

TISSUE EXPERT COMMITTEE: FOR RECOVERY AND PROCESSING, WHAT IS THE BEST BALANCE BETWEEN DOMESTIC AND IMPORTED TISSUE? (DRAFT SOLUTION DESIGN PAPER)

CONTENTS

1. Scope	3
2. Current State	4
A. Current State.....	4
B. Current Community Thinking	6
C. Other Models.....	7
3. Analysis	9
A. Analysis Approach	9
B. Analysis Findings	9
4. Options and Considerations	10
A. Options.....	10
B. Considerations	13
Appendix A	14
Appendix B	15

1. Scope

FOR RECOVERY AND PROCESSING, WHAT IS THE BEST BALANCE BETWEEN DOMESTIC AND IMPORTED TISSUE?

This document will review the current state, data, and options in regards to domestic and international sourcing and processing of tissue. It will also examine the related risks associated with the options. The scope includes the following tissue types: skin, cardiac, eye, musculoskeletal, and dental.

This document will not examine options in mechanisms for achieving different states of balance. Nor will it discuss how to ensure alignment between supply and demand in practice or safety matters typically in the purview of a good quality management program. These topics will be discussed in separate papers.

2. Current State

A. Current State

A variety of tissue products are used in Canada each year to save lives (e.g. heart valves), to improve quality of life (e.g. corneas, musculoskeletal grafts) and to improve surgery outcomes (e.g. demineralized bone matrix). Tissue grafts and specialized bone products are available through a number of channels:

- Tissue banks recover tissue and process locally or send to another Canadian or American tissue bank for processing. Grafts are made available to end-users, either free of charge or on a cost-recovery basis. Distribution can be restricted to the affiliated hospital, or can expand to hospitals in other provinces.
- End-users can order tissue grafts directly from foreign tissue banks, or indirectly through local distributors.
- Hospital tissue banks, blood banks, and health authorities can also act as a local distributor for imported tissue.

Generally, provincial governments, either through medicare or through a hospital's or tissue bank's budget, pay for tissue grafts used in hospitals for medical procedures. Tissue products used for dental procedures are generally paid for through private insurance or by patients.

While the actual amount of tissue imported into Canada is unknown, it has been estimated that imports account for over 80% of the tissue products used by Canadian patients¹. The amount of importation varies depending on tissue type (Recent estimates are provided in Table 1). In spite of the current availability of tissue product from international markets, there are certain tissues types that consistently are in short supply and for which wait lists exist. These products include heart valves, skin, corneas, and tendons.

¹ *Demand for Human Allograft Tissue in Canada: Integrating Dental Industry Demand, Final Report*, Canadian Council for Donation and Transplantation and Canadian Institute for Health Information, September 2003

Table 1: Summary of Estimated Canadian Supply and Demand²

	Number of Allografts				Canadian Supply (%)
	Canadian Supply	Estimated Surgical Demand	Estimated Dental Demand	Total Estimated Demand	
Corneas	3,577	4,001	0	4,001	89%
Bone	5,248	33,476	116	33,592	16%
Tendons	764	2,131	0	2,131	36%
Soft Tissue	224	1,637	4,833	6,470	3%
Cardiovascular	231	1,122	0	1,122	21%
Skin	654	1,775	8,073	9,848	7%
Sub-Total	10,698	44,142	13,022	57,164	19%
Demineralized and Mineralized Bone Matrix	0	16,293	58,688	74,981	0%
Total	10,698	60,435	71,710	132,145	14%

Security of Supply

The current dependency upon imported tissue product presents risks that could have significant impacts on the health of Canadian patients:

- **Safety**

While tissue allografts are generally safe, there have been intentional and unintentional breaches in regulations and standards, resulting in disease transmissions and death. Recalls can affect a large number of recipients, as a tissue donor can provide over 80 allografts. Appendix 1 describes several instances of serious incidents which have affected Canadians. Both domestic and foreign suppliers and distributors are required to register with Health Canada and confirm compliance to Canadian regulations. Health Canada will begin auditing domestic tissue banks in the fall of 2009, but have yet to announce audits for any foreign source establishments (see Appendix 2 for list of registered establishments). Without auditing to ensure that source establishments are complying with Health Canada regulations, there may be a risk in ensuring that recalls, withdrawals, and traceability requirements are fulfilled.

