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Chair

Mrs. Joy Smith

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● (1105)

[*English*]

The Chair (Mrs. Joy Smith (Kildonan—St. Paul, CPC)): Good morning, everybody, and welcome to the Standing Committee on Health.

I'd like to welcome all of our witnesses today. It's wonderful that you could arrive. The committee is very excited about the topic we're studying today, pursuant to Standing Order 108(2), our study on stem cell donation in Canada.

We have some very important people with us today. I must say that we have someone by teleconference, Donna Wall.

Donna, can you hear me speak?

Dr. Donna Wall (Director, Manitoba Blood and Marrow Transplant Program, Pediatrics and Child Health, Internal Medicine and Immunology, University of Manitoba, CancerCare Manitoba): Yes, no problem.

The Chair: Great, and if you have something to say, just let me know. I'll give you a chance to present during the course of the morning. We won't forget about you; even though we can't see you, we can hear you. Thank you for joining us.

We now have with us, from the Alberta Cord Blood Bank, Dr. John Akabutu, the executive medical director. Welcome. I'm glad you could be here.

We have, from Canadian Blood Services, Dr. Graham Sher, chief executive officer. Welcome. We also have Jean-Paul Bédard, vice-president of public affairs, and Jennifer Philippe, director, from the OneMatch stem cell and marrow network. It's wonderful to see you again. We quite enjoyed the time we have with you at our awareness campaign here on Parliament Hill, when some of you joined us here. Thank you for that.

We have a very special person here this morning—to my family anyway—Dr. Morel Rubinger, associate professor of medicine, University of Manitoba. Thank you so much, Dr. Rubinger, for coming today.

From the Department of Health, we have Liz Anne Gillham-Eisen, manager, blood, cells, tissues, organs and xenografts, office of policy and international collaboration of the biologics and genetic therapies directorate. Welcome, and my goodness that's a long title.

Voices: Oh, oh!

The Chair: I think I'm going to have to give you an acronym or something. Welcome. We're very glad that you're here.

Ms. Liz Anne Gillham-Eisen (Manager, Blood, Cells, Tissues, Organs and Xenografts, Office of Policy and International Collaboration, Biologics and Genetic Therapies Directorate, Department of Health): Thank you very much.

The Chair: And from Héma-Québec, we have Marco Décelles, vice-president, stem cells, human tissues, and reference laboratory operations. Welcome. We're very pleased that you're here. And we have André Lebrun, vice-president of medical affairs, hematology. Welcome.

Ladies and gentlemen, we are going to begin. We will get copies of any presentations you have, if they aren't already in the hands of everyone. I think I'm going to start with the Canadian Blood Services, first of all.

Canadian Blood Services, who would like to speak first?

Dr. Graham Sher (Chief Executive Officer, Canadian Blood Services): I'll be speaking, Madam Chair. Thank you very much.

Good morning, members of the committee. I'm Graham Sher, the chief executive officer of Canadian Blood Services, which is the organization responsible for managing the blood system in all provinces and territories of Canada, except for the province of Quebec. We are also responsible for managing, in addition to the blood program, the plasma program and, of particular relevance to today's committee, the OneMatch stem cell and marrow network.

I'd like to thank you, in particular, Madam Chair, for the invitation to attend today's committee and for your very strong personal interest in the topic of stem cell transplantation. I'm pleased to be able to talk to the committee this morning about stem cell donation in Canada, and specifically about the probability and possibility of creating a national public umbilical cord blood bank for the country.

As many of you in this committee know, stem cell transplants are used to treat patients who have certain cancers or life-threatening immune disorders and some metabolic and other genetic disorders. Unfortunately, only about one-quarter, 25%, of patients actually have a match within their own family, and therefore, every year, hundreds of Canadians require stem cell transplants and have to depend on the program, OneMatch, to find them a suitable donor.

To that end, OneMatch recruits and maintains a registry of prospective Canadian stem cell donors. When a patient requires a stem cell transplant, at the request of their physician, they search the OneMatch registry to identify potential matching donors. Because OneMatch is a member with accredited international organizations, we are able to search over 14 million donors worldwide, from 63 other registries in 44 countries, and we're able to search 44 cord blood banks in 26 countries worldwide, in addition to our own registry in Canada.

OneMatch's role is to ensure that the volunteer donors are healthy and able to donate, and then we organize the collection and the delivery of stem cells in Canada and around the world when a suitable match is found between a Canadian patient and a donor. In addition, OneMatch actually serves the purpose of enabling searches for international patients from our Canadian registry, making this a truly international system.

However, finding a match for a patient in need is often very challenging because of how closely the donor stem cells have to match the tissue type of the patient. It often requires what is called an HLA, human leukocyte antigen, match and ideally you want a 10-point match. HLAs are the genetic markers that are used to find the best stem cell donor for a particular patient. This requirement is really at the heart of what we're talking about here today.

Canada is one of the few G-20 countries without a national cord blood bank. An ethnically diverse, national public cord blood bank is needed in Canada. Having this important resource in place for Canadians would offer several benefits: it would save more Canadian lives; it would allow for greater matching possibilities because cord blood does not always require the rigorous match that other stem cells such as bone marrow and blood stem cells may require; it causes fewer complications to do transplants from cord blood, particularly a complication known as graft versus host disease; and it helps meet the rapidly growing demand for cord blood stem cells in general.

In fact, consistent with worldwide trends, OneMatch continues to see a significant shift in demand for products away from bone marrow and peripheral blood stem cells toward patients and physicians, particularly physicians, requesting cord blood stem cells.

In addition, a Canadian cord blood bank would better represent the unique ethnic diversity that makes up this country and would decrease the risks and costs associated with the 100% reliance on international sources for cord blood stem cells.

As I mentioned earlier, Canadian Blood Services is the organization that operates the national blood system across this country, except in Quebec. In recognition of CBS's established quality and regulatory infrastructure, our accredited and licensed testing laboratories, our experience in donor recruitment in stem cell processing, and the fact that we are national in scope and accountable to the provinces and the public, and we have credibility with links to Canadian and international stem cell communities, with all of those factors in mind, the provincial and territorial ministers of health responsible for the delivery of health services asked Canadian Blood Services to investigate the possibility of a national cord blood bank for Canada. In response to this request, we prepared and submitted the results of a study, including recommendations for the establishment of a national public cord blood bank in Canada. Following discussions and further requests from the ministers, we submitted to them a detailed business plan for this cord blood bank.

● (1110)

After extensive public consultation across the country to discuss the issues and share knowledge, key learnings, and best practices, our plan was submitted to the provinces and territories outlining a comprehensive national model, including two accredited stem cell laboratories and a collection network right across the country. It would be managed by Canadian Blood Services through our national stem cell program, OneMatch. We would be an active contributor to the global stem cell community, joining those other 44 cord blood banks I mentioned earlier and being able to contribute to the 450,000 cord blood units available worldwide today.

As mentioned earlier, this plan leverages Canadian Blood Services' established infrastructure and foundation in support of a national public cord blood bank. To be more specific, our organization already manages the OneMatch network, which currently searches matches and acquires cord blood for patients in this country. We have experience in the collection, processing, and storage of stem cells. We are experienced at meeting regulatory requirements, including the Foundation for Accreditation of Cellular Therapies, which is an international accreditation standard that we already have in our laboratories.

We have established partnerships with hospitals across this country. We are successful in our blood program in recruiting ethnically diverse donors, and we have extensive experience in understanding stem cell requirements of physicians. We have the infrastructure and the expertise necessary to support the creation and maintenance of quality and regulatory standards, privacy, medical, scientific, information technology, and the legal and financial resources to support a public cord blood bank.

Further, we believe that a centralized national model for cord blood banks in Canada would best be able to meet the needs of Canadian patients by providing the diverse tissue type—HLA type—searchable, accredited, cord blood bank that reflects the ethnic diversity of Canada. It would be used not only by physicians and patients in this country, but by physicians and patients internationally.

One of the primary goals stated in our plan for the national public cord blood bank is to collect and store a diverse inventory to serve the needs of the entire Canadian population, in particular and including the aboriginal population in Canada. To achieve this, our recommended national model includes collection sites in the ethnically diverse provinces and cities in Canada. We would apply the key learnings from the successful recruitment campaigns we already have in OneMatch to help recruit these ethnic donors.

On the size of the bank, in our model we are proposing a bank of 20,000 cord blood units, based on the estimates of Canadian subject matter experts who have suggested that a bank in this country needs to range somewhere between 10,000 and 30,000 units. Our plan focuses on continued reliance on the medical and scientific expertise within the Canadian stem cell transplant and research community.

In June 2009, this plan for the 20,000 cord blood bank samples was unanimously approved by the ministers of health in all the provinces and territories, excluding Quebec, pending funding approval.

● (1115)

The Chair: I'm sorry to tell you that you'll have to wrap up.

Dr. Graham Sher: I'm wrapping up in my last sentence or two, Madam Chair.

The Chair: Thank you, Dr. Sher.

Dr. Graham Sher: Once the funding is in place, we will be able to leverage our existing infrastructure and launch this national cord blood bank.

In closing, Canadian Blood Services is committed to working with provincial and territorial partners to launch this important health care initiative. We appreciate the effort this committee is showing in this important part of health care.

I look forward to any questions or discussions from the committee.

The Chair: Thank you, Dr. Sher, for your very insightful and useful comments. We appreciate them. Sorry about the time limits. I want to get everybody in. My apologies.

I will now go to Héma-Québec for a presentation. I believe it's going to be Dr. Décelles.

