

**SHARE YOUR HEALTH
AND VITALITY WITH
SOMEONE IN NEED**



OneMatch Network Overview and Stem Cell/Bone Marrow Transplantation

**Blood Matters
2010- 10-29**

Sue Smith, Executive Director

one  **match**
stem cell and marrow network


Canadian Blood Services
it's in you to give

Declaration

- The presenter does not have any involvement with the industry that may be perceived as potentially influencing the presentation of the educational material contained within.

Objectives

- 1) To provide an overview of the OneMatch program
- 2) To review the matching process of donor and patient
- 3) To provide an overview of Stem Cell/Bone Marrow Transplantation



OneMatch Overview

- Recruits and maintains volunteer unrelated donor information
- Searches for matched donors for patients
 - Ensures donors are healthy and able to donate
 - Coordinates the collection of stem cells in Canada and around the world



OneMatch Fast Facts – October 2010

- Searchable donors: **264,876**
- Canadian Transplant Centres: **18**
- Canadian Collection Centres: **10**
- International Registries: **64**
 - Over **14,531,945** registrants worldwide
- International Cord Blood Banks: **44**
 - Over **443,840** umbilical cord blood units



Francis,
OneMatch Registrant

Stem Cell/Bone Marrow Transplant Indications

Adults and children with life threatening diseases, such as:

- leukemia
- aplastic anemia
- immune dysfunctions
- genetic disorders



Danny,
OneMatch Registrant

Why Unrelated Donors?

- HLA Typing: inherited genetic markers
 - Only 30% of patients have a match in family
 - Unrelated donors are often from the same ethnic group as the patient



Leila,
OneMatch Registrant
& whole blood donor

How Are Stem Cells Collected?

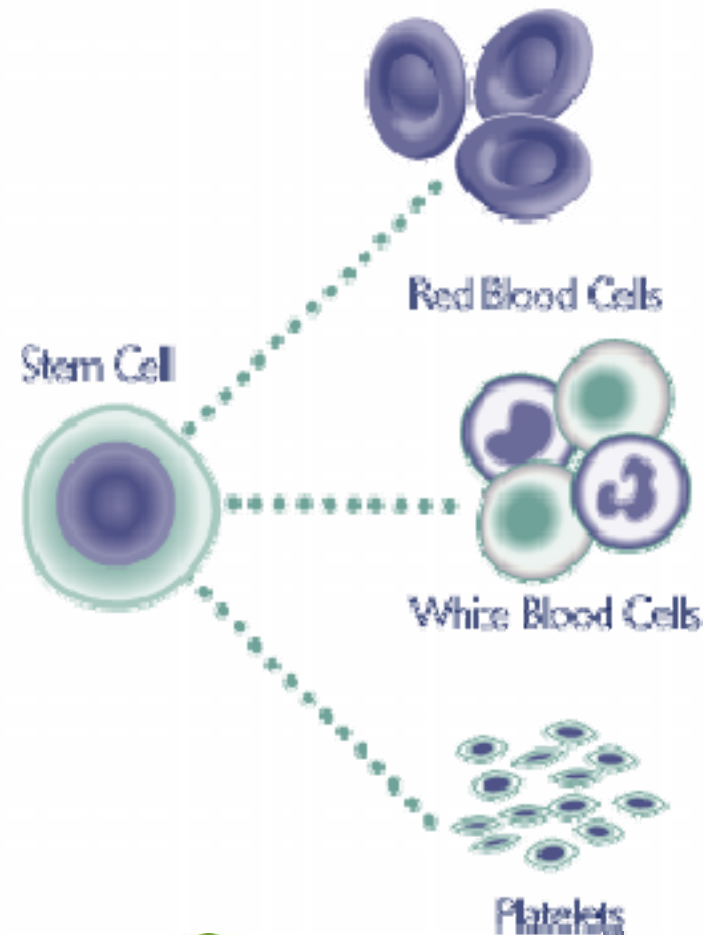
- Marrow - surgical procedure in hospital
- Peripheral Blood - injections, then apheresis
 - Umbilical Cord blood is obtained at birth, stored and frozen in a “bank”
 - Donor’s marrow replaced in 4-6 weeks



Mike,
Stem cell & whole
blood donor

Hematopoietic Stem Cells

- Hematopoietic stem cells are “not yet mature” (undifferentiated) cells that can divide and develop into any one of the three main types of cells found in the blood:
- [Red blood cells](#), which carry energy-giving oxygen from the lungs to the entire body;
- [White blood cells](#), important immune cells that play an important role in fighting bacteria and viruses that cause infection; and
- [Platelets](#), which help blood to clot when bleeding occurs.