² Data, with the exception of Canadian supply data, was taken from *Table 40 Summary of extrapolated predicted demand versus known supply across ranges (medium range), Demand for Human Allograft Tissue in Canada: Integrating Dental Industry Demand, Final Report September 2003.* (Canadian Council for Donation and Transplantation, Canadian Institute for Health Information)

Canadian supply data was estimated from the 2008 Canadian Blood Services Tissue Survey, 2007/08 Hema-Quebec data, and historic 2002 data from Quebec eye banks and non respondent bone banks.

- **Availability**

Currently, sufficient tissue supply exists internationally to meet Canadian requirements. However, Canadians have few alternatives with which to deal with the disruption of this supply, should shortages occur due to:

- **Increased demand:** Utilization in the United States is projected to increase by 5.4% from 2008 to 2013³ and demand could potentially exceed supply. As well, in case of natural or manmade disasters, it may be difficult to quickly obtain the amount and type of tissue graft required, e.g. allograft skin to treat burns from wildfires or manufacturing facility fires.
- **Decreased supply:** An epidemic could decrease the number of tissue donors or result in restrictions at international borders, making importation difficult and expensive.

- **Cost**

The volatility of the exchange rate makes it difficult to plan financial budgets for the importations of tissue product. An increase in the rate can significantly impact a budget. As experienced by Canadian Blood Services with the importation of plasma protein products, an increase in the rate from 1.09 to 1.30 in a two-month time frame resulted in a \$41 million increase to the budget.

B. Current Community Thinking

National Consultation: Organ and Tissue Donation and Transplantation (Canadian Blood Services) September 22-24, 2008, Gatineau, Quebec

Over 130 experts were brought together to discuss the following question:

"Given the need for national, integrated services in tissue donation and transplantation, how do we establish the system that best meets the needs of Canadian patients?"

The following were recommendations related to self-sufficiency:

- Develop an integrated national strategy and targets for sufficiency
- Focus on developing tissue specific targets and objectives
 - Target hard-to-obtain tissues that are not difficult to procure and process
 - Build on the practice (East Coast and Manitoba) of having donor tissue exported for processing and then returned to Canada for use
 - Look at converting excess domestic tissues into structured allografts

³ BCC Research (2008) Market Research Report – Organ and Tissue Transplantation and Alternatives, BCC Research www.bccresearch.com

- Target tissues locally produced at better cost with equal efficacy than other sources
- End users need to be engaged as part of the process in order to ensure their needs are met

**Enhancing Tissue Banking in Canada, Phase I: Sustainability
(Canadian Council for Donation and Transplantation, Task Force on Enhancing
Tissue Banking)**

November 23-24, 2006, Montreal, Quebec

30 experts from across Canada were brought together to discuss key issues related to sustainability in tissue banking. The following were recommendations related to self-sufficiency and security of supply:

- Define reasonable and appropriate self-sufficiency for Canada (in collaboration with end users)
- Define a sustainable funding model(s) in collaboration with end users
- Develop a national processing strategy, taking into account regional variations
- Develop a national strategy for managing the long-term demand and processing of advanced tissue products, and assign oversight responsibility (accountability)
- Establish a mechanism for the bulk purchase of external products, starting regionally and then moving nationally

C. Other Models

United States

The U.S. tissue industry, based on a manufacturing business model, is a mix of for-profit and not-for-profit tissue banks that generate revenue from tissue product they provide to customers. These tissue banks provide basic and specialized, sophisticated product for the American and international market. Market and business factors dictate the level of American sufficiency. Because of the surplus of tissue that is currently being experienced, American companies are exporting product to over 40 countries. American tissue banks also have the option of procuring tissue from donors from other countries.

National Health Service Blood and Tissue (NHSBT) Tissue Services

Like Canada, the UK has a mix of domestic tissue banks that recover, process, import, and distribute tissue products. There are also distributors that sell imported tissue product, with sales forces within hospitals. While there are approximately 150 tissue establishments in the UK, NHSBT Tissue Services is the UK's major provider of tissue. They provide 100% of UK's skin requirements, 70-80% of basic bone, and are the primary provider of tendons. While the extent of importation is unknown, there are some decisions that have been made based on safety risk. For example, because of the

potential prevalence of vCJD in the population, there is a preference to import dura mater, rather than produce it internally.

