.

I thought it was really interesting, and I'm just trying to figure out the synergies that happen by having a technology park where people are lined up one beside the other. Obviously there are the students, because they're close to universities, but what else is happening there? Are people exchanging ideas, employees? Otherwise, why not have them anywhere in the city?

Mr. Ken Loeppky: We describe it by using the example of the neighbourhood you choose to live in. You choose to live in a neighbourhood that has like-minded people, and relationships develop. As small as Saskatoon and Regina are—both of them are somewhere in the neighbourhood of 200,000 to 250,000 people—businesses go about their business without understanding each other's capabilities. When they become neighbours they have another opportunity through this social environment, through business activities at the park, to get to know each other in a way they normally may not engage.

We see many examples of situations where companies are worried about the competition in the park and about their employees being taken away by similar businesses, only to find they can work with their neighbours to deliver things they haven't been able to deliver before. That fear of losing their employees to each other soon disappears.

In some respects it helps with recruitment. If you're trying to attract international employees, or even employees nationally, if you have more than one business in a neighbourhood, they see that if they move to Saskatoon because of this business or work opportunity and it doesn't work out, there are lots of other opportunities. They're reassured. It actually helps businesses with recruitment and retention.

● (1630)

The Chair: Thank you, Mr. Simard.

We'll go to Madame Brunelle.

[*Translation*]

Ms. Paule Brunelle: Thank you for being here.

I found Innovation Place interesting too, Mr. Loeppsky. Your evidence clearly shows that research here is booming, to say the least.

What main areas of activity are clustered together? What are the advantages of the clustering? Do you have networking programs for the companies? Is that feasible? Are people close enough together for a supplier or someone to become part of the cluster? Is there a training effect?

[*English*]

Mr. Ken Loeppky: Thank you.

When we first started working with companies we thought there was an advantage to interdisciplinary clustering. We thought the different technology companies would complement each other. It was through circumstances that we ended up clustering a group of our biotech companies, and a synergy started taking place. There was a perception that the biotech industry all of a sudden emerged. We realized that by clustering similar groups, they seemed to benefit from each other better than trying an interdisciplinary approach.

With respect to the focus in Saskatoon, we have information technology, process engineering. We have biotech in Regina. We have petroleum and enhanced oil recovery. We have environmental sectors clustered, and we have information technology. We haven't tried tying suppliers together to any degree.

Our philosophy is that bringing technology companies together is part of the formula, and the other part is bringing together organizations that support them. For example, we have a lawyer's office in Innovation Place that specializes in patent law. We may have human resource offices that help with recruitment and retention. We have done some tenant mix adjustments to try to build stronger clusters.

[*Translation*]

Ms. Paule Brunelle: Thank you, this is interesting.

Mr. McCulloch, I found this very interesting. We can see how the boom in the natural resources sector here leads you to identify the increased demand. People need to be trained, so I would like to know how you go about it.

You told us about aboriginal students and I would like to share a story from my region. There are students at the Collège Shawinigan in Shawinigan in Maurice—I do not know if you know it. There were problems. Aboriginal students living in more northern communities were asked to go to Shawinigan for their studies. At certain times, the classrooms emptied because they all went hunting. Everyone would leave, because the college had not adapted to their way of life. So a college was opened in La Tuque, further north and closer to their home, and the training was tailored to their needs. Perhaps you know that, but there it is for your information.

I would like to know how you go about training all the young people you need as quickly as possible.

● (1635)

[*English*]

Dr. Robert McCulloch: Thank you very much for the question.

We have to be reminded that, particularly for our northern folks, coming to Prince Albert is a big move; I hope everybody is familiar with that. If we were to ask people to come from a northern reserve to Saskatoon, it probably would be comparable to any of us moving to New York.

We try to make sure that we deal with support at a number of levels. First of all, at each of our campuses we have aboriginal support centres and we try to make sure that students can get help as they're moving through the program. But we've also found it helpful to set up transition programs for particular areas in which there is a large demand, so that students aren't just forced to walk in on September 1 and be expected to run with the program. We're trying to make sure that students get an orientation. We found it particularly helpful in some of our health sciences areas to do some advanced prep work, and that's been really helpful as well.

But as you point out, there are still many challenges, and we need to consider and have been trying to consider some particularly targeted programs whereby we would take the education on reserve. We're really proud that with the Kawacatoose First Nation we offer a licensed practical nursing program right on reserve. We've done similar work with Montreal Lake Cree Nation.

These are the kinds of efforts we need to undertake. We need to be more flexible. I think you'd find that at the institutions across the province, the enrollments are increasing because we are starting to pay attention to the importance of education.

I'm sure Richard may want to comment on the number of aboriginal students at the University of Saskatchewan. Our numbers are going like this...and I think that's very positive for all of us.