How Are Donors and Patients Matched?

- Stem cell matches are determined according to DNA markers on white blood cells called Human Leukocyte Antigens (HLA).
- A buccal (cheek) swab sample is collected and tested for six of these antigens (HLA-A, HLA-B and HLA-DRB1).

The Matching Process

Diagram of HLA Inheritance

| Mom | |
|------|------|
| A3 | A32 |
| B35 | B27 |
| DR13 | DR14 |

| Dad | |
|------|-----|
| A2 | A30 |
| B7 | B44 |
| DR15 | DR4 |

| Child #1 | |
|----------|------|
| A3 | A2 |
| B35 | B7 |
| DR13 | DR15 |

| Child #2 | |
|----------|-----|
| A3 | A30 |
| B35 | B44 |
| DR13 | DR4 |

| Child #3 | |
|----------|------|
| A32 | A2 |
| B27 | B7 |
| DR14 | DR15 |

| Child #4 | |
|----------|-----|
| A32 | A30 |
| B27 | B44 |
| DR14 | DR4 |

Is HLA the only factor in matching patients and donors?

- Other factors:
 - ABO blood group
 - CMV (cytomegalovirus) status
 - Donor's age
 - Donor's sex
 - Donor's history of antigen exposure (previous blood transplants, pregnancies, etc.)

How To Become a Donor?

- You must be between ages 17- 50
- Must be healthy, and committed to all patients
- Register at www.onematch.ca
- Buccal Swab collection at enrolment
- You're registered until 60th birthday
- Confirmatory Testing: potential match
- Workup: you're the “one match” to save a life