Canadian Blood Services

In the Memorandum of Understanding established for Canadian Blood Services by the Deputy Ministers of Health, a list of principles was included to provide direction to the organization. One of those principles was that national self-sufficiency in blood and plasma collections should be encouraged. Canadian Blood Services has managed to achieve this goal for blood and blood components; however, it has not been able to become self-sufficient in plasma protein products, because of the large plasma volumes required, as well as the cost. In 2004, Canadian Blood Services revised its strategic plan with respect to plasma protein products. Canadian sufficiency in plasma products was analyzed based on a risk management framework, balancing cost, benefit, and risks.

Outcomes of this analysis included:

- Target sufficiency levels should be based on the risk of mitigating supply disruption for IVIG
- Self-sufficiency, defined as 100% of IVIG needs met from Canadian plasma, would be hugely expensive and require a significant program expansion from current levels, therefore was not practical
- The goal should be to ensure a three month supply in the event of a supply disruption. Based on target inventory levels, critical inventory levels, reasonable time to respond to supply disruption, cost and level of albumin sufficiency, the recommended IVIG sufficiency target was established at 40%

Héma-Québec

In Québec, tissue banking is moving towards a centralized provincial model, for both tissue processing and tissue purchasing and distribution. Currently, Héma-Québec produces approximately 15% of the province's tissue needs.⁴

⁴ Canadian Blood Services site visit to Hema-Quebec, February 21, 2008

3. Analysis

A. Analysis Approach

Strengths and weaknesses of proposed options were evaluated, based on risk and benefit. Note that insufficient financial data was available to evaluate options with respect to cost increases or savings. In evaluation of the options, the following assumptions were made:

- Security of supply, including mitigation of supply disruption, is required to ensure the health and safety of Canadians
- Canada has enough potential tissue donors to supply all its tissue requirements
- Choice of product must be maintained for patients and physician stakeholders
- In the short and medium term (next 20 years) developing technologies will not generate products that will replace the requirement for tissues

B. Analysis Findings

As mentioned above, data was difficult to obtain and is lacking in many areas. There are no accurate supply and demand forecasts. Consolidated, complete national financial data is non-existent. Current and potential capacity of Canadian tissue banks is unknown. More detailed information is required on international models to compare against. Further data collection and analysis to fill in these gaps is needed to determine the financial impacts and feasibility of each option.

4. Options and Considerations

A. Options

a) Status Quo

Individual tissue banks and end-users continue to procure, process, source, and supply tissue product independently with little to no coordination. Imported product continues to account for a significant portion of total volume of allografts used by Canadian patients.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Diverse supply base, wide range of choice in products for end-users, including latest innovative products ▪ Access to an open market that is responsive to dramatic changes in end-user product preferences ▪ Permits purchasing from alternate suppliers in the event of a problem with any one supplier 	<ul style="list-style-type: none"> ▪ Uncoordinated response to supply disruption or supply shortages at national level ▪ No long-term contingency planning or mitigation at national level ▪ Slow and uncoordinated system response to emerging safety issues ▪ Not optimizing cost savings nationally through leveraging purchasing power ▪ Continued risks related to safety, supply and costs
Barriers	
<ul style="list-style-type: none"> ▪ None 	

b) Move to 100% self sufficiency in tissue products

All tissue products used in Canada are derived from Canadian donors, and processed and distributed by Canadian tissue banks, including advanced tissue graft (e.g. demineralized bone matrix).

**TISSUE EXPERT COMMITTEE:
FOR RECOVERY AND PROCESSING, WHAT IS THE
BEST BALANCE BETWEEN DOMESTIC AND IMPORTED
TISSUE?**

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Complete control of donor selection criteria and testing, and mechanisms that ensure its application ▪ Provides more opportunities for Canadians who wish to donate ▪ Will strengthen tissue banking industry in Canada, increasing Canadian jobs and expertise ▪ Potential to generate profits, as surplus inventory could be sold internationally 	<ul style="list-style-type: none"> ▪ May jeopardize ability to meet product demand for certain types of tissue ▪ May limit product diversity, especially for advanced tissue graft (e.g. demineralized bone matrix) and innovative new products ▪ Slow response to disruptions or persistent shortages in Canadian supply as on-going relationships with external suppliers would be diminished or non-existent
Barriers	
<ul style="list-style-type: none"> ▪ Canada currently lacks capacity, expertise, and infrastructure to be totally self-sufficient. It would require time and investment to meet full demand. ▪ Resistance to lack of access to imported products from some end-users 	

c) Move to 100% importation of tissue product

All Canadian tissue requirements are supplied from international sources. No tissue is recovered from Canadian donors. Sourcing, purchasing, and distribution of tissue product are coordinated nationally. No processing is performed in Canadian tissue banks