[*Translation*]

Mr. Marco Décelles (Vice-President, Stem Cells, Human Tissues and Reference Laboratory Operations, Héma-Québec): Excuse me, but I am not a doctor. It is Mr. Marco Décelles.

[*English*]

The Chair: Okay.

[*Translation*]

Mr. Marco Décelles: This morning, we are going to try to answer two fundamental questions.

But first of all, on behalf of Héma-Québec, I would like to thank Madam Chair and the committee for the opportunity to be here today. We are very grateful.

So Héma-Québec will speak to two issues this morning. The first has to do with the feasibility of establishing a Canada-wide public cord blood bank, and the second pertains to the establishment of a registry of stem cell donors.

I would like to share with you Héma-Québec's mission: to efficiently provide adequate quantities of safe, optimal blood components and substitutes, human tissues and cord blood to meet the needs of the population.

I want to make it clear, from the outset, that Héma-Québec is already involved in Canada's human tissue sector. Héma-Québec has been distributing human tissues, tendons, skin and bones throughout Canada for a number of years now.

Furthermore, we provide and develop expertise, along with specialized and innovative products and services, in the field of transfusion medicine and human tissue transplantation.

Now I want to address the first issue, regarding the establishment of a stem cell donor registry. As Dr. Sher pointed out, a Canadian registry already exists: the OneMatch network. Canadian Blood Services administers the registry, but Héma-Québec also contributes on two levels: it helps recruit donors and assumes a portion of the overhead costs.

The Canadian registry comprises more than 265,000 individuals across Canada who have already made this generous commitment, including 36,000 in Quebec. Many people owe their lives to the millions of men and women listed in registries around the world. Keep in mind that the registry, together with various other public banks, is part of a worldwide registry. It is part of a joint effort and must be seen from a global perspective, not a local one.

I would like to pick up on some statistics mentioned by my colleague earlier. There are indeed 64 registries of unrelated donors in 44 participating countries, and 44 public cord blood banks in 26 participating countries. Today, there are more than 15 million donors, contributing to an inventory of 447,184 cord blood units around the world.

That figure, 447,184, bears repeating because the number put forward at the committee's November 2nd meeting was 600,000. The cord blood industry, if you want to call it that, is still fairly young, and the international inventory does not yet contain very many units. That is what we are all working on.

Take the figures for the Canadian registry, which Héma-Québec contributes to. Those 266,000 or so unrelated donors make up approximately 1.8% of donors worldwide, despite numerous efforts over many years. But it is important to consider Canada's efforts as a whole. It is 1.8% despite how incredibly well the network and Héma-Québec have performed, at the national level.

Now let's look at Héma-Québec's public cord blood bank. As of November 16, we had 4,202 cord blood units in inventory, which represents 0.9%, or close to 1%, of the worldwide inventory. I should point out, as we will see a bit further on, that we did not start operating until 2004. So our bank is not very old, as mentioned at the meeting on November 2. Nevertheless, we contribute to the inventory at a rapid rate. I would also point out that ours is a very active bank.

Back to the public cord blood bank. It fits into a very well-developed strategic and business plan, which has been in place for a number of years. We started up in 2004, as I mentioned earlier. We had our first distributions in 2009. So we were able to start distributing cord blood units five years after we began building our inventory.

Why does it take so many years? Because you need enough units in the inventory. You cannot start distributing cord blood units with only 500, 1,000 or 1,500 units in the bank. The bank's inventory has to contain a certain number of units to be of use internationally.

● (1120)

It is also worth noting that Héma-Québec must hold a federally issued establishment licence and is therefore subject to the Safety of Human Cells, Tissues and Organs for Transplantation Regulations, or the CTO regulations. So, as required, we hold an establishment licence to process and distribute cord blood in Canada.

In addition, we rely on two medical directors, Dr. André Lebrun, who is here this morning, and Dr. Martin Champagne, who you should know is one of Canada's most experienced transplant specialists. Known around the country, he is certainly among those who have performed the largest number of transplants in Canada.

Of course, Héma-Québec's public cord blood bank relies on partnerships. In terms of recruitment, we have agreements with a number of partner hospitals. In our presentation, we list seven hospital centres that we partner with in Quebec, including Sainte-Justine, an institution we began working with back in 2004.

There is also a research component to our work. It is always necessary to consider the therapeutic uses of cord blood, but those kinds of advances require research. So Héma-Québec supports a great deal of research. We currently have research agreements with five of our seven hospital partners. When cord blood units do not meet inventory qualifications, they are sent back to the hospital centre, where they can be used for a variety of research projects.

Next, we formed a partnership with St. Mary's hospital, also in 2004, and with the Royal Victoria in September 2007. We went on to forge partnerships with the Centre mère-enfant in Quebec City, Cité de la Santé, Ville LaSalle and Saint-François d'Assise, our most recently acquired partner, in 2008.

Starting up a public cord blood bank requires considerable investment. Nearly $20 million has been invested in Héma-Québec's bank since it began. We anticipate that, by March 31, we will have spent nearly $20 million to put 5,000 units in our inventory. So then you can appreciate that putting 20,000 to 50,000 units in the bank would truly require a huge investment at the national level.

The cord blood inventory in the U.S. grew at a rate of 49% over 2 years, 2007 to 2009. The worldwide inventory is also growing quickly, and Héma-Québec is keeping up with that pace. Between 2008 and 2010, our inventory grew at a rate of 66% over 2 full years. We are on track with worldwide growth. We have a duty to contribute high-quality units that meet international standards, and to do so at a rapid rate in order to respond to a variety of needs.

There are few cord blood transplants in Canada. In 2008-09, a total of 76 transplants were performed in the entire country. In 2009-10, there were 90, and the units for 4 of those transplants were supplied by Héma-Québec. In 2010-11, that number dropped to 30, as of the end of October. Out of those cases, the blood units were drawn from the worldwide inventory for 25 of the transplants and from Héma-Québec's public cord blood bank for the remaining 5. The cord blood we distributed in the province for those 5 transplants represents 30% of the cord blood transplanted in Quebec and 17% of the blood transplanted nationwide.

● (1125)

Our recommendation is to continue developing Canada's main public umbilical cord blood bank so that it is representative of the population. Héma-Québec has the ability to develop a public bank with an inventory ranging from 20,000 to 50,000 units of cord blood. We agree with the figure cited by Dr. Wall on November 2, in terms of establishing a national bank with an inventory of 20,000 to 50,000 units of cord blood. We estimate that the inventory will hit 20,000 cord blood units sometime in 2015 or 2016, in other words, in the very near future.

[*English*]

The Chair: Dr. Décelles, can you wrap up now, because of the time?

Thank you.

[*Translation*]

Mr. Marco Décelles: To do that, of course, we need to forge partnerships outside Quebec, in order to increase the inventory's ethnic diversity. So we need to form partnerships in Vancouver, Winnipeg, Toronto and probably other regions, such as the Northwest Territories.

We have the ability to process, store and distribute cord blood. Héma-Québec will certainly continue to encourage cord blood research in order to make cord blood more accessible.

Thank you.

[*English*]

The Chair: Thank you, Dr. Décelles. You'll also have time to add comments when we go into our rounds of questioning. Thank you so much.

We'll now go to CancerCare Manitoba, with Dr. Rubinger, associate professor of medicine.

Dr. Morel Rubinger (Associate Professor of Medicine, University of Manitoba, CancerCare Manitoba): Good morning.

I wish to thank the committee for inviting me to speak to this important issue in the role of a transplant physician.

When I am facing a patient who has reached the point of requiring a stem cell transplant, and if no family donor has been found, I am asked, with tremendous hope but also with a high level of anxiety, “Doctor, what is my chance of finding a donor in the registry?” How much more rewarding would our task be and how much more would a patient appreciate it if the answer would always be, “I can reassure you, there is a high likelihood that we will be able to find a donor for you in the right frame of time.”

Unfortunately, we have not reached this stage. We hope to get there soon.

Hematopoietic stem cell transplantation, known also as a blood and marrow transplantation, is a curity procedure for life-threatening blood cancers and other bone marrow disorders. The single most important donor factor in determining transplant outcomes is a degree of matching known as HLA matching, or, in other words, the immune equivalent of the fingerprint match between the patient and the donor.

There is approximately a 25% chance that two siblings inherit the same immune fingerprints, which translates to only a probability of 30% that someone will have a suitable sibling match in a family, mainly due to the small size of Canadian families. Thus, donation of hematopoietic stem cells from an unrelated donor has become the only available option for 70% of patients in need of unrelated stem cell transplants.

The success of securing an unrelated stem cell donor for a particular patient depends on many factors, but the very important one is the ethnic background of the patient. The smaller the ethnic group the patient belongs to, the less likely such a patient will find a suitable donor in any registry, including the Canadian registry, as their representation in the donor group is significantly lower.

Stem cell transplantation is often the last hope for a curative option for these patients. Their disease is at the point at which no better alternative exists. The waiting period for a search to complete, the hope that they will be the lucky one to find a suitable donor, and the potential curative nature of the procedure hangs heavy in a patient's mind.

The ability to tell a patient that we have found a donor is always emotionally charged and rewarding. It is among the best news the patient can get when transplantation is needed. The reverse is heart-wrenching, for the patient and their family, and it leaves us, their physicians, with a sense that we have not done enough for their well-being.

In order to find the best available donor, individual donor registries collaborate internationally. However, despite the number of adult donors already registered, many patients in need of a stem cell transplant still cannot find an acceptable donor because they have a rare tissue type.