The Chair: I'll let you have a brief question.

[*Translation*]

Ms. Paule Brunelle: Mr. Meldrum, we know how important telecommunications are. How do you assess access to telecommunications in Saskatchewan in comparison to other provinces, specifically high-speed Internet access?

It seems to me that the debate about broadband and access in rural areas already took place in Quebec a number of years ago. We have almost finished getting it organized. Do you feel that you have to make up ground? Is this a big challenge for you?

[*English*]

Mr. John Meldrum: Still about 10% to 15% of our population don't have access to high-speed Internet in Saskatchewan, so there is still a challenge before us. It's very uneconomic to get there. Today we provide service to most communities of 200 people and more; we're now getting to the point where those remaining unserved are fairly widely dispersed customers, and it's very uneconomic to serve them. We're currently studying how to get at that and hope to be talking to the provincial and federal governments about what opportunities there might be to get close to 100%. That would be our goal, to get to 98% coverage.

[*Translation*]

The Chair: Thank you, Ms. Brunelle.

[*English*]

We'll go to Mr. Stanton, please.

Mr. Bruce Stanton: Thank you, Mr. Chair.

Welcome to our witnesses.

I want to start with Mr. Florizone, picking up some of the things he spoke about with respect to the funding question.

You said that right now there was about $140 million in research revenues. I assume that's the revenues coming in from all sources. Do you have a quick breakdown on how much of that is the federal government's share?

Mr. Richard Florizone: I'd hazard a guess that the majority—I don't have the exact breakdown—would be federal. The CLS, the Canadian Light Source, funding would be a large portion of that. Another significant portion of it, though, would be agriculture research, which is quite significant for us, and a lot of that would be the Province of Saskatchewan. But federal funds as well; the majority of it would be federal dollars.

Mr. Bruce Stanton: Picking up on some of the questions we had this morning when we were at the synchrotron, I know we are looking for that more stable.... You mentioned today, in your presentation, about getting that stable five-year base of funding that at least is predictable for you.

When the synchrotron project began, what was the expectation in terms of what the operating cost component would be? This project began in 1998, so we're going back almost a 10-year span, roughly. When the government of the day invested in this program, was there an expectation that at some point the Government of Canada wouldn't be part of the operating cost equation?

● (1640)

Mr. Richard Florizone: The brief answer would be no. What I found in talking to Ottawa, and in discussing with other people, is that there has been a point of confusion around this. I would say that most of the people you talk to recognize that the original target was around 25% industrial utilization. It seems that in certain pockets people had the expectation that the facility would be full cost recovery.

Mr. Bruce Stanton: I think you said this morning they're producing about 15% on the revenue side, even though it's 25% of the beam time.

Mr. Richard Florizone: That's right. So I think on those original targets, two things happened. One is that the overall revenue required has grown as the facility has been—if I could put it bluntly—a victim of its own success. In the most recent CFI round, three beam lines went forward for funding; all three were successful, 100% successful. But once you have that, you have to expand the building and you have expanded operating costs for that peer-reviewed very excellent science that's ongoing.

So that growth has added to the operating cost. As well on the industrial side, I think it has taken longer to get us where we need to go—the 25% goal. I guess the other point I was making was about the goal. Depending on who you talk to, I think most people recognize there was sort of a 25% goal. I don't know how the misunderstanding was created, but there was an expectation, among pockets, that the majority of the funding would come from industry. If you look at other synchrotrons, our goal is already at least three times what others have achieved.

Mr. Bruce Stanton: Thank you.

To Mr. Meldrum, will SaskTel be participating in the advanced wireless spectrum auction that was just announced this week?

Mr. John Meldrum: Yes, we are one of the bidders.

Mr. Bruce Stanton: Very good. So will we have SaskTel services in other parts of Canada, outside of Saskatchewan?

Mr. John Meldrum: It is a public record that to this point we have not bid outside of Saskatchewan.

Mr. Bruce Stanton: I picked up on your thoughts around the fact that you didn't believe the private sector had the capability of rolling out. In fact I was quite surprised that only 15% of Saskatchewan people don't have access to high-speed. I would consider that actually not too bad, really, on balance with the rest of the country. I think that's a remarkable achievement; I wish you well with that.

Although I'm encouraged to hear you're having discussions with the province and you're interested in talking to the federal government, I think there's a sense that certainly open competition is going to move us most of the way we need to go there.

To Mr. McCulloch, you actually mentioned that the CFI is getting some support directed your way for certain projects. We heard in previous testimony that one of the ways better collaboration and clustering is happening is that, when an application is put to one of the granting councils, for example, it involves multiple players.

Seeing as you introduced the notion today that in fact the college community has the ability to do that applied science component, has that been explored with some other potential partners: how you could in fact work together with other applicants for the university community, for example, to take a piece of the projects that are going and being funded by the granting councils? Is that an area that's been explored?