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ No need for additional investment in tissue recovery and processing ▪ Diverse supply base, wide range of choice in products for end-users, including latest innovative products ▪ Access to an open market that is responsive to dramatic changes in end-user product preferences ▪ Potential to optimize cost savings nationally through leveraging purchasing power ▪ Permits purchasing from alternate suppliers in the event of a problem 	<ul style="list-style-type: none"> ▪ Little control of donor selection criteria and testing, and mechanisms that ensure its application ▪ Does not promote tissue banking industry in Canada – jobs and expertise are lost to other countries ▪ Does not allow Canadians the opportunity to donate tissue

**TISSUE EXPERT COMMITTEE:
FOR RECOVERY AND PROCESSING, WHAT IS THE
BEST BALANCE BETWEEN DOMESTIC AND IMPORTED
TISSUE?**

<p>with current sources of supply</p> <ul style="list-style-type: none"> ▪ National coordination ensures consistent management of risks associated with supply disruption and emerging safety issues 	
Barriers	
<ul style="list-style-type: none"> ▪ Potential resistance from tissue programs operating in Canada, from governments who have tissue programs, and from the Canadian public 	

d) Move to 100% self-sufficiency in tissue donation

Canadian donors provide 100% of tissue product used in Canada. Tissue is processed both by Canadian tissue banks and American processors, through national, coordinated contract agreements, depending on the capacity of Canadian tissue banks, the type of tissue, and the complexity of processing required.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ More control of donor selection criteria and testing, and mechanisms that ensure its application ▪ Contingency available (purchase internationally) in the event of donation shortages ▪ Provides more opportunities for Canadians who wish to donate 	<ul style="list-style-type: none"> ▪ May jeopardize ability to meet product demand for certain types of tissue ▪ May limit product diversity, especially for advanced tissue graft (e.g. demineralized bone matrix) and innovative new products
Barriers	
<ul style="list-style-type: none"> ▪ Will need to improve and invest in tissue donation programs across the country ▪ Will need to establish/expand relationships and agreements with international tissue processors 	

e) Increase number of Canadian donors, and Canadian processing capacity and capability

Increase the number of tissue donations from Canadian donors; increase the capacity of Canadian tissue banks to process Canadian tissue, and increase the types of products that are being produced.

Continue to import tissue products, as required, based on a risk analysis considering costing and possible disruption of supply.

Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Access to an open market that provides a wide range of choice and is responsive to dramatic changes in end-user product preferences, including latest innovative products ▪ Permits purchasing from alternate suppliers in the event of a problem with any one supplier or in the event of a donor shortage ▪ Will strengthen tissue banking industry in Canada, increasing Canadian jobs and expertise ▪ Potential to generate profits, as surplus inventory could be sold internationally ▪ Allows more Canadians the opportunity to donate 	<ul style="list-style-type: none"> ▪ None identified
Barriers	
<ul style="list-style-type: none"> ▪ Investment and time will be required to increase donation opportunities and processing capacity and capabilities ▪ National coordination would be required to proper production and inventory management 	

B. Considerations

- Different strategies can be considered for different tissue products, e.g. 100% self-sufficiency in cornea and skin may be desirable and feasible while, in the short term, continuing to import 100% of specialized bone material may be necessary.