In 2008, there were 10,400 adult stem cell donations and 3,500 cord products were used. Through these global efforts over the years, a total of 100,000 patients have received stem cell transplants worldwide.

Despite these heartening figures, many patients remain unable to find a suitable stem cell donor within their own country's registry. Thus, the percentage of products crossing international borders has increased over time. In 1997, 30% of products crossed an international border, and this grew to 44% in 2008.

Currently, as mentioned before, there are over 14.9 million registered unrelated donors and 450,000 blood unit cord banked worldwide. However, the number of donors in Canada is smaller. In Canada, the OneMatch stem cell and marrow network, under the auspices of Canadian Blood Services, is responsible for finding and matching volunteer donors for patients who require stem cell transplants. OneMatch maintains a detailed database of tissue typing results of all prospective Canadian donors. The ethnic composition of OneMatch, including Héma-Québec, is 81% Caucasian, 15% ethnically diverse, including a total of 266,000 donors who comprise about 1% of the Canadian population.

● (1130)

The age of recruited donors is also becoming important. On the basis of published data describing that the use of younger donors may lower the incidence of complications from transplantation and improve survival, some registries have recently started to focus recruitment on younger donors. There is a particular need to increase younger registrants and those from ethnically diverse backgrounds.

Concomitantly, an increase in the availability of cord blood units will act synergistically in enhancing the ability to find a suitable donor for patients. Cord blood units are more likely than any other source of stem cells to expand rapidly, because of cord blood's wide availability and ease of collection, with no major burden to the donors.

The specific benefit of cord blood units is that a lesser degree of matching is acceptable and leads to clinical outcomes similar to those in which unrelated donors are used. These units are fast becoming a significant stem cell source for patients who cannot find a suitable donor within the unrelated donors registry.

The process of stem cell donation has changed significantly over time, over the last year particularly. While bone marrow is a rich source of stem cells, the ability to collect stem cells from peripheral blood, also known as peripheral blood stem cells, and from umbilical cord blood has changed the way we obtain stem cells today.

Because the donation of peripheral blood stem cells does not require a surgical procedure, is efficient, and is more acceptable to donors, it has become the predominant form of stem cell collection worldwide. Unlike the donation of organs such as kidneys, the donation of peripheral stem cells is much less complex, both technically and psychologically. The stem cells are a renewable source, and donating them is only slightly more complicated than donating blood. However, the benefit is similar to donating any other important organ or tissue: the benefit of saving a life.

The altruistic nature of people willing to donate stem cells has to be highly appreciated, and their safety has to be properly ensured. Donor safety must be a priority, and they should not be asked to take unacceptable risks. Any medical and psychological condition that increases the risk to a donor has to be thoroughly investigated, resulting in either deferral or approval for donation.

I will make some concluding remarks.

In 2008, among 462 transplants done in Canada using a stem cell donor, 179 received a stem cell transplant from an unrelated donor, including umbilical cord blood.

Unfortunately, I do not have the number of unsuccessful searches and as such the number of patients who could not find a stem cell donor and could not be rescued by this procedure. The ability of every Canadian patient who requires a stem cell transplant to find a suitable donor is an important goal that we should strive to achieve. The ability to do so resides in having all the stakeholders work together towards this common goal.

Some of the measures to achieve this important goal should include: a focus on the increasing enrolment of ethnic minorities and mixed minorities; a focus on the increased enrolment of younger donors, aged 18 to 35, as the youth of their stem cells can lead to better transplant outcomes, as published; the establishment of a national cord blood bank in Canada, ethnically diverse, which would be a complementary and long-awaited stem cell source for many patients who cannot find an unrelated donor match; increased funding for research in the area of mismatched donor transplantation, to establish whether manipulation, a graft, and/or the recipient's immune system can lead to improvement in clinical outcomes; continuing the present efforts and adopting new ways to increase awareness among the Canadian public about the importance of becoming a stem cell donor; and perhaps increasing funding to allow for the thorough and accurate reporting of the outcomes of stem cell transplants to the Canadian Blood and Marrow Transplant Group, the only group that collects this clinical data, which in turn might lead to improvements in transplantation outcomes.

● (1135)

As transplant physicians, we would like to be able to offer to any patient in need of a stem cell transplant a suitable donor match that would improve his or her chances of survival and ultimately lead to a long, happy, and productive life. I hope we will be able to accomplish this through our present meeting and other future endeavours.

Thank you.

● (1140)

The Chair: Thank you very much, Dr. Rubinger, for your insightful comments. They're very helpful.

We'll now to go to the Alberta Cord Blood Bank, and Dr. John Akabutu, the executive medical director.

Dr. John Akabutu (Executive Medical Director, Alberta Cord Blood Bank): Thank you, Madam Chairman and members of the committee.

This is my first time appearing before a House of Commons committee, so pardon me if I appear nervous. I am a teacher, so I can stand in front of 200 unruly students and be able to handle them well, but when I get into situations like this, I seem to get very nervous.

My presentation is going to be very brief and non-technical. I want to tell you a story about the Alberta Cord Blood Bank and how we developed a cord blood bank in Alberta.

Our story with cord blood banking began with a little girl in the town of Eckville, Alberta, who I was treating—I am a pediatric hematologist oncologist—for acute lymphoblastic leukemia. She successfully entered remission, but after 18 months she failed. This was in the late 1980s.

Even then we recognized that the only chance of survival for this little girl would be a bone marrow transplantation or, in latter days, a stem cell transplantation. The people in the town of Eckville heard this story and heard about this child, and they decided they wanted to do something about this to ensure that we could find a stem cell donor for her anywhere in the world. They got together and raised funds, and they donated $35,000 to us to look for a transplant source for her.

Unfortunately for her there were no matches in her family. So we approached our colleagues at the University of Minnesota, who looked worldwide for us for a donor for this little girl. None was found and so she died.

In the same year, the townspeople decided that even though she had passed away, they would continue with this fund, hoping that one day it might be useful. They approached the provincial Government of Alberta and got it matched two to one. We had over $100,000 at the time but nothing to do with it.

Then in 1995 I was part of a site visit committee for the National Institutes of Health, and I happened to visit Columbia Presbyterian Hospital in New York, where a Canadian transplant physician, Dr. Blanche Alter, was working. I was the one who reviewed her grant, and it was on the use of cord blood stem cells for the therapy of sickle cell disease. I read that, and I was enthused and amazed at the fact that cord blood stem cells could be used to cure sickle cell disease.

At the meeting, she and I had a conversation, and she encouraged me to get into the field of cord blood banking, because she felt there was a big future in cord blood banking, not just for the treatment of leukemia but for other things.

On my return to Edmonton, I met with Dr. Locksley McGann, who is the foremost authority in Canada on the cryopreservation of mammalian cells, as far as I know, and Dr. Hongyou Yang, a specialist in cryopreservation. We tossed around the idea of developing a public cord blood bank. We spent eight months looking at the logistics of doing this and decided at the end of eight months that it was possible to do. So at the end of that period, we began banking cord blood, and our first cord blood was banked in October 1996, on my birthday.

● (1145)

We have now collected over 10,000 samples of cord blood specimen from across Canada. I have to tell you that it's amazing how generous Canadian mothers and parents are and how they want to help somebody else who might be in need. Canadian physicians across the nation have also been wonderful. None of them has ever asked to be paid for collecting cord blood for our program.

We chose to extend our program across Canada, as you have heard from the previous speakers, based on the fact that we believed that collecting cord blood across Canada would represent the ethnic diversity of the nation, that this was the best way to go. This is true, again, because when you look at the genetics of Canada's aboriginal population, they are unique. And you're not going to find stem cell donors from the registries for that group of patients, but you might find cord blood donors from them if we were successful in collecting cord blood from the deliveries among the aboriginal population.

Our interest in cord blood banking is twofold.

The first is that we agree and believe that cord blood stem cell transplantation is probably going to become the therapy of choice in stem cell transplantation. As has been pointed out before, the morbidity associated with cord blood transplantation is reduced, but the efficacy remains high. So it makes sense to pursue that avenue.

The second reason that cord blood transplantation might become more important is because even today, we are beginning to use cord blood stem cells in adults, and recently there has been the advent of using two cord blood stem cell transplantations because of the larger size of the adult. These seem to be working very well. Our second reason for wanting to bank cord blood stem cells comes from the fact that these stem cells come from an inexhaustible source, and we believe that at a future date they will form a very important component of the stem cells that we might need for treatment with regenerative medicine.

In my days as a pediatric hematologist oncologist treating children with cancer, I had three methods to treat them: cut it out, burn it, or poison them. When you think about it that way, you surely have to say to yourself, “There must be better ways to treat these children.” And lo and behold, it may seem possible that in the future, using stem cells we might indeed be able to repair, rather than do the things that we have been doing in the past. We believe that cord blood stem cells will form a major component of stem cell use in the future.

Madam Chair, I would like to conclude by quoting a favourite quote of mine from George Bernard Shaw, and this tells you why we did what we did. He said, “You see things; and you say, 'Why?' But I dream things that never were; and I say, 'Why not?'”

Thank you.

● (1150)

The Chair: Dr. Akabutu, it is indeed an honour to have you here. Obviously, you weren't nervous for very long. Your comments were very insightful, and I'm very happy that we had the privilege and honour of hearing you today.

Dr. John Akabutu: Thank you.

The Chair: We'll now go to Dr. Donna Wall, who is with us via telephone.

Dr. Wall, we have just under 10 minutes. Could you give your presentation, please?

Dr. Donna Wall: Thank you very much, Madam Chair and committee. I'll be brief.