Three Matching Scenarios

- **Canadian Donor for Canadian Patient**



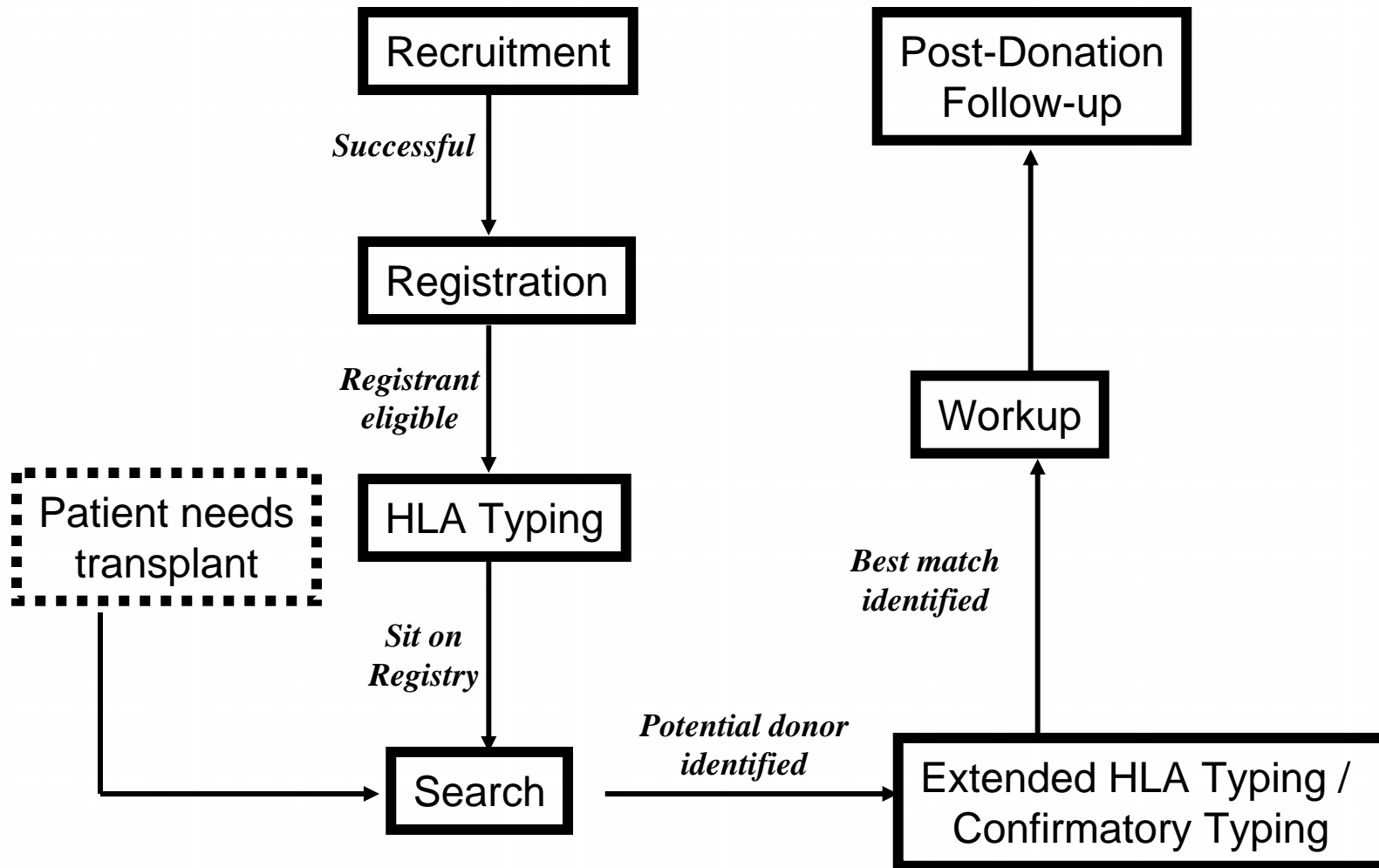
- **Canadian Donor for International Patient**