Dr. Robert McCulloch: Mr. Stanton, again, I don't want to overplay this. I mean, this is new for colleges to be getting into this. From our institutional perspective, we just applied for NSERC eligibility, and we're delighted that the doors are starting to open up.

We're working on a CFI proposal and we have a number of partners from the province, including the Saskatchewan Research Council, a couple of people from university, and other partners like the Canadian Home Builders' Association. So to be very crisp, the first proposal we're looking at is a building sciences institute.

Our goal would be to get involved. We want to get in as partners. We can build on the expertise that's out there. And it's also been fun, frankly, to challenge our folks to get into this. We have a high-quality program, a nice program, in architectural sciences at our Palliser Campus. But it's new for our team to be getting into granting applications, etc. So we're looking to partner. That's the simple answer.

We'll continue in that direction. If there could be some targeted support in which colleges or institutes would serve as the principal investigator, that would give our teams a boost. It would give people some confidence as they're applying. We're realistic about what the opportunities are.

● (1645)

The Chair: Mr. McTeague.

Hon. Dan McTeague: Thank you, panellists, for being here. It's been a very important and eye-opening experience for us.

I'm seeing in your comments an underlying theme that you cannot be successful in a knowledge-based economy without support from the government. I also take it that there are very few successful nations that aren't trying to back their winners or discover new ones for tomorrow.

You seem to have the best of all possible outcomes. Energy prices are high. Agricultural products are in high demand. Metals, minerals are also in high demand. I'm wondering if this is both a gift and a potential problem down the road. If the bubble were to bust in one of those areas, how much are you doing as organizations, institutions, to help diversify Saskatchewan so it doesn't falter in the future?

You have new companies, new ideas, partnerships with the private sector. How much effort is being made to allow them enough capital, enough interest, to commercialize what they're doing and maintain their presence in your province, as opposed to being gobbled up by another country or corporation, leaving all of you destitute after many years of research and effort?

Mr. Doug Gill (Managing Director, Industry Liaison Office, University of Saskatchewan): One thing that's happening—it's the result of a lot of varied research at the university—is that technologies are getting out into the market and helping to diversify the province's economy. I'll give you a couple of examples. Twenty years ago, there were very few pulses grown on the prairies. Now Saskatchewan is the largest producer of pulse crops in the world, and we're higher than any province in Canada. We export most of that around the world and contribute a great deal. Some parts of agriculture might go in the tank, but other parts might still be in good shape. This is an example of how we've diversified in the agricultural area.

We've all heard about biofuels, like biodiesel and bioethanol. And indeed, the university is very active in these research areas. We have technology that we're in the process of commercializing in both these areas, and I believe that this will also help to diversify the province's economy.

Hon. Dan McTeague: If there are new discoveries that emanate from your university, what does the university request in the way of licensing and fees? When an innovator uses your labs, finds something interesting that can be patented and later commercialized, what is the structure at your university for these kinds of discoveries or breakthroughs?

Mr. Doug Gill: Typically, if a university professor, a graduate student, or a post-doctoral fellow invents something new, the university has a policy in which the university owns the intellectual property. My office is responsible for sifting the wheat from the chaff, for commercializing the good stuff, investing in it. At the end of the day, when we bring in some commercialization revenues, we share it 50-50 with the inventors.

Hon. Dan McTeague: Thank you, Mr. Gill.

To Mr. Meldrum, let's say a new company comes up with the latest in technology and it's very small. Will SaskTel partner with such a small company, recognizing, of course, that you are still very much a government telephone company? Are there restrictions? Are there problems? Are there challenges? Is there a requirement right up front that if you see something that's new and innovative, you'll have to perhaps farm it off to a company that is not government-owned? Or is it something that you've been involved with in the past in terms of advancing, outside of the reach of your own company?

Mr. John Meldrum: We have pursued matters on our own, and are currently in the process of introducing a product called LifeStat, which we developed. It's an electronic remote monitoring of health for individuals using the cellphone and a secure system. We're going to market that right across Canada. We're going to go through dealers.

At times we'll do it ourselves. At times, in the past, we've done it with partners.

● (1650)

Hon. Dan McTeague: Thank you, Chair.

The Chair: Thank you.

Mr. Carrie, please.

Mr. Colin Carrie: Thank you very much, Mr. Chair.

I want to thank the witnesses for being here today.

Mr. McCulloch, I was quite pleased by and interested in some of your comments when you were saying the government is finally starting to work with community colleges as far as some of the research dollars are concerned. I come from Oshawa, where GM is undergoing some challenges right now. Many of my constituents have phoned me in the last few weeks saying, you know, when the Government of Canada invests my tax dollars, we want to make sure that they stabilize jobs. It relates to the economic spinoffs. If someone's having a hard time getting a job, they're not going to be paying taxes, etc., to fund the science.