I'm speaking as a pediatric blood and marrow transplant physician who uses cord blood as the primary choice of stem cells for transplant in children who do not have a donor in the family, and also as a person who's been active in the field of cord blood banking and regulation for over 15 years, having started both the St. Louis Cord Blood Bank and the Texas Cord Blood Bank, and being active in the Foundation for the Accreditation of Cellular Therapy.

My previous colleagues have made a very eloquent case for the need for a cord blood banking system in Canada. The points I'd like to accentuate at this time are as follows.

One, a cord blood bank in Canada needs to be known for its quality. There are very strict international regulatory standards that have been established, and it's critical that we be known as a bank with very high standards.

Second, just to be very direct, size matters. When we're doing a transplant, we need to have a large cord blood unit, meaning units that have the most cells possible contained in them. What that means in banking operations is that you need to develop a collection network and system that allows you to bank only the largest of the cord blood units.

The third point is that it is critical to have a variety of immune types—and you can put in the word “ethnicity”, since immune type and ethnicity go together. Where cord blood makes a difference in clinical practice is with our patients who are of mixed racial heritage or of ethnic minorities. With the establishment of a bank, we need to unabashedly target these populations for the bank. This means our first-generation Canadians, our multi-ethnic Canadians, and ethnic minorities. This is going to need a very creative network of cord blood collection.

We have a lot of the building blocks in place for an excellent cord blood collection banking system in Canada. We've heard from CBS. It has set up a tremendous network system for management of donors, putting transplant centres across the world together with donors across the world. There's no need to reinvent the wheel in that department. We have Héma-Québec, which has done a tremendous job in setting up a solid cord blood bank, as have colleagues in Alberta.

What we need are the funds to help pull all this together and take the banking operations up to the next level so that we can move to the forefront on the world stage. I've inspected banks around the world. Unfortunately, I have never had the privilege of inspecting a Canadian cord blood bank as part of the international accreditations, because we're just not quite there yet.

With those words, I'll submit my written document. I don't want to waste everyone's time by repeating a lot of the similar statements.

Thank you for the time.

● (1155)

The Chair: Thank you very much, Dr. Wall, for your insightful comments. They're very much appreciated.

Last but not least, from the Department of Health we have Liz Anne Gillham-Eisen, who is the manager. Would you present your document, please?

Ms. Liz Anne Gillham-Eisen: Thank you very much, Madam Chair. I'd like to thank the chair and this committee for the opportunity to address you this morning—almost afternoon.

I'm here representing Health Canada. I've been asked to explain Health Canada's regulatory requirements with regard to cord blood banking. This is probably the boring side of the discussion. You've heard the very inspirational, and the need, and how important cord blood banking is in Canada, and I am very privileged to be sitting here with these individuals.

My presentation, again, is on the regulatory side. First of all, I'd like to take a minute to explain, in general, how the safety of stem cells is regulated in Canada. I was present at your initial hearings on stem cell donation, which you held on November 2, I believe, and I think there may be some confusion around the regulatory oversight of stem cell therapies.

Stem cells, as you know and as you've heard, can be produced from a variety of sources, including embryos, bone marrow, cord blood, adult skin, peripheral blood, etc. The Assisted Human Reproduction Act contains provisions governing the creation of embryos, including their use in research. In order to use stem cells derived from embryos for research, a facility will need to be licensed under Assisted Human Reproduction Canada, which, as you know, is the agency responsible for the AHR Act.

However, once a stem cell line has been established from an embryo, any clinical trials for new therapies using this stem cell line are subject to the requirements of the Food and Drugs Act and regulations, specifically division 5, which regulates the clinical trials and clinical trial applications.

Research involving stem cells sourced from other sources, such as cord blood and bone marrow, does not fall under the AHR Act. This research is subject only to the requirements of the Food and Drugs Act and regulations. There is also the Canadian Institutes for Health Research, which has developed guidance and created a national stem cell oversight committee to address all stem cells used in research.

Now I'd like to specifically speak to cord blood, which, as you've heard, is the blood that remains in the umbilical cord after birth. The retrieval of cord blood allows for the harvesting of stem cells, which can then be transplanted into patients to treat a variety of disorders, such as certain cancers and genetic diseases related to blood and blood cell formation.

Stem cells retrieved from cord blood may be transplanted into the same individual, which is considered autologous use, or into another individual, which is referred to as allogeneic use, provided the cells and the recipient are sufficiently matched.

Cord blood banking is the act of storing cord blood under controlled conditions for future use. Current technology enables storage of cord blood for many years. Public cord blood banks, for example, the Alberta program, as well as Héma-Québec, collect and store donated cord blood for use by unrelated patients. Information needed for matching can be listed on a registry so that this cord blood can be used to save the life of a potential recipient in Canada or elsewhere in the world.

Private cord blood banks collect and store babies' cord blood in return for a fee. Cord blood is banked for either autologous use, which is for that child himself or herself, or for allogeneic use, normally restricted to another family member.

Health Canada's role relating to cord blood pertains to the safety of the human cells derived from the umbilical cords that are used, or intended for use, in transplantation. Both public and private cord blood banks fall under the same set of regulations.

Cord blood is currently classified under the group of products known as cells, tissues, and organs, or CTOs. CTOs are considered to be therapeutic products, and as such they are subject to the provisions of the Food and Drugs Act. The act prohibits anyone from distributing cord blood, or its cells, if it has been prepared or collected under unsanitary conditions, is adulterated, or is likely to cause harm. Health Canada has the authority to enter cord blood facilities for investigational purposes and to stop distribution if necessary.

In December 2007, specific regulations for transplantation that apply to cord blood as well as other types of cells, tissues, and organs came into force. These regulations reference portions of the national standards for cells, tissues, and organs published by the Canadian Standards Association and funded by Health Canada. Cord blood establishments involved in the retrieval, processing, preservation, packaging, labelling, storage, quarantine, record-keeping, distribution, importation, adverse event reporting, investigation, and recall of cord blood for allogeneic use are required to comply with these regulations.

● (1200)

These cord blood banks are also required to register with Health Canada, and cord blood for allogeneic use can only be collected, stored, and distributed for use by banks with a valid Health Canada registration. If cord blood is used for a novel or experimental purpose, or extensively altered or manipulated prior to its use, other regulations under the Food and Drugs Act may also apply.

There are two public cord banks in Canada, and you've heard presentations from both of them, and there are ten private cord blood banks registered with Health Canada. The Health Products and Food Branch Inspectorate is in the process of inspecting these establishments to assess their compliance with the CTO regulations. As of today, one-third of the cord blood banks have been inspected, and Héma-Québec is one of them that has been inspected. All have received compliant ratings. The inspections of all registered Canadian CTO establishments, including the cord blood banks, should be completed by the end of next year. December 2011 is our goal.

As you are aware, both the Government of Canada and Canada's provincial and territorial governments have responsibilities in the area of health care. Delivery of health care, including the supply and sourcing of products used in the provision of health service, is a provincial responsibility and beyond federal authorities, with some exceptions. As such, the establishment of a national cord blood bank would have to be initiated and coordinated by provincial and territorial governments, despite the national scope.

Health Canada is aware that in 2007 the provincial and territorial ministers of health had asked Canadian Blood Services to study the feasibility of creating a national cord blood bank, and CBS concluded that Canada should have a national public umbilical cord bank, and you heard the results of that particular consultation from Dr. Sher.

I'd like to thank you once again for the opportunity to explain Health Canada's regulatory role with regard to cord blood banking and to clarify the federal regulatory oversight with regard to stem cell therapies.

Thank you.

The Chair: Thank you very much.

Now we have the opportunity to question our guests. For the first round, each individual will have a seven-minute question and answer period. I will be watching the time carefully.

First we'll begin with Mr. Dosanjh and Dr. Duncan, who are sharing their time.

Hon. Ujjal Dosanjh (Vancouver South, Lib.): Thank you very much for being here and talking to us.

I have a very general and brief question. There is a perception that in Canada researchers face some obstacles in stem cell research, and I understand there were guidelines back in June of 2007 by the Canadian Institutes of Health Research. One of the guiding principles outlaws the creation of embryos for research purposes by anyone obtaining federal funding. Now much of the research in this country doesn't go very far without federal funding. So the question I have is—anyone can answer it—does this create a problem in terms of wide-ranging research that scientists usually like to conduct?

The Chair: Who would like to take that?

Dr. Sher.

Dr. Graham Sher: Madam Chair, I'll provide a very brief answer, and colleagues can add to it.

Mr. Dosanjh, the issue you're raising is of course related to embryonic stem cell research, and as Liz Anne just pointed out, what we're talking about here are mature stem cells found in blood or cord blood, which are not embryonic in nature. So the guidelines that you refer to are slightly different.

Hon. Ujjal Dosanjh: I recognize that. We're talking here about a cord blood bank, a national blood bank. I think there's pretty well consensus on that. That's motherhood today. That's why I'm asking you the more important question in terms of the research.

Dr. Graham Sher: My second quick comment to your question is yes, the plan that we have put forward to the provinces and territories contemplates the national bank being able to support research into stem cell biology. Currently there are many researchers trying to access cord bloods in this country for research purposes. Most of that is not acquired through cord blood banks but is really acquired directly from obstetric and gynecology delivery units. But we are certainly building into our plan the capacity to support the research community within the research guidelines, and any cord blood samples collected that are not suitable for storage and transplantation would be made available to researchers in an equitable and fair fashion.

● (1205)

The Chair: Dr. Duncan.

Ms. Kirsty Duncan (Etobicoke North, Lib.): Thank you, Madam Chair.