- **International Donor for Canadian Patient**

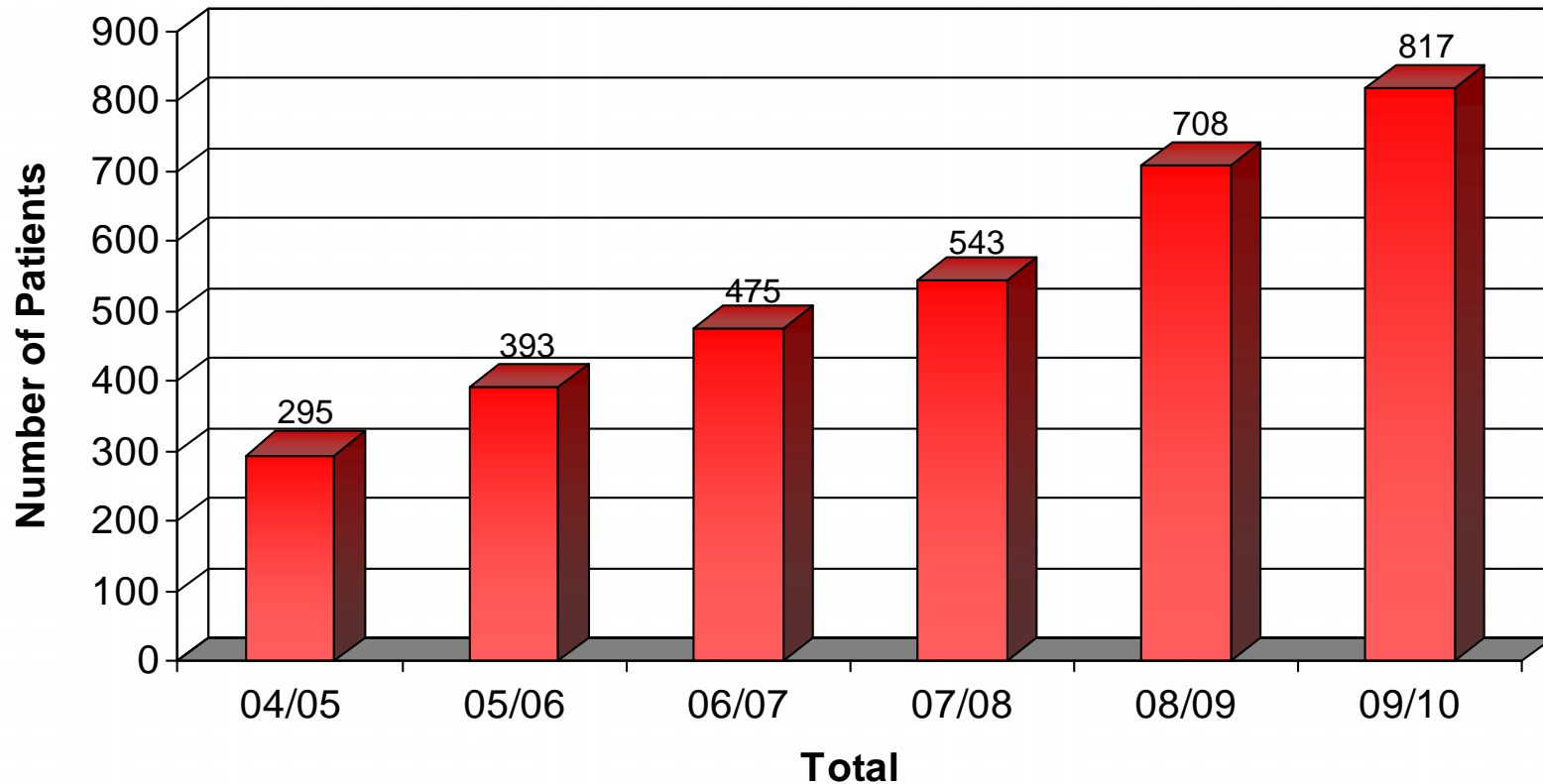


OneMatch Donor Matching Process