I was wondering, would you say there's a bias with the Government of Canada, or has there been one in the past, with regard to university versus colleges—for investments or big science—versus applied sciences?

Dr. Robert McCulloch: I need to go on record here. I worked for 25 years in the university sector, so quite frankly I love the system. But I do believe there's been a bias across the country. There has been a pressure of not forcing people, but encouraging them, to look to university as a first choice. What we try to talk about, and what I think is healthy when we talk to students and even retired workers, is that there are lots of choices. We're really proud that in the last survey, 97% of our graduates were employed within six months. Our population is adult learners.

To answer your question, I think there's been a general societal bias. Some of the funding has been directed that way. I'm sure you heard that from Mr. Knight, from ACCC. Our facility here in Saskatoon, our Kelsey campus, was the largest technical institute in the Commonwealth when it was built in the late sixties. There hasn't been a thing done to that facility since the late sixties. So we've been neglected and we need to upgrade. It's like the infrastructure across the country.

I hope that answers your question. A balance is what we would like to see.

Mr. Colin Carrie: How do you like the way the government funds big science versus applied science?

Dr. Robert McCulloch: Well, that's my point. Even when we talk about big science I hope that all of us are aware that to make big science work there are these key folks in the background who are doing the legwork. My research was in osteoporosis. Quite frankly, I could have dreamed of all sorts of great things, but if it wasn't for the technician measuring bone density, my work didn't go anywhere. That's what I would hope the panel would consider. It's the role that the technologists and lab folks are doing. We need big science in this country, but we need it across the sector.

In closing, the other day I heard retired General Dallaire comment that what was missing in the Canadian Armed Forces were not the big thinkers, but the technologists to adjust weapons. What he was saying is, I hope, parallel to what I just said. We need people who will apply the information and get things down to the “make them work” situation.

Mr. Colin Carrie: If you have specific recommendations, please feel free to give those to the committee.

Mr. Florizone, we talked a little this morning about how government should fund big science. I was going to ask you to be more specific. We didn't quite get an answer this morning. How big is your board and how many members or leaders in the business community do you have on your board?

I thought the light synchrotron facility was just wonderful. If I had that, as a businessman, I'd be trying to run it 24/7. Do you have people with experience in business to connect to the community to make sure that investment is going to be utilized? As I said, my constituents pay a lot of taxes into big science and they want to see those spinoffs. How many people on your board are from the business community?

Mr. Richard Florizone: Many of us on the board wear different hats. For example, I have a private sector background, so I have a partial hat, I suppose. But specifically on the board now there are about three members with that private sector experience.

I referred this morning to being chair of the governance and nominating committee for the CLS board. This challenge has been a topic of intense thought and debate for us. We have a goal. We've designed our board structure to be from 14 to 18 members, just in line with good governance—not too big, not too small.

Since we have had to pursue and have welcomed multiple partnerships with different provinces, many of our funding arrangements have come with requirements for board seats. So, for example, Alberta has two seats on the board. That's fantastic. B.C. has another member. This is all wonderful, and it's part of building partnerships. Speaking as chair of the governance and nominating committee, though, it creates a challenge in terms of attracting private sector participation. You have only a certain amount of latitude and you try to work through your partners to get the nominations.

That's probably not the main challenge, though. Believe me, I and the entire CLS board would welcome more senior-level engagement. I can tell you more about how we're accessing that senior-level engagement with industry in ways other than through the board, but with respect to the board, the way we've been successful—we talked about the two solitudes between industry and the university—is to continue to have that ambitious industrial target and build the team to pursue those targets, to build the partnerships. Once we've built those partnerships, they're then turned into the board-level relationships.

For example, this morning you've heard about the work we did with AREVA around mine tailings. Now we have the former CEO of AREVA on our board.

It's a lot of hard work, and attracting those senior executives onto the board is really one and the same issue as the industrial research and the relationship between the university and industry. There is a gulf there. We think labs such as the CLS and InterVac/VIDO are closing that gulf. We'll continue to work on it, but it's a tough problem.

As one of the other ways we're trying to engage senior leaders, we're saying that maybe it's easier to get CEOs if you don't try to drag them into the board where they're dealing with budgets and day-to-day things. So we've created a new body.

● (1655)

The Chair: I'm sorry, Mr. Florizone, we're way over time here.

Mr. Richard Florizone: I'm sorry. I'll pause there.

The Chair: Okay.

Thank you, Mr. Carrie.

We'll go to Madame Brunelle.

[*Translation*]

Ms. Paule Brunelle: Mr. Florizone, I like universities like yours very much and I congratulate you on your work. I am from Trois-Rivières, where we have the Université du Québec à Trois-Rivières. It has a hydrogen research institute. There is also a research centre on small business, which has become well-known in Europe and is generating returns on the investment. I believe strongly in universities that are well integrated into their communities and I find it really interesting to hear about your research centres.