Appendix A

Tissue Recalls in Canada

Company / Product	Year	Description
Tutoplast Dura	2002	<ul style="list-style-type: none"> In April 2002, Health Canada suspended the license for Tutoplast Dura and monitored a recall of the product. This product, processed in Germany, was available in Canada between 1982 and 2002. In 2003, a case of classical CJD was confirmed in a Canadian patient who received a graft in 1992.
Cryolife, Inc. (US)	2002	<ul style="list-style-type: none"> In August, 2002, Health Canada issued notice of a risk of fungal and bacterial contamination of soft tissues for implantation processed and sold by CryoLife Inc. (Georgia). The FDA also initiated a recall due to infections having been reported with these implants and the occurrence of one confirmed death following knee allograft surgery. No cases of death or infection were reported in Canada.
B.C. Ear Bank	2003	<ul style="list-style-type: none"> In February 2003, Health Canada began investigating the B.C. Ear Bank at St. Paul's Hospital, Vancouver. Their investigation revealed donor suitability and tissue processing documentation was incomplete. All unused tissue was recalled and patients who were the recipients of bones or tissues supplied by the B.C. Ear Bank were advised to be tested for HIV, Hepatitis B and Hepatitis C. Thousands of patients across North America were affected, as the B.C. Ear Bank supplied tissue and bone to 87 hospitals and physicians across Canada and in two cities in the United States.
Biomedical Tissue Services Limited (BTS) (US)	2005	<ul style="list-style-type: none"> In October of 2005, Health Canada advised Canadians of a voluntary recall in the United States of tissue products used in implants and grafts that were imported into Canada. Tissues recovered by BTS were acquired without legal consent or proper screening. Funeral home operators accepted money from the company in exchange for ignoring forged death certificates and consent forms. BTS sold these tissues to several companies, including those that exported tissue to Canada. These companies initiated voluntary recalls for all products that were produced using tissues from BTS. About 10,000 people received product from BTS. Approximately 300 tissue products were imported into Canada, though no adverse effects have been reported from Canadian patients.
Donor Referral Services (DRS) (US)	2006	<ul style="list-style-type: none"> In 2006 DRS, located in Raleigh, NC, was ordered by the FDA to cease all manufacturing operations because of serious deficiencies in its donor screening and record keeping practices. The owner allegedly used a local consumer group to procure material from a local funeral home's unsterilized embalming room. The companies that received their tissues initiated voluntary recalls involving 2,400 allografts. Six implicated products were imported into Canada. None were transplanted, all were returned to the US.

Appendix B

List of Tissue Establishments Registered with Health Canada⁵

Certificate Holder Name	City	Province/State
Alabama Eye Bank	Birmingham	Alabama
Alberta Cord Blood Bank	Edmonton	Alberta
Lions Eye Bank (Alberta) Society	Calgary	Alberta
Southern Alberta Organ Donation Program	Calgary	Alberta
Southern Alberta Tissue Program	Calgary	Alberta
Capital Health - Clinical Islet Lab	Edmonton	Alberta
Capital Health - Human Organ Procurement & Exchange (HOPE) Program	Edmonton	Alberta
Comprehensive Tissue Centre	Edmonton	Alberta
International Biologics	Scottsdale	Arizona
Eye Bank of British Columbia	Vancouver	British Columbia
Fraser Health Tissue Bank	Surrey	British Columbia
Vancouver Island Health Authority Tissue Bank	Victoria	British Columbia
British Columbia Tissue Bank	Vancouver	British Columbia
BC Transplant Society	Vancouver	British Columbia
BC Transplant Society / Ike Barber Human Islet Transplant Laboratory	Vancouver	British Columbia
Musculoskeletal Transplant Foundation	Costa Mesa	California
Community Tissue Services - California	Fresno	California
San Diego Eye Bank	San Diego	California
IsoTis OrthoBiologics, Inc.	Irvine	California
AlloSource	Centennial	Colorado
Rocky Mountain Lions Eye Bank	Aurora	Colorado
Rocky Mountain Tissue Bank	Aurora	Colorado
Surgical Tissue Network, Inc. dba Tissue Net	Orlando	Florida
Bio-Tissue, Inc.	Miami	Florida
Tutogen Medical, Inc.	Alachua	Florida
Tutogen Medical, GmbH	Alachua	Florida
Regeneration Technologies, Inc. (RTI)	Alachua	Florida

⁵ As of September 2, 2009: <http://www.hc-sc.gc.ca/dhp-mps/compli-conform/info-prod/cell/cto-estab-etab-eng.php>