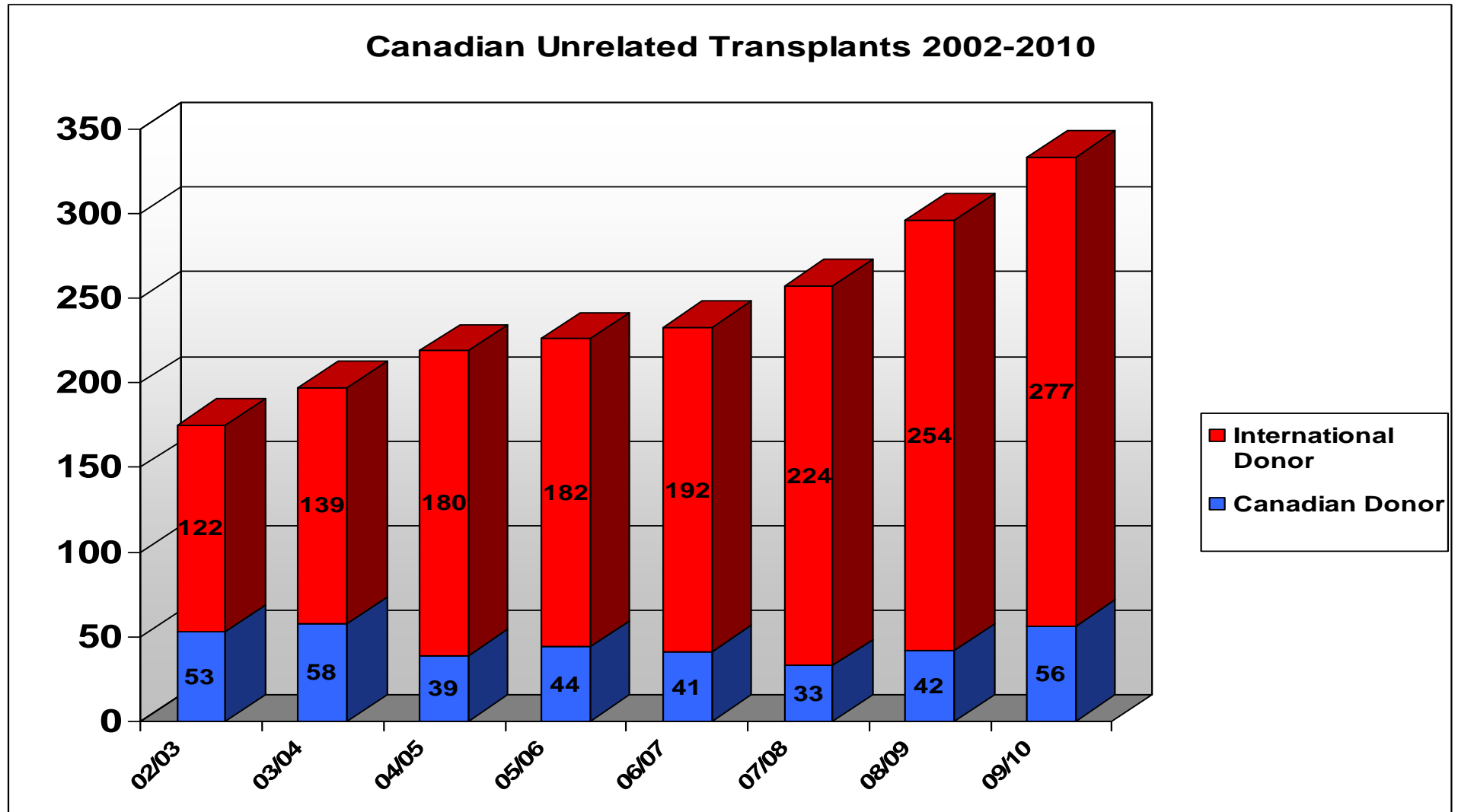


Canadian Patient Searches - The Demand And Need Continues to Increase