You say that funding for operational expenses in research centres is a problem. This morning, we were told that the second and third phases of the expansion of the centre are underway. I asked how it would be funded, and they specifically mentioned foundations.

With foundations providing part of the funding, does business contribute too?

[*English*]

Mr. Richard Florizone: Responding to your point on integration into the community, I think the University of Saskatchewan couldn't agree more. Part of our overall strategic plan is to build an engaged university that's meeting the needs of the local community. When we consider funding solutions, it's another important piece in why we need to think about provincial participation, and certainly we've seen that with CLS and InterVac.

The funding of our centres really has been a mix. By and large, the major funding has come from federal agencies. That can include NSERC, CIHR, NRC, Western Diversification. We've also had varying components of provincial support. With the Canadian Light Source, the Province of Saskatchewan and, as I mentioned, three other provinces were partners in providing the capital. We're now in discussions with the Province of Saskatchewan on operating funding for the facility. With regard to VIDO/InterVac, again provincial and federal dollars are an important component.

Concerning the industrial revenue for the Canadian Light Source, the target over the long term is to get to 15% industrial revenue. We're not there yet. We've only, as you'll recall, started to produce scientific output really in the last 18 months, and so the industrial revenues have been on the scale of several hundred thousand dollars, relative to a budget of some $18 million. But we're confident that in the next five years we will get to approximately 10% to 15% industrial support in revenue, and we've put the team together to achieve that.

[*Translation*]

Ms. Paule Brunelle: Mr. Chair, I would like to finish with a purely personal observation.

The living environment here interests me a great deal. There has been a lot of talk about the development of research and the economy, and that is all very good. But we have also been told that the cost of housing has doubled, skyrocketed. I hope that some effort is going into creating a pleasant environment to live in. If you want to keep your young people and attract families, you are going to have to consider the standard of living, especially in culture and the arts.

● (1700)

The Chair: Thank you, Ms. Brunelle.

[*English*]

We'll go now to Mr. Van Kesteren.

Mr. Dave Van Kesteren: Thank you, Mr. Chair.

Thank you, panel, for coming this afternoon.

Mr. Florizone, I want to continue from where Mr. Carrie left off. You answered the question well, but what about his comments about running that thing 24/7? I understand that research has to be done, and the idea is for research to take place. Would you first do your research or would you first take care of business?

Mr. Richard Florizone: To answer that question, first, to clarify, it is run 24/7, except for scheduled shutdowns for operations and maintenance. Again, to improve efficiency, another aspect of that is the partnership with CANARIE to do the remote data collection so that people cannot necessarily travel, but also be able to get the data and run experiments remotely.

In terms of the priority, that's a tough question. I think the reality for a university is we need to serve our entire mandate, so we need to have that curiosity-driven research and the industrial research. You really can't have one without the other. If you focus just on the industrial, you're not necessarily getting the right people there, the graduate students, getting that real forefront of science. And yet if you don't have the industrial mandate, you risk not being as relevant to society. So it's a real balancing act.

We haven't run into those issues yet since we're still new. I think one of the things we're toying with is setting particular targets by beam line, so assigning 25% of the time to industrial and then allocating time according to that. So by agreeing on high-level targets with governments, with our funding agencies, we can then drive that down into the operations of the facility and reduce any of those conflicts, I hope.

Mr. Dave Van Kesteren: For instance, in the recent move with MDA, it became apparent that the satellite was pretty much paid for by the federal government by way of contracts. Is that something that happens with the federal government as far as some of the imaging and some of the experimental work that's done?

Mr. Richard Florizone: The intellectual property?

Mr. Dave Van Kesteren: No. The federal government forwarded the money by means of contract; in other words, the satellites took a certain number of images.

Can the federal government do that? Is there some benefit to the federal government if, say, the Department of Health needs to have some information on whatever imaging you can do for them, that you can pay for some of the machinery? Is that something you approach?

Mr. Richard Florizone: I think that's something we'd consider and I think that's one of the business opportunities we're looking at. Clearly there's a whole piece here, that this facility can be used to meet regulatory requirements for industry, but then maybe for government as well. So that is a market segment we'd look at.

I'm not sure if I've answered your question.

Mr. Dave Van Kesteren: Yes, you have.

What's the shelf life of that thing? How long is it good for?

Mr. Richard Florizone: I think if you look at these facilities historically, probably every 20 years or 30 years you're looking at upgrading to the next generation. But it's hard to predict the future. I certainly would expect two to three decades of very solid science out of the facility, but things are always moving.

Mr. Dave Van Kesteren: Okay.

I don't mean to zero in all my questions to you, but you said there were 20,000 students, and I wanted you to clarify.