Thank you to the witnesses for coming. I just want to begin by saying I strongly believe that stem cell therapies represent a tremendous opportunity to improve or alleviate human suffering, reduce the economic burden on health care costs to Canadians, and create long-term jobs in the delivery of generic medicine. I also want to recognize that Canada really has global scientific leadership in this field, and I think we have to ensure that Canadians benefit from this discovery and have access to these therapies in a safe, fair, and timely manner.

I think we know the answers to many of these questions, but I would like your opinions. Do you think Health Canada should be asked to review its guidance for clinical trials relating to cellular therapy to ensure that Canadians will be able to access stem cell therapies in a safe and timely manner?

The Chair: Who would like to take that on?

Mr. Lebrun.

[*Translation*]

Dr. André Lebrun (Vice-President, Medical Affairs, Hematology, Héma-Québec): First, I would like to respond to the first question that was asked regarding Canada's involvement in stem cell research. Since the very beginning, Héma-Québec has said that we should support that kind of research, and that is what we have been doing since 2004. We have put 4,000 units in the bank, but nearly 10,000 others could not be added to the inventory and were made available to researchers. We work with five research centres in this area.

As for the regulations you referred to, you have the clinical component and the practical one. We are not directly involved in the clinical side. But clearly, we would like to see certain regulations relaxed, so that we, as cord blood suppliers, could improve our inventory, especially with respect to its ethnic diversity.

You are no doubt aware that there are many genetic differences between ethnic groups, and it can be hard to recruit people who do not meet the basic criteria, such as those governing hemoglobin or sometimes even exposure to malaria or HIV Group O, in certain African nations. Some criteria such as those should be improved, so that we can further develop our public bank.

We have talked a lot about the need to recruit donors from different ethnic groups. For example, according to figures put out by the New York Blood Center's National Cord Blood Program, even though just 9% of blood is donated by people of Asian ethnicity, there is compatibility with 50% of donors.

[*English*]

The Chair: Thank you. Can I just interrupt you for a minute, because I believe Liz wanted to make a comment too?

Okay, Liz, go ahead.

Ms. Liz Anne Gillham-Eisen: Sorry, this is just to clarify that as far as the guidance is concerned in developing around research and clinical trials, etc., that do exist, they do fall under division 5 and there is guidance. There is a working group in place to develop specific guidance for clinical trials around stem cell therapies. There's also a workshop that is occurring in December of this year dealing specifically with research in stem cells, entering into clinical trials, trying to make that easier, and that workshop is happening in Canada. There's another international workshop that is going on.

Did you want me to address the ethnic—

● (1210)

The Chair: No, not right now.

We have to stop, Dr. Duncan.

Dr. Akabutu, you wanted to comment on the same....

Dr. John Akabutu: I just wanted to observe that Dr. Duncan's question is very important.

The Chair: Yes, go ahead.

Dr. John Akabutu: If you look at all the research that's being done in the world today on stem cells, there's almost zero in Canada, which is nothing to be proud of. The problem we have in Canada is we all have the consensus that stem cell therapy is okay and let's do it, but nobody does it.

The Chair: I'm sorry, in this round I have to be a little tighter on time. I do have to suspend at a quarter to one because there are two motions on the table. I was extremely generous before; this time I have to be tighter on time. My apologies.

We'll now go to Monsieur Malo.

[*Translation*]

Mr. Luc Malo (Verchères—Les Patriotes, BQ): Thank you very much, Madam Chair.

During her presentation, Dr. Wall said that unfortunately no Canadian banks had obtained international accreditation. And yet Héma-Québec operates on the international stage. How can it do that without international accreditation?

Mr. Marco Décelles: I will give you a very simple answer. We are working on it. In February 2011, we will be submitting our application for international accreditation. I will spare you the logistical details associated with that, but there was a lot of work we had to do internally.

Regardless, as I mentioned earlier, an inventory has to have a certain number of units before a bank can be considered at the international level. Whether you are accredited or not, if you have not done the initial groundwork, no one will seek out your services. We had to prove ourselves at home first, and now we are ready to do so on the world stage. It will happen in a few months' time.

Mr. Luc Malo: Congratulations.

You also said, during your presentation, that you were already active in other provinces in terms of providing other types of services. How were you able to start operating outside Quebec?

Mr. Marco Décelles: It is demand, plain and simple. The human tissue sector is quite different, and we are just as used to providing that service as Canadian Blood Services. We operate in an open market, meaning a competitive one, so we are competing against the Americans, among others. In that kind of environment, we have to set ourselves apart, especially when it comes to product quality, reputation and quality assurance regulations. And that is why doctors elsewhere in Canada seek out our products and services.

Mr. Luc Malo: Does it work the same way with cord blood?

Mr. Marco Décelles: In terms of cord blood, Dr. Wall, in Winnipeg, has done searches for some of her patients, but we have not found any compatible units so far. You always need to find the most compatible unit. People in British Columbia have also done searches as recently as the beginning of last week. Our bank is becoming more popular, and we are now able to begin meeting all of the demand.

Mr. Luc Malo: During your presentation, you said that there are few transplants, as we can see from your chart.

Why are there so few, when banks seem to be so generous in terms of donors?

Mr. Marco Décelles: It is a phenomenon in Canada, and especially Quebec, which was the leader. You can even see it in the volume. Historically, nearly 50% of transplants were done in Quebec. In Canada, it has to do with the culture of transplant specialists. Last year, 90 transplants were performed, and that figure was in line with the trend. This year, we are not sure what is happening in Canada, or even Quebec, because we have seen a significant drop, even though the number of units transplanted around the world has grown.

Mr. Luc Malo: Very well.

I have a question for you, Dr. Lebrun, further to something you said in response to a previous question. You said that certain rules needed to be relaxed in order to build a much more ethnically diverse bank. Could you elaborate on that? Is that really a barrier for you? According to your presentation, you want to recruit donors in specific regions, in order to significantly improve your bank's ethnic diversity.

Dr. André Lebrun: I will use the Black community as an example. For a few years now, we have been trying to raise awareness in the Black community about blood donation and cord blood donation, to try to encourage people to ultimately donate to the international registry. We encounter challenges that are very specific to that type of community. The members of that community have blood types that are quite different than those in other communities. According to the New York Blood Center's National Cord Blood Program, 16% of units come from Black donors, and 60% of those units will be used because of their compatibility. You will not find that in the Caucasian population.

I identified one problem, but you will appreciate that there are also regulations on the screening of viruses, including HIV Group O, an especially prevalent strain in Africa. It is just as easy to screen for that strain of the virus as it is for the others, such as HIV-1 or HIV-2. The same goes for malaria; we know that Europe has testing, and we would really like to see that happen in Canada, as well.

So there are a number of factors that can serve as barriers. We know that our Black donors, at least those in Quebec's Haitian community, very often travel abroad, to Haiti or elsewhere. As a result, they are exposed to certain illnesses, especially in countries where the incidence of malaria is higher. All of that creates a barrier for us.

Discussions on that topic have only just begun with Health Canada. But, since you asked, I can tell you that this is precisely the kind of thing we want to talk to Health Canada about, in order to make it easier to recruit donors.

● (1215)

Mr. Luc Malo: In fact, we have an official from Health Canada here today. Could she explain why there are barriers in this respect?

[*English*]

Ms. Liz Anne Gillham-Eisen: The cell tissue and organ regulations are different from the blood regulations; they don't have the same criteria. There is no exemption for people who have lived in Africa or outside the country, or travelling restrictions, which there are currently for blood. So that is not a restriction to cord blood donors in Canada.

There's also the provision of exceptional distribution under the CTO regulations, which allows for the collection and distribution of blood that doesn't meet all the requirements of the regulations, based on the clinical judgment of the transplanting physician and the informed consent of the recipients, so they are made aware that the specimen they are receiving might be of slightly higher risk, but it is not that it is exempted and cannot be used. It can be used in Canada. We have done this under the CTO regulations, because of the life-saving issue around all cells, tissues, and organs, so this is permitted to be collected and used. The requirements are not as strict as for blood, and there are not the geographic referrals for HIVO under the CTO regulations, as we find with blood. So I hope that clarifies it.

The Chair: Thank you very much, Ms. Gillham-Eisen.

Now we'll go to Ms. Leslie, please.

Ms. Megan Leslie (Halifax, NDP): Thank you, Madam Chair.

Thank you to all of you for being here today.

I have two questions about the accessibility of cord blood collection.

The first would be, what are some of the barriers to collection in rural settings? I don't even know if you need specialized facilities or how that works.

Then my second question relating to that is, do you see an increase in problems or barriers with the rise of midwifery and home births? Is that impacting your ability to collect?

The Chair: Who would like to answer that question?

Doctor.

Dr. John Akabutu: I'll answer the last one first.

We don't allow home deliveries, the reason being that we are not able to certify the home environment as being safe for the collection of cord blood. However, midwives can collect cord blood for us if they work in hospitals, where hospitals are already accredited, so that's how we get around that.

As far as the other question about the rural collection, this is where expense comes in, and especially if you want to include, say, aboriginal populations. They are located in far-off places in Canada, sometimes with a very harsh climate where things might freeze up. So collecting cord blood from that population is very difficult and very expensive. I think what will dictate whether we are able to do it or not is going to be the resources that are available to do it. It can be done.

The Chair: Mr. Décelles.

[*Translation*]

Mr. Marco Décelles: From a different perspective, everything is a matter or logistics. In order to create or preserve a unit of cord blood, bank operators have to work within a 48-hour time frame. Obviously, there are issues surrounding proximity to the processing site and airport accessibility. That is one reason why collection is concentrated primarily in major urban centres. So we need to improve the logistics in terms of facilitating access.