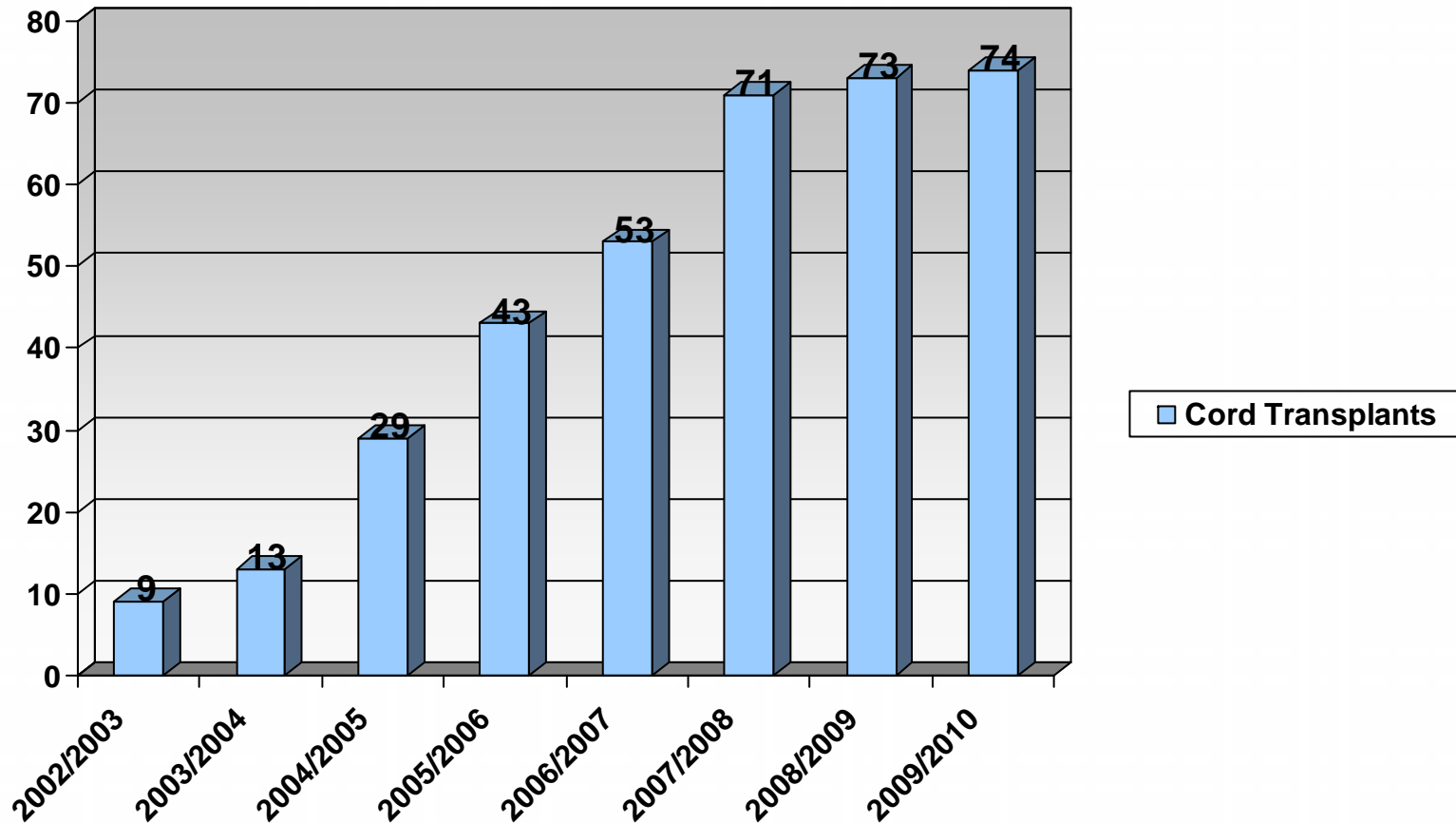
All patient ethnic origins



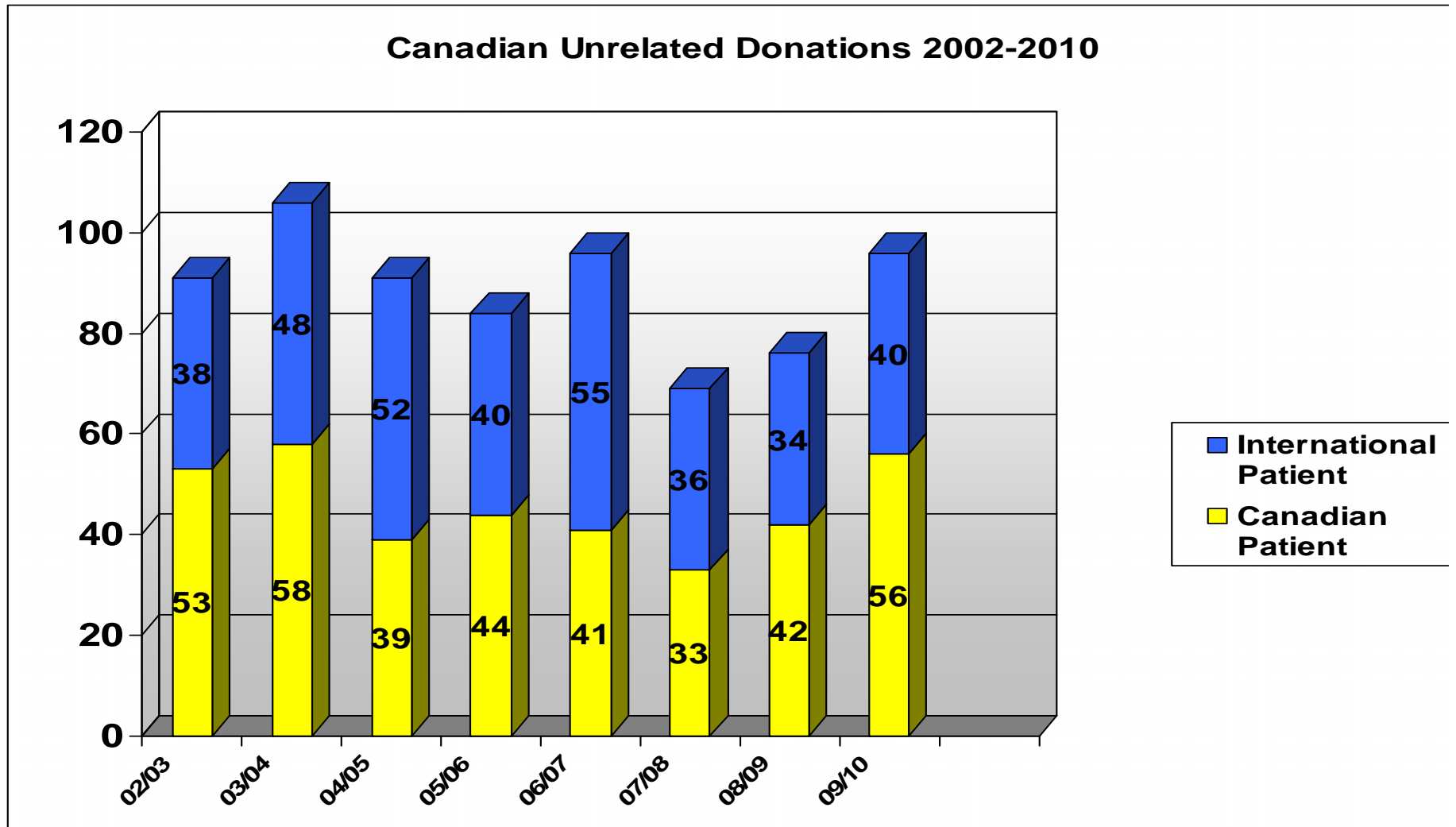
Canadian Patients Transplanted