Mr. Richard Florizone: That's correct.

Mr. Dave Van Kesteren: Are there 7,000 staff?

Mr. Richard Florizone: In total, yes.

Mr. Dave Van Kesteren: So the ratio is 3:1. How's that in comparison to other universities?

Mr. Richard Florizone: That's roughly in line.

Mr. Dave Van Kesteren: Is that right?

Mr. Richard Florizone: I have to remind you that also it's not full-time equivalents, it's head count. So it does include, in round numbers.... Sometimes you hire students as graders in the system, you have post-doctoral students. When you have a major research enterprise, a lot of staff is involved. Our ratios are quite typical for a Canadian university.

● (1705)

Mr. Dave Van Kesteren: What would the average tuition cost be, including residence, for a student?

Mr. Richard Florizone: I should know the number offhand. The tuition for an arts and science student is in the neighbourhood of $5,000 a year, and residence, depending on whether you have a meal plan, might add another $5,000.

Maybe a more accurate answer, instead of the quantitative one, is to know that until a few years ago we had a national norms policy. We were basically benchmarking our tuition against a national group and picking the middle. In the last few years that has fallen by the wayside a little bit, because the government has funded, effectively, a tuition freeze. So our tuitions are maintained at 2004-05 levels.

Mr. Dave Van Kesteren: So it is roughly half the cost of tuition in the United States.

Mr. Richard Florizone: That would be about right, yes.

Mr. Dave Van Kesteren: Is it part of the problem too—

The Chair: This is your last question, Mr. Van Kesteren.

Mr. Dave Van Kesteren: —that we've traditionally kept the price of tuition down, and as a result, you've had to come cap in hand to the governments for a lot of these projects?

Mr. Richard Florizone: That's a very difficult issue and one we're wrestling with now. Education is obviously both a public and a private good. What's the appropriate price to pay for it from a public policy perspective? It's a very thorny question and one we're still wrestling with.

Certainly, university core operations, in some ways, are still underfunded versus their American counterparts. Does that translate into funding for major research facilities? I'm not sure I'd make that link, because synchrotrons, for example, in the U.S. wouldn't be funded through tuition. They would be funded directly by Department of Energy grants.

Mr. Dave Van Kesteren: But it comes from somewhere, and if it's going somewhere, it's obviously coming out of the same pie.

The Chair: Thank you, Mr. Van Kesteren. We'll go to Mr. Simard.

Hon. Raymond Simard: Thank you very much.

Mr. McCulloch, I just have a comment with regard to the built-in biases against community colleges. I think you're absolutely right, but I think things have changed, and I'm not sure we get that message out to young people. When I go to my schools and tell them that a commercial construction project manager can now make $120,000 a year in Manitoba, people don't believe it. I'm not sure that message is getting out there. So there may be some work to do there.

Mr. Florizone, one of the questions I asked in Ottawa with regard to big science projects was what the benefits to Canada are. We've seen your project today. We visited the level 4 lab, the disease control lab, in Winnipeg. And one thing you're not talking about is third-party success.

In Manitoba, Smith Carter Architects and Engineers Inc. is now involved in almost every level 4 lab in the world. They've benefited from $1 billion of work in the couple of years since they built that lab. Cangene is another one that's benefited hugely from that. You've spoken about UMA Engineering Ltd. here that has basically worked on future synchrotrons. I think that is something you should be talking about. We just heard about it in passing, and I think it should be front and centre. It would be easy to convince me to fund you $20 million a year if you told me that the spinoff has been this, this, and this.

I don't think we have those numbers very clearly. But I tell you, in Winnipeg it was very clear from Smith Carter Architects that the benefits have been huge. They've doubled their volume and doubled the number of employees. And that's only one firm. I think you should probably put that one front and centre.

So that's one of the comments. With regard to SaskTel, one of the comments we had this morning was that some of the start-ups and some of the smaller companies in the technology field were having a hard time getting on with bigger companies like SaskTel, because they're not tried and proven, if you will. What came to mind is that SaskTel actually signed a contract with a small firm in my riding in Manitoba that was an up-and-comer. So I congratulate you for that. Obviously, it's not everywhere in the world that you're seeing people having to go to IBM, and that's a big challenge, and we can talk about that later. I'm not going to name the company, but it was at a critical time in their career. You signed a contract with them and got them up and running.

I wonder, Mr. Florizone, if you could just comment on that. How come we're only hearing about these third-party successes as kind of an afterthought? I think it is absolutely one of the most important things we've heard here today.

Mr. Richard Florizone: That's a good reminder, and if you don't mind me saying, Smith Carter is the lead consultant on InterVac. So that's an excellent example.