● (1220)

[*English*]

Ms. Megan Leslie: Thank you.

My next question is this. Ms. Gillham-Eisen planted this firmly at the feet of the provinces and the territories, and I want to put it to the other witnesses, if you agree with that, if you think there is a federal role here. Maybe this is something that could be orchestrated by public health versus Health Canada. So if you have thoughts about what the federal role is, and also if you think there are federal regulations that would need to be changed to support a national bank....

The Chair: Dr. Sher.

Dr. Graham Sher: Thank you, Madam Chair.

Briefly, Ms. Leslie, I think Liz Anne was pointing out the different roles of the federal government as regulator and the provinces and territories as funders of the service provision, which I completely concur with, and hence our business case has gone to the provinces and territories and the ministers of health in those jurisdictions for approval.

I believe this committee and the federal government have continued to support the need for a national bank. I think the federal government can continue to play a role there, but ultimately the funding and delivery thereof is something that falls firmly within the health care provision of the constitutional differences that we have in this country with respect to health care.

I believe the current regulations in place from Health Canada, as Liz Anne has summarized, are adequate. They support the appropriate respective views of safety. They allow sufficient access. They are there to protect Canadians, and as she said, they also have the flexibility that distinguishes cell tissues and organs from the more rigid rules that apply to blood, where we have a very different donor-recipient relationship. So we believe, at Canadian Blood Services, it is the role for the provincial governments to approve and fund this. The federal government can certainly continue to support and champion it, but we also believe the federal government's regulatory oversight is appropriate.

Ms. Megan Leslie: Thanks.

The Chair: Yes?

Dr. John Akabutu: I can see a role for the federal government in the field of innovation. Stem cell therapies as we know them today are going to be something different in a few years. Without support and innovation, we will not be able to harness the resource appropriately.

Ms. Megan Leslie: Thank you.

The Chair: You have another minute, Ms. Leslie.

Ms. Megan Leslie: My next question is, would placenta stem cell collection fall within the mandate of a cord blood bank? I'm not sure who could answer that.

Dr. Graham Sher: It's one and the same thing.

Ms. Megan Leslie: It's one and the same? My understanding is that it's much more complicated. It doesn't matter? There are no problems with it?

Dr. Graham Sher: I think I can answer on behalf of all of us. Placenta and umbilical cord blood bank are one and the same thing.

Ms. Megan Leslie: Okay, thanks.

The Chair: Thank you, Ms. Leslie. Is that the end of your questions?

Ms. Megan Leslie: Yes.

The Chair: Thank you.

We will now go on to Dr. Carrie.

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

I want to thank everyone for being here with this topic today. My wife and I made a decision with our third child, our daughter. We used a bank in Markham. It is a private one, but we've been satisfied with how it has worked out. We had the third baby at home with a midwife, so they didn't have an issue in that regard.

In 2008, Minister Clement got together with the provincial and territorial ministers. They made an announcement of $35 million over five years to create an integrated national system to improve organ donation and transplantation in Canada. I was wondering if you could speak about that investment and let the committee know what has occurred since then.

Dr. Graham Sher: I'm happy to do that, Dr. Carrie, as that was funding provided to Canadian Blood Services.

The funding you are referring to was to develop and design an integrated system for organ and tissue donation and transplantation. The cord blood bank initiative is separate from that. What you are referring to was the joint federal, provincial, and territorial announcement to create an integrated pan-Canadian system for organ and tissue donation and transplantation, which has already started. The work is under way. The strategic plan has been developed and will be presented to the governments on December 9. We've already launched some of the registries that were supported by the provincial components of those dollars. For example, we launched the kidney paired exchange registry, which has already allowed 50 kidney transplants to happen that, without the national registry, would not have taken place. That's a separate stream of work related more to organs and other tissues besides cord blood, things like skin, bone, cornea, and those sorts of tissues for banking purposes.

● (1225)

Mr. Colin Carrie: Okay.

We talked a bit about the regulations. I was wondering if you could describe how the regulations have affected the supply of cord blood available in Canada.

Ms. Liz Anne Gillham-Eisen: The supply issue would probably be better dealt with by our guest speakers.

As to the effect on safety, etc., we have done cost-benefit analyses, and we have done a lot of research on developing the regulations. We do not believe the regulations have limited or made cord blood or stem cells any less available in Canada. They have bolstered the safety of cells, tissues, and organs available in Canada for Canadians, and they have made cord blood and bone marrow more available internationally. We are not aware of the regulations making availability any more difficult.

The Chair: Dr. Rubinger, would you like to make a comment?

Dr. Morel Rubinger: Probably Donna would be best. She does cord blood transplants and is an inspector in those cord blood banks.

In my understanding, Canada is more or less adopting its own rules about the safety of cord blood banking. But we are in parallel, adopting North American rules. Those cord blood units can cross over to us from Europe, the United States, Australia, the entire western world, without much limitation.

The Chair: Dr. Wall, would you like to make a comment?

Dr. Donna Wall: The Health Canada regulations are right on target. You have to remember that cord blood is going into an immunocompromised patient, so we really need high standards and we need to do everything possible to prevent the transfer of infection. You don't want to push Health Canada too hard on this one, in my opinion.

This has not been a limiting factor in the collection of cord blood units. The limitation has been the coordination and funding in getting the operation off the ground.

Mr. Colin Carrie: I would think, actually, it would be helpful to have a convergence of regulations internationally to help increase the blood supply. My next question leads into that.

I think it's obvious, with the presentation, that sometimes cord blood is imported. I was wondering if you could comment on how we can be sure that the imported cord blood is of the same quality as we get in Canada. You mentioned the CTO regulations, and I think somebody mentioned the cost, or one of my colleagues mentioned it. Is it increased cost when you do these international...?

The Chair: Ms. Gillham-Eisen, do you want to answer that, or would you like to give it over to...?

Ms. Liz Anne Gillham-Eisen: I wouldn't be able to comment on the cost, but as far as the regulations themselves are concerned, they apply to imported cord blood as well, so the safety standard is the same.

The Chair: Dr. Sher, perhaps you'd like to comment.

Dr. Graham Sher: Very briefly, there is a cost; there is a fee for importing stem cells, whether they're from cord blood or bone marrow peripheral blood, and it's $35,000 U.S.

One of the other arguments for growing a Canadian bank is that there are substantial savings to the health care system, and certainly if we export cells, it's a revenue generator as well.

Mr. Colin Carrie: So is there an international agreed amount?

Dr. Graham Sher: Yes, that's correct, sir.

Dr. Donna Wall: No, there isn't. It would be restrictive trade, so the banks have their own fee structures, and the cost of a cord can range between $20,000 up to $42,000, at least from the dollars that we see on the transplant centre side. Once you start looking at using two cord blood units for a patient, you can see that we're running into a sizeable cost outlay upfront for the cost of the graft.

Mr. Colin Carrie: Thank you very much.

I have one other question, and this is something that hasn't been addressed yet. What are some of the major challenges, actually, to get people to donate?

The Chair: Dr. Carrie, I'm sorry. Mr. Décelles would just like to add an additional comment, and then we'll go to your question.

● (1230)

Mr. Colin Carrie: Sure.

[*Translation*]

Mr. Marco Décelles: As far as cost goes, you need to keep two things in mind.

What Dr. Wall just said is absolutely true. The cost of cord blood units from international banks varies between US$20,000, which is especially low, and US$30,000 or US$35,000. Units that come from Héma-Québec cost the same thing. I would put the current cost of a cord blood unit at around US$35,000.

You also need to consider the cost associated with putting a cord blood unit in a bank. As mentioned earlier, not every unit in the bank will eventually be used. A mature bank is said to use around 2% of its cord blood units. The current cost of adding to a very mature bank's inventory varies between US$2,500 and US$3,000 a unit and can even be as high as US$4,000.

Those are two completely different units of measurement. You have the cost of banking a unit and the cost of distributing it.

[*English*]

Mr. Colin Carrie: Thank you very much.

The Chair: Dr. Carrie, I think we have to go to Dr. Dhalla now and then back to you, if you'd like to continue on.

Dr. Dhalla.

Ms. Ruby Dhalla (Brampton—Springdale, Lib.): Thank you so much for coming before the committee and for your insightful presentations and for the great work that you're doing.

I want to congratulate the Canadian Blood Services. I know you've been working quite a bit in constituencies like mine, in Brampton—Springdale, which are very ethnically diverse, to be able to reach out. Perhaps you could share with the committee some of the initiatives you have under way for the OneMatch program to reach out to ethnically diverse Canadians from all across the country, in terms of collections, but also in terms of increasing awareness and reaching out to educate them on the services that exist and that you provide.

Dr. Graham Sher: Madam Chair, if it's okay with you, I'll have Jennifer Philippe provide a brief answer to it.

The Chair: Absolutely.

Thank you.

Ms. Jennifer Philippe (Director, OneMatch Stem Cell and Marrow Network, Canadian Blood Services): Thank you, Madam Chair.

During the last two years, the OneMatch stem cell and marrow network has really focused on establishing partnerships with leaders in diverse communities, and we have had a huge success in educating leaders and getting them then to engage their community on the need to support patients within the community. We have partnerships with our Asian community. The OtherHalf Chinese stem cell awareness initiative in Toronto is one such group that actively recruits donors of Asian heritage to the network, and we have seen unprecedented registration through that community. Last year alone, in a one-day event, that committee registered 4,025 new donors. Most of them were ethnic—I'd say 99%—and the majority of them were under the age of 30. The younger the donor, the happier the stem cells, the better the outcome for the patient.