Canadian Patients Transplanted With Cord Blood Stem Cells

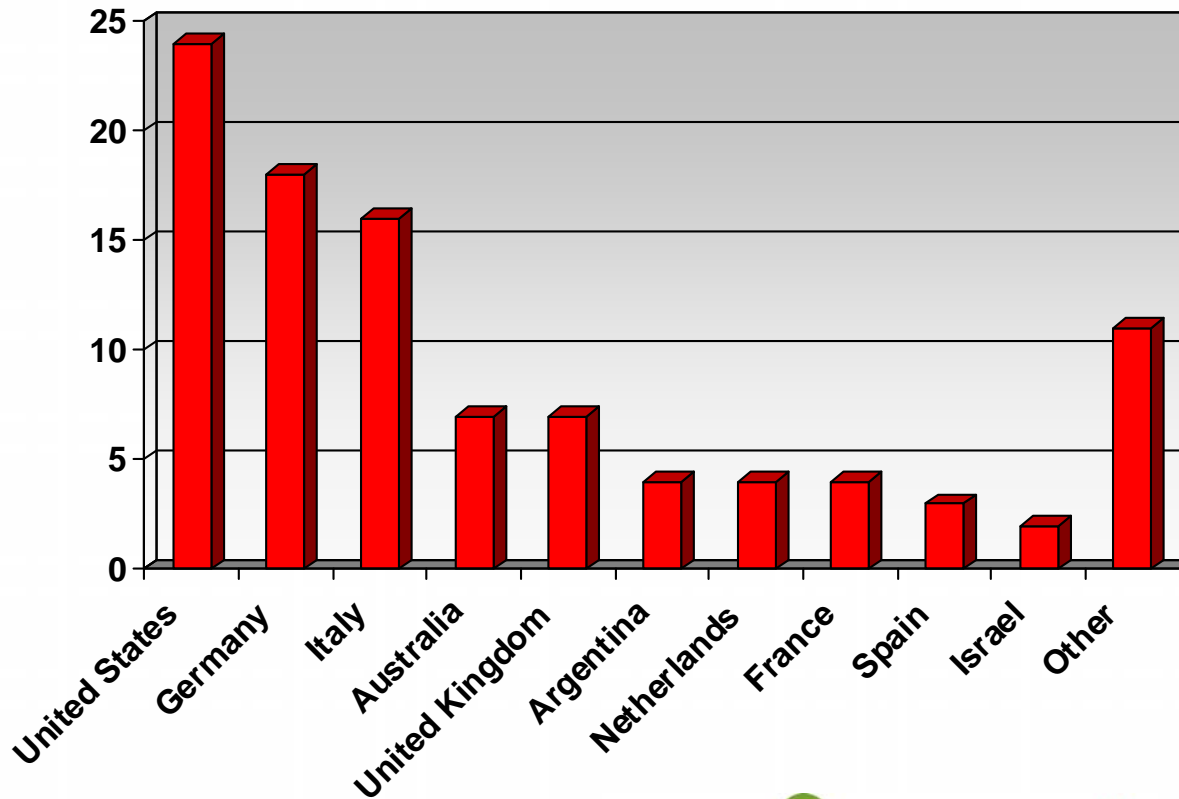


Canadian Unrelated Donors