I don't know what to say except thank you for the advice. I think we need to continue to think about that. I think the benefits of these types of facilities are multiple in terms of the training of the people and the economic spinoffs. The challenge is always to kind of give a balanced explanation of that. You can see from the early days of the synchrotron when, I think, in some ways, the industrial spinoff part was maybe overplayed. We've seen that when the expectations are not right. So the challenge is talking about the reality, talking about the real things we've achieved, and setting expectations.

● (1710)

Hon. Raymond Simard: The challenge is always finding a balance between the public policy debate and the taking-care-of-business part. We have to be careful. If one of these projects discovers a great product, it could end up helping Canadians down the road. There are public policy issues as well. You have to find a balance between working 24 hours a day and a mandate that makes sense, something that is good for Canada over the long term.

The Chair: Thank you, Mr. Simard.

Monsieur Arthur.

Mr. André Arthur: Mr. Florizone, how long is it since you had your first industrial customer at the synchrotron? When was your first customer present?

Mr. Richard Florizone: It was before the facility was operational. That sounds like a crazy answer; because this was a core part of the mandate and we were so committed to it early on, we built an industrial development team before the machine was actually operational. So some of the early partnerships would go back roughly three years, when we actually entered into partnerships in conducting experiments at other facilities.

Mr. André Arthur: How many times were industrial customers refused time because the machine was busy doing something else?

Mr. Richard Florizone: We've done about 60 industrial projects. I don't know the number of refusals. If there were any, though, it wouldn't be because of the peer-reviewed science, the competition from that. It would be simply because we're still up and running with the operations.

In January 2007, we started to get our first publishable data. These types of facilities are very complicated. It's kind of like saying January 2007 was the first time the car started and went down the track, but yet you continue to refine and tune the instruments. Along with pursuing funding, a lot of the time has been invested in fine-tuning the machine. So that's been a bit of a barrier.

Mr. André Arthur: Okay, I understand that. Fine-tuning, repairing, not having enough electricity to operate—these I can understand. But I'm trying to figure out if there was a time when an industrial customer was refused because the machine was busy doing something else.

Mr. Richard Florizone: I would be very surprised. I would need the director to give you a full answer, but I would be very surprised if that were the case.

Mr. André Arthur: Are you able to realize that if such an event had happened it would be kind of revolting for Joe Canadian, who paid for your machine?

Mr. Richard Florizone: Certainly.

Mr. André Arthur: Thank you.

The Chair: I'm going to take the last spot here, as the chair's prerogative.

I wanted to touch upon two broad things, both related to the question of innovation. I want to ask about how it happens, and how the innovation continuum works. I wanted to use two examples: one in the ICT sector, one in the health sector.

Mr. Meldrum, I'll put this question to you. You'll probably enjoy answering this, because one of the common criticisms of business in Canada is that it does not invest enough in research and development. However, your sector is probably the biggest exception. It invests in R and D. It invests in innovation, and it has stupendous successes. Take this BlackBerry; if you'd told me 10 years ago I could have something that would have phone, e-mail, and Internet capability, 6,000 contacts.... Everywhere I've travelled in the world, this thing has worked. That's an amazing innovation.

Could you talk about why your sector invests in innovation? What is it that causes you to invest? Just give us your thoughts. Is there a government policy we should look at changing? Or do we just have to tell other sectors to pull up their socks and start investing the way the ICT sector does?

Mr. John Meldrum: Technological change in the telecommunications industry started the day after the phone was invented. So there's a long history of innovation and improvements. I'd say today this is driven primarily by consumers and their needs and demands, and it's centred on the imagination of folks who see the opportunities out there.

We're probably more of an exception, not being a standard incumbent phone company. But as an industry, the incumbent phone companies traditionally haven't done a lot of direct investment themselves. I would say most of the investment in R and D is by suppliers, who are trying to keep ahead and develop new products and services to sell to the phone companies. Indirectly, we do a lot of investing in R and D, but it's mostly applied research and development that we do ourselves as a phone company.

● (1715)

The Chair: Can I just follow up on that? You've mentioned two things—being driven by consumers and imagination. I think that's exactly right. The key question is how you keep that in, whether it's a company or an institution or whatever.

I had the opportunity to tour the Google facility in New York, and it was fascinating. Twenty percent of the employees' time is blue-sky time, where you leave your desk and you go wherever you want and you think. They try to be so non-traditional in the way they run their company. As one of them said to me, “If we become traditional”—and they used that as a pejorative term, even though it's not a pejorative term—“a conservative company, we'll cease to be an innovative company. We don't want to become like those other companies.” They didn't mention names. But they want to have this really non-traditional environment where people can just sit around a desk with their colleagues and imagine and dream up concepts like Gmail.

How do you keep that imagination alive in a company that gets bigger and bigger, like Google has over the last 11 years?