We have such partnerships with groups in the South Asian community in both Toronto and in British Columbia. We have groups in the Latin American community as well, and we have found that that has been a very good template to use in engaging communities where we need to encourage donors to join.

Ms. Ruby Dhalla: Thank you.

Perhaps very quickly, because I'm sure we're short on time, if you had your ideal wish, a recommendation you would give—I know you mentioned the national registry that needs to be created for a cord blood bank—and you could perhaps provide that to the committee with any additional recommendations you would like to see in the report, that would be beneficial.

Does each of you want to quickly give a recommendation or a suggestion?

Dr. Graham Sher: Dr. Dhalla, I would say what I said a minute ago, which is the support of this committee for Canada having an integrated and accredited system, as Dr. Wall said—I think she really hit the nail on the head—of cord blood banking that meets if not exceeds international standards. We must aspire to the highest level of quality in the bank we're creating.

The Chair: You have another minute, Dr. Dhalla.

Ms. Ruby Dhalla: Is there anyone else?

Dr. John Akabutu: I think the emphasis is on a system rather than a monolithic system, because we already have, within our country here, a lot of expertise, and we shouldn't let that go to waste.

The Chair: Thank you.

Are you finished? Thank you so much.

Now we'll go to Ms. McLeod, please.

Mrs. Cathy McLeod (Kamloops—Thompson—Cariboo, CPC): Thank you, Madam Chair.

I want to focus on two different questions. Perhaps I'll just give you my questions and leave it open. First, I think I heard from Canadian Blood Services that you were looking to have 20,000 units. And then I also heard from the program in Quebec that they have the same goal. So first of all, are those aligned?

We talked about the cost internationally, but, for example, I'm from British Columbia, and it doesn't sound as though there is a system in place there. So if I were in need of a treatment and my match was in Quebec, would the B.C. government be having to pay $25,000 or $30,000 to Quebec?

● (1235)

The Chair: Mr. Décelles, would you like to answer that, please?

[*Translation*]

Mr. Marco Décelles: Yes, exactly.

That is already the case. There are hospital centres in the Vancouver area that are performing cord blood transplants. The Children's & Women's Health Centre of British Columbia and the Vancouver General Hospital have transplanted three and six units respectively. Those hospitals paid the international blood cord bank somewhere between $25,000 and $35,000 to do those transplants.

Does that answer your question, specifically?

[*English*]

Mrs. Cathy McLeod: From Quebec it goes through an international payment system? Okay. Thank you. That clarifies that.

[*Translation*]

Mr. Marco Décelles: If you look at it the other way around, it is actually the province of the transplant hospital. A public bank, such as Héma-Québec's, supplies the cord blood. The hospital doing the transplant is responsible for the costs; it is the one that has to pay the bill. So if a hospital in Vancouver is performing the transplant, the British Columbia government is responsible for assuming the costs of that cord blood, regardless of where it comes from.

[*English*]

Mrs. Cathy McLeod: And what if the transplant were required in Quebec? Would it be the same thing?

[*Translation*]

Mr. Marco Décelles: It works the same way.

[*English*]

Mrs. Cathy McLeod: My next question—and this relates perhaps to the challenges of getting donations, and again more generally—is whether the placenta and the cord blood are deemed to belong to the mother or the fetus. Many years ago—and I perhaps date myself here—I think the hospitals deemed them to be a byproduct and actually sold them to the pharmaceutical companies at that time. Again, that was a long time ago.

Is there a permission process? Are there cultural issues in terms of donations? Are there challenges?

Dr. Donna Wall: I can take that one.

The Chair: We're going to start with Ms. Gillham-Eisen. You wanted to respond, and then....

I'm sorry. Go ahead, Dr. Wall. I can't see you, but I can hear you.

Dr. Donna Wall: Legally, they're considered waste products. But because there is a value attached to them, we do have very rigorous consenting in the donation, and we use the mother as the person who is giving permission for the cord blood, which legally would belong to the infant.

Interesting legal issues for cord blood units are raised if they are banked past the year of consent, so past the age of 18 or 19, which, to the best of my knowledge, nobody has tried to sort out legally.

The Chair: Ms. Gillham-Eisen, you wanted to reply as well?

Ms. Liz Anne Gillham-Eisen: Under the regulations, the donor is the child. But surrogate testing as well as a physical exam are done of the mother, simply because of the relationship, and the mother would have the risk, not the child. But the donor is the child, under the regulations.

The Chair: Thank you very much.

You've got one more minute, Ms. McLeod.

Mrs. Cathy McLeod: If you would like—

Dr. John Akabutu: I was going to say—

The Chair: Go ahead.

Dr. John Akabutu: —in our program, we ensure that both parents have custody of the cord blood, and the custody is assumed until the age of majority. Beyond that, it becomes the property of the child. That's how our program works.

Mrs. Cathy McLeod: I have a quick question. Perhaps I missed the answer. Is 20,000 the target for a Canadian blood system? Is it 20,000 units?

Dr. Graham Sher: That's the size we're targeting for our bank, and Héma-Québec has a similar target, as you've heard.

Mrs. Cathy McLeod: So would we be looking at 40,000 for Canada, or is Héma-Québec going to meet the needs of...?

[*Translation*]

Mr. Marco Décelles: Yes, when the committee met on November 2, I believe Dr. Wall said that Canada needed between 20,000 and 50,000 units. So we are in that range with 40,000 units in Canada.

[*English*]

The Chair: Thank you so much.

We'll now go to Monsieur Dufour.

● (1240)

[*Translation*]

Mr. Nicolas Dufour (Repentigny, BQ): Thank you very much, Madam Chair.

Earlier, Mr. Malo had a question about restrictions being too tight. I was wondering whether Héma-Québec was satisfied with Health Canada's response.

Mr. Marco Décelles: Absolutely. To put the challenges surrounding recruitment into perspective, I would say that, last year, we recruited more than 6,500 mothers who had agreed, meaning they had signed the famous consent form discussed earlier. As Dr. Wall said, it is perfectly normal to have to comply with international rules. Our standards here in Canada need to be just as high. And obviously that gives rise to certain supply restrictions, but we need to come to terms with those restrictions.

Mr. Nicolas Dufour: Thank you very much.

You said earlier that only 2% of all units in banks would be used. Could you elaborate on that a bit more?

Mr. Marco Décelles: That is every year, in terms of ethnic groups and the various HLA tests required. Clearly, that applies to mature banks. We are not there yet, because we are still a young and rapidly growing bank. A mature bank, however, will use, on average, 2% of its cord blood units a year.

Mr. Nicolas Dufour: Thank you very much.

I have a question for the Canadian Blood Services officials. The provincial and federal health ministers have agreed on a business plan. Do you know what the schedule will be for that?

[*English*]

Dr. Graham Sher: We are in the process right now of negotiating our budget for 2011 with the provinces and territories, and we hope to have approval for the cord blood bank at the start of our fiscal year.

[*Translation*]

Mr. Nicolas Dufour: Thank you very much.

Mr. Rubinger, you said that we needed more and more young people, and young people from different ethnic groups, of course. How do you plan to get the word out or raise awareness in order to recruit young donors? Do you have any ideas or suggestions for us?

[*English*]

Dr. Morel Rubinger: Thanks very much.

The issue of having younger donors arises from the fact that the outcomes of transplantation—rejection, etc.—are much lower in patients who receive such a transplant, so I think the impetus in registering those potential donors has to go to that kind of population, i.e., schools, universities, drives, in which this population is made aware of the benefits of stem cell donation and the ease of stem cell donation.

I had a conversation with my kids over the weekend about that and both have already registered, without any kind of incentive. So what I'm saying is that you have to convince people that, yes, it is something good to do, easy to do, takes little time, and is renewable. The stem cells are renewed very quickly. You recover and do well after that. And you can save a life by doing this.

So getting drives in the right population age is important. The attrition rate of the banks, when you get to age 40 or 50, is very high, so we're losing a lot of donors. As I say, schools—even high schools—and universities should be targeted, and of course ethnic groups in a different format, be that through cultural or other events.

[*Translation*]

Mr. Nicolas Dufour: Thank you very much.

I have no other questions.

[*English*]

The Chair: You have one minute.

[*Translation*]

Mr. Luc Malo: Oh, really? I will use it then.

[*English*]

The Chair: Oh, I'm sure you will. It's one minute, Monsieur Malo.

[*Translation*]

Mr. Luc Malo: Thank you very much, Nicolas.

Thank you, Madam Chair.

In one of his earlier responses, Dr. Akabutu said that we needed to use what already exists in the field. I imagine he was referring in part to his work with the Alberta Cord Blood Bank.

I was just wondering whether Canadian Blood Services planned to use expertise that has already been developed in terms of moving forward with a Canada-wide bank.

● (1245)

[*English*]

The Chair: Respond quickly, Dr. Sher.

Dr. Graham Sher: The short answer is yes, and we've indicated both to Dr. Akabutu and the Government of Alberta that we would like very much to work with them to get the bank and the samples that he has collected over the years accredited by the Foundation for the Accreditation of Cellular Therapy so that we can make an informed decision.

The Chair: Thank you, Dr. Sher.

I want to thank our witnesses very much.

I'm going to have to suspend for a couple of moments, and then we'll go into committee business.

Thank you for all your insightful comments.

● (Pause)

●

The Chair: I'm sorry to interrupt all these valuable conversations, but let me please ask the committee to join us.