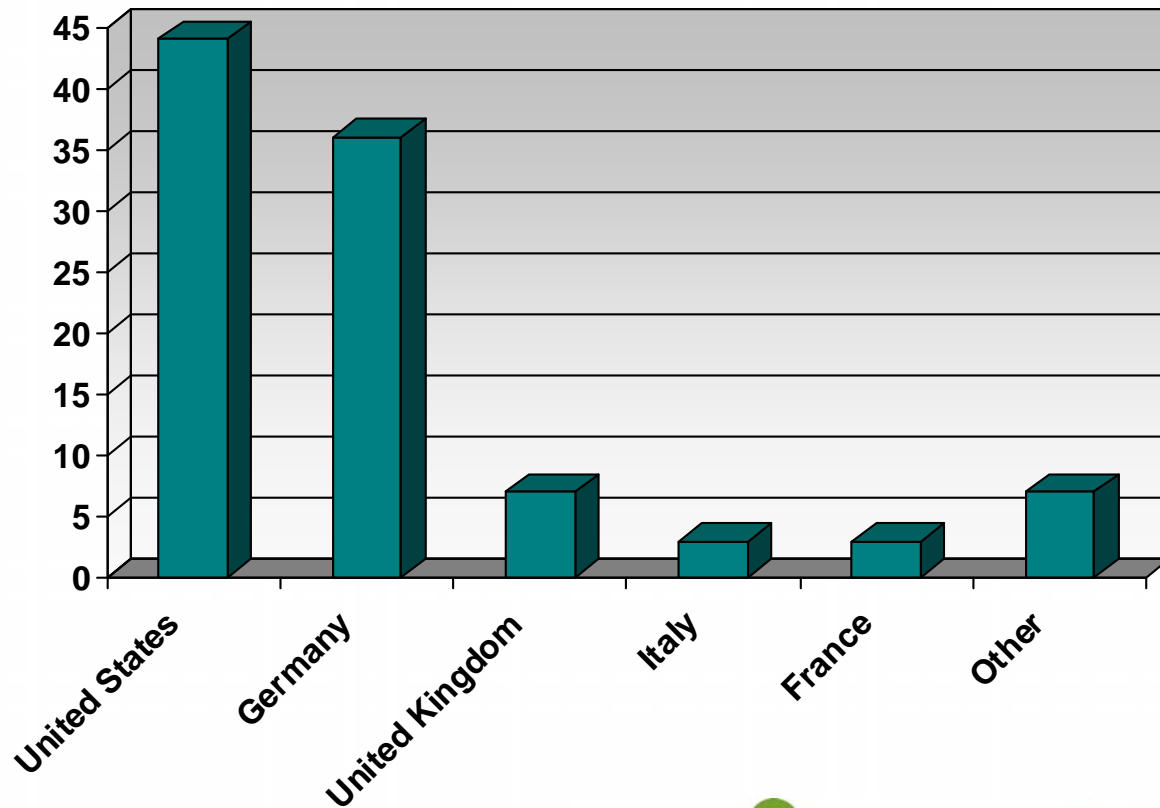
Canadian Stem Cells To International

Percentage of Canadian Exports