**TISSUE EXPERT COMMITTEE:
FOR RECOVERY AND PROCESSING, WHAT IS THE
BEST BALANCE BETWEEN DOMESTIC AND IMPORTED
TISSUE?**

Axogen Corporation	Alachua	Florida
Lions Eye Institute for Transplant & Research, Inc.	Tampa	Florida
LifeLink Tissue Bank	Tampa	Florida
CryoLife, Inc.	Kennesaw	Georgia
Community Tissue Services - Indiana	Indianapolis	Indiana
Indiana Lions Eye & Tissue Transplant Bank	Indianapolis	Indiana
Iowa Lions Eye Bank	Iowa City	Iowa
Lions Eye Bank of Lexington	Lexington	Kentucky
Transplant Manitoba - Gift of Life Program	Winnipeg	Manitoba
Lions Eye Bank of Manitoba and NW Ontario	Winnipeg	Manitoba
Tissue Bank Manitoba	Winnipeg	Manitoba
Midwest Eye-Banks	Ann Arbor	Michigan
Minnesota Lions Eye Bank	St. Paul	Minnesota
Heartland Lions Eye Bank	St. Louis	Missouri
Heartland Lions Eye Bank - Kansas City	Kansas City	Missouri
Bacterin International Inc., Biologics Division	Belgrade	Montana
New Brunswick Eye & Tissue Bank	Saint John	New Brunswick
Dr. Donald MacLellan Tissue Bank	Moncton	New Brunswick
New Brunswick Organ & Tissue Procurement Program	Fredericton	New Brunswick
Musculoskeletal Transplant Foundation	Edison	New Jersey
LifeCell Corporation	Branchburg	New Jersey
Osteotech, Inc.	Eatontown	New Jersey
Rochester Eye & Human Parts Bank, Inc.	Rochester	New York
Organ Procurement & Exchange of NL	St John's	Newfoundland
North Carolina Eye Bank, Inc.	Winston-Salem	North Carolina
Regional Tissue Bank	Halifax	Nova Scotia
Community Tissue Services - Dayton	Dayton	Ohio
Community Tissue Services - Northwest Ohio	Toledo	Ohio
Rubinoff Bone & Tissue Bank, Department of Pathology & Laboratory Medicine, Mount Sinai Hospital	Toronto	Ontario
Hamilton Health Sciences, Stem Cell and Bone Marrow Transplant Program	Hamilton	Ontario
Hospital for Sick Children	Toronto	Ontario
The Eye Bank of Canada (Ontario Division)	Toronto	Ontario
London Health Sciences Centre - Surgical Donor Program	London	Ontario
Labtician Ophthalmics, Inc.	Oakville	Ontario
Trillium Gift of Life Network	Toronto	Ontario
Zimmer Dental Corp.	Mississauga	Ontario

**TISSUE EXPERT COMMITTEE:
FOR RECOVERY AND PROCESSING, WHAT IS THE
BEST BALANCE BETWEEN DOMESTIC AND IMPORTED
TISSUE?**

The Ottawa Hospital - National Capital Region Bone Bank	Ottawa	Ontario
Biohorizons Canada	Markham	Ontario
Lake Superior Centre for Regenerative Medicine (RegenMed)	Thunder Bay	Ontario
Sunnybrook Health Sciences Centre- Blood and Tissue Bank	Toronto	Ontario
Biogenics Inc.	Markham	Ontario
Kingston General Hospital - Live Donor Program (Tissue)	Kingston	Ontario
Surgical Science Systems	Thornhill	Ontario
Wright Medical Technology Canada Ltd	Mississauga	Ontario
Medtronic of Canada Ltd.	Mississauga	Ontario
Hamilton Health Sciences - Bone Bank	Hamilton	Ontario
St. Joseph's Healthcare - bone bank	Hamilton	Ontario
Canada Microsurgical Ltd.	Burlington	Ontario
Maple Leaf Orthopaedics Inc.	Burlington	Ontario
Community Tissue Services - Portland	Portland	Oregon
Lions Eye Bank of Oregon	Portland	Oregon
Banque d'Yeux Nationale Inc.	Quebec	Quebec
Hôpital Hotel-Dieu de Québec (Banque d'os)	Quebec	Quebec
Banque d'Yeux du Québec	Montreal	Quebec
Héma-Québec	Saint-Laurent	Quebec
Citagenix Inc.	Laval	Quebec
Saskatchewan Transplant Program	Saskatoon	Saskatchewan
Lions Eye Bank of Saskatchewan	Saskatoon	Saskatchewan
Regina Qu'Appelle Health Region	Regina	Saskatchewan
LifePoint, Inc.	Charleston	South Carolina
Mid-South Tissue Bank	Memphis	Tennessee
The National Eye Bank Center / Tissue Banks International	Memphis	Tennessee
Community Tissue Services - Texas	Fort Worth	Texas
Transplant Services Center, UT Southwestern Medical Center	Dallas	Texas
Utah Lions Eye Bank	Salt Lake City	Utah
LifeNet Health	Virginia Beach	Virginia
Lions Medical Eye Bank & Research Center of Eastern Virginia, Inc.	Norfolk	Virginia
Skin and Wound Allograft Institute	Virginia Beach	Virginia
Puget Sound Blood Center, dba Northwest Tissue Services	Seattle	Washington
Sightlife	Seattle	Washington
TBF Genie Tissulaire	Mions	