Mr. John Meldrum: It's certainly a challenge. One of the initiatives for us this year is to focus on innovation, to try to get back to where we were a few years ago when I think we were more innovative as a company. It is hard to say to an organization, to the 5,000 people who work for SaskTel, “Be more innovative.” You can't just instruct it. You have to feel it, you have to feel that you're empowered to do things differently, and try to achieve different objectives.

With a company like Google, we may find that they lose that edge and start to go backwards.

The Chair: For the second example, I want to turn to the health sector. It deals with so many...certainly from my city and very close to me. It's the Edmonton Protocol. It involves a researcher named Ray Rajotte, whom some of you may know.

Ray was a graduate of a polytechnic school. He was an X-ray technician, and he then went on to get other degrees at the University of Alberta. He started his research in an old abandoned washroom on the bottom floor of the University of Alberta, and 30 years later he's on the front page of *The New York Times*. President Clinton is talking about the Edmonton Protocol. By taking islets from a pancreas and transferring them into a patient, you can get that person off of insulin shots.

I had someone actually come up to me and say that my uncle improved their life, and that was a real moment for me. But if I'd said to Ray in 1977, "Ray, you're going to be famous for the Edmonton Protocol on taking islets out of a pancreas", he would have said that I was nuts, that there was no way he was going there.

It shows the challenge we face as policymakers and parliamentarians. How would you identify a Ray Rajotte in 1977? It's easy in 2005 for us to all stand up and say what a wonderful thing this is, let's fund it. And that's what we did. The federal government stepped in at the end and started funding it, saying "Isn't this wonderful." But how do you identify that? You are talking about funding basic research over a 30-year period. Maybe that would have ended up producing nothing, but it did end up making a difference in a lot of people's lives.

Mr. McCulloch, I was struck when you talked about big science projects requiring both. One of the reasons it was successful was that Ray had an engineering technical background that allowed him to make different products to actually freeze the islets and then transplant them.

That's a key question for me. How do you recognize that there's a genesis there that could turn into something, allow it to turn into something, but not fund 20 white elephants? It's a real challenge, and I think that's where a lot of our questions are going.

I don't know if anyone wants to address that issue.

Mr. McCulloch, do you want to address that?

● (1720)

Dr. Robert McCulloch: Thank you.

That's the challenge we face within our organizations as applications come in. As I've indicated several times, I think what we need to look for is that broad base. Don't narrow the opportunities, but stretch the opportunities so that more people can get access. I think that's what we're tying to do with our institution, give opportunities across the piece, to the NRT folks, the natural resources technology folks who want to look at GPS, right through to the....

In research there are some really sexy things that are easy to direct funds to, but it's all about giving opportunities and letting people experiment. I worry that sometimes our policies tend to narrow rather than broaden opportunities.

The Chair: Thank you.

Mr. Florizone.

Mr. Richard Florizone: I don't know if it's any consolation, but you're not alone. Every country is struggling with this. I know, from the time I spend in the U.S. or the U.K., people there are also struggling with what the secret is. How do you deliver innovation? It's a tough question, and maybe it's not that different in some ways from being a venture capitalist. You sort of have to pick your sectors, where you're going to focus, and your teams. Don't be afraid to innovate with innovation. Experiment with it, tying it close to home for us.

These are some of the things we're trying to do at CLS and InterVac. We've set ourselves goals that are far beyond what others have achieved, but we think they're achievable. We've assembled a team and have a bit of a track record. We're asking government, "Tell us what you think. Does this achieve your goals and help us move forward?"

The Chair: Mr. Gill.

Mr. Doug Gill: I mentioned earlier separating the wheat from the chaff, and I think that's the nub of your question. How do you identify, way back when, that this has tremendous potential? Basic research—it's not often apparent.

I think one of the ingredients is having really skilful, well-trained, technology transfer professionals in the university who rub elbows with those researchers. I have people in offices in the colleges, maybe down the hall from professors' labs, who get to know the professors on a personal basis. They work with professors by talking with them about their research, and they have helicopter vision so they understand. They often come from an industry background, but they also have a science and academic background. These people help work with those like Ray Rajotte to identify what that wonderful potential might be five, 10, or 15 years down the road. I think that's a key ingredient.

I'll put in a plug for WestLink Innovations in Calgary, because they're doing a great job of training technology transfer professionals.

The Chair: Thank you.

I want to thank all of you for your time here today, for your presentations, and for responding to all of our questions. If you have anything further that you'd like to submit to the committee, please do so. I'll ensure that all members get it.

We've certainly enjoyed the discussions here, so thank you very much for being with us.

Members, on a logistical note, we have to meet at 5:45 in the main lobby to depart on the bus, so be ready for that. Some of you may have time to get a smoke or something, I don't know...or a rum, yes....

Voices: Oh, oh!

The Chair: Thank you very much for your time. We sincerely appreciate it.

The meeting is adjourned.

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