We have in front of us a motion submitted by Dr. Duncan.

I would ask you, Dr. Duncan, to read it into the record.

Ms. Kirsty Duncan: Thank you, Madam Chair.

It's my understanding that since these are five separate motions, we have to do one at a time, and each time I have to ask that it be reported back to the House.

The first motion is:

> That the Committee recommend that the federal government work with the provinces and territories to determine how best to provide Canadian Blood Services and Hema-Quebec with the funding required to establish a public cord blood bank.

The Chair: Dr. Carrie.

Mr. Colin Carrie: Yes, I was wondering if we could speak to this.

We would recommend a slight wording change. As we heard from the presenters today, Health Canada's role here is as a regulator responsible for the product's safety, so Health Canada must maintain an arm's-length relationship with the blood operators and is not involved in corporate or operational decisions, including the determination of funding priorities.

Broader decisions around cord blood are under the purview of the provincial and territorial jurisdictions. I think CBS made that quite clear. An initiative such as the establishment of a national publicly funded cord blood bank would therefore not fall within Health Canada's federal authorities.

So what we would recommend—we would like to support this, if we could change this—is that instead of "funding", it would say "provide Canada Blood Services and Hema-Quebec with the support"—we would use the word "support"—"required to establish a public cord blood bank".

The Chair: Monsieur Malo is next, and then Ms. Davidson.

● (1250)

[*Translation*]

Mr. Luc Malo: I have a general comment, Madam Chair.

I have here the committee's meeting schedule, and a study of the draft report is planned for December 9. Do the recommendations we are currently studying regarding stem cell donation in Canada replace the committee's report? Basically, we could include these recommendations in the report. So, if we adopt recommendations, the report may not be as useful. I think it would be a duplication of work.

[*English*]

The Chair: Oh, Monsieur Malo, you are such a wise man.

[*Translation*]

Mr. Luc Malo: Oh, thank you very much!

[*English*]

The Chair: Basically, are you saying that we're reporting this back to the House, so we don't need the other report, that this will take the place of it?

[*Translation*]

Mr. Luc Malo: One or the other.

[*English*]

The Chair: Yes, we do one or the other.

Dr. Carrie, can you comment?

Mr. Colin Carrie: Actually, I think that's a good idea, because it would free up a meeting, wouldn't it, if we just did that?

[*Translation*]

Good idea.

Mr. Luc Malo: It is a good idea, but the report also gives parties an opportunity to express supplementary opinions, to present other perspectives and perhaps to make other recommendations. The way I see it, studying the report involves a lot more than simply adopting the motions put forward by Dr. Duncan.

[*English*]

The Chair: Could I just make a comment about this, Monsieur Malo?

[*Translation*]

Mr. Luc Malo: Of course.

[*English*]

The Chair: The only thing is that we've only had two days' study on this, and to do a full report on a two-day study is, in my opinion, a little thin. Dr. Duncan has a very comprehensive notice of motion.

Dr. Carrie, I'm not clear on exactly what you want.

Mr. Colin Carrie: I would like to replace the word "funding" with "support".

The Chair: Because it's a provincial jurisdiction?

Mr. Colin Carrie: For that reason, and also because funding is just one part, whereas by way of "support", after the discussions there might be agreements made in other ways as well.

The Chair: Ms. Davidson had a comment.

Mrs. Patricia Davidson (Sarnia—Lambton, CPC): Thank you, Madam Chair, but my question was asked by Monsieur Malo, and I know what the answer is now.

The Chair: Great.

Monsieur Dosanjh.

Hon. Ujjal Dosanjh: I would in fact say, Mr. Carrie, that it should be "support including funding", because giving funding doesn't detract from the jurisdiction of the provinces. The idea here is that we want to commit the federal government to funding—at least to recommend that we fund.

The Chair: Ms. McLeod.

Mrs. Cathy McLeod: I would argue against the funding; I'm arguing for support. Clearly we heard that there's actually a business case for these banks at least being self-sustaining. So I would say to support but not to fund.

The Chair: We need to vote on the amendment, first of all.

Please signify, all who are in favour of the amendment, which is to take out "funding" and say:

> That the Committee recommend that the federal government work with the provinces and territories to determine how best to provide Canadian Blood Services and Hema-Quebec with the support required to establish a public cord blood bank.

Mr. Colin Carrie: Let me make a quick comment, Madam Chair.

The Chair: Yes.

Mr. Colin Carrie: I think we even heard from the witnesses that what Health Canada is doing now is appropriate, and that's why they are.... They report to the provinces. I would like to make that comment clear.

The Chair: Yes, we did hear that.

Having said that, could we support the amendment to motion number 1?

(Amendment negatived)

The Chair: Now we have to vote on the motion.

(Motion agreed to)

● (1255)

The Chair: Dr. Duncan, we're not going to get through motion number 2 today anyway, so take your time.

Ms. Kirsty Duncan: I'll read the motion and I'll ask that you report it back to the House:

> That the Committee recommend that Canadian Blood Services and Hema-Quebec be encouraged to pursue all possible means to ensure wider participation in OneMatch registry, including partnership with federal and provincial governments and with the charitable sector.

The Chair: Are there any comments? Is there discussion?

Monsieur Malo.

[*Translation*]

Mr. Luc Malo: I just want to say that since this entire sector is clearly under provincial jurisdiction, in our view, it is really up to the governments of Quebec and the provinces to put this kind of registry or bank in place. We believe that the provinces, themselves, have the ability to enact different rules regarding this type of activity.

Therefore, I will be voting against the motion.

[*English*]

The Chair: Okay, let's go to a vote.

(Motion agreed to)

The Chair: We go on to motion number 3.

Ms. Kirsty Duncan: Again, I'll ask that you report to the House:

> That the Committee recommend that Health Canada review its guidance for clinical trials, relating to cellular therapy, to ensure that Canadians will be able to access stem cell therapies in a safe and timely manner.

The Chair: Is there discussion or comment?

(Motion agreed to)

The Chair: Next is number 4.

Ms. Kirsty Duncan: Again I'll ask that it be reported to the House:

> That the Committee recommend that Health Canada work closely with its international counterparts to ensure that Canadians make informed decisions about the safety and efficacy of stem cell treatments not offered either in this country or in others where there is strong regulatory oversight.

(Motion agreed to)

The Chair: Now you have to report it back to the House.

Ms. Kirsty Duncan: I'll ask that it be reported back to the House:

> That the Committee recommend that the federal government increase financial support for the entire continuum of stem cell research, from basic science to funding for cell manufacturing, and early phase clinical trials to globally competitive levels.

The Chair: Is there any discussion?

Dr. Carrie.

Mr. Colin Carrie: Again I'd like to ask for some wording changes so we can support it.

I'll go through the wording changes and give my rationale, if that's okay with the chair.

The Chair: Yes.

Mr. Colin Carrie: I'd like it to be changed to, "That the Committee recommend that the federal government increase support" and take out "financial". That would encompass all the ways that Health Canada supports this.

Then we would change the final words that Kirsty originally had, "globally competitive levels", to "ensure that Canada remains globally competitive".

I'd like to review some rationale here. First of all, we'd like to agree that stem cell research can potentially lead to useful therapies in the treatment of health conditions and diseases such as Alzheimer's, Parkinson's, diabetes, kidney failure, heart disease, and spinal cord injury. The government recognizes that clinical therapies based on the properties of stem cells have the potential to revolutionize the treatment of degenerative diseases and major traumatic injuries, thus improving the quality and length of life for Canadians.

That is why the Government of Canada has provided significant support for stem cell research through the Canadian Institutes of Health Research. For example, in 2009-10 CIHR invested approximately $41.5 million in stem cell research, which is up from $8 million in 2000. So we're already seeing a huge increase there. In Budget 2010, the Government of Canada increased the budget of CIHR globally by $16 million, so the CIHR total budget in 2010-11 will exceed $1 billion. This financial commitment signals the importance that the government places on all health research, including stem cell research, for its contribution to improved health for Canadians. Even Dr. John Akabutu mentioned that's where he thought the priority should be going from the federal government.

The Government of Canada, through CIHR, will continue to support the Canadian researchers who are increasing our understanding of stem cells through their work and will build on the findings of the international research community to promote the development of stem cell therapies.

Finally, it's important to note that CIHR is actively working at enhancing Canada's clinical trial capacity through its recently launched strategy for patient-oriented research. Once implemented, this strategy will help address key infrastructure and research environment needs that include large-scale clinical trials—which is what we heard today—so that Canadian researchers may better identify and tackle these health gaps.

● (1300)

The Chair: We're running out of time.

Mr. Malo, should we save this until the last day, or can we finish this? Can you very quickly give me your ideas?

[*Translation*]

Mr. Luc Malo: Yes, I can be quick.

I just wanted to say that, in 2008, the Québec Court of Appeal ruled on the validity of challenges to the Assisted Human Reproduction Act, deciding that research and clinical trials were not within the federal domain. I will spare you the exact quote, but I would remind you that the court made that ruling and that the matter is now before the Supreme Court of Canada.

Therefore, we will be voting against the fifth recommendation.

[*English*]

The Chair: We're going to vote on the amendment so that it reads:

> That the Committee recommend that the federal government increase support for the entire continuum of stem cell research, from basic science to funding for cell manufacturing, and early phase clinical trials to ensure Canada remains globally competitive.

(Amendment agreed to)

The Chair: Let's vote on the motion as amended.

(Motion as amended agreed to)

The Chair: Thank you so much. We will go on to future business on Thursday.

The meeting is adjourned.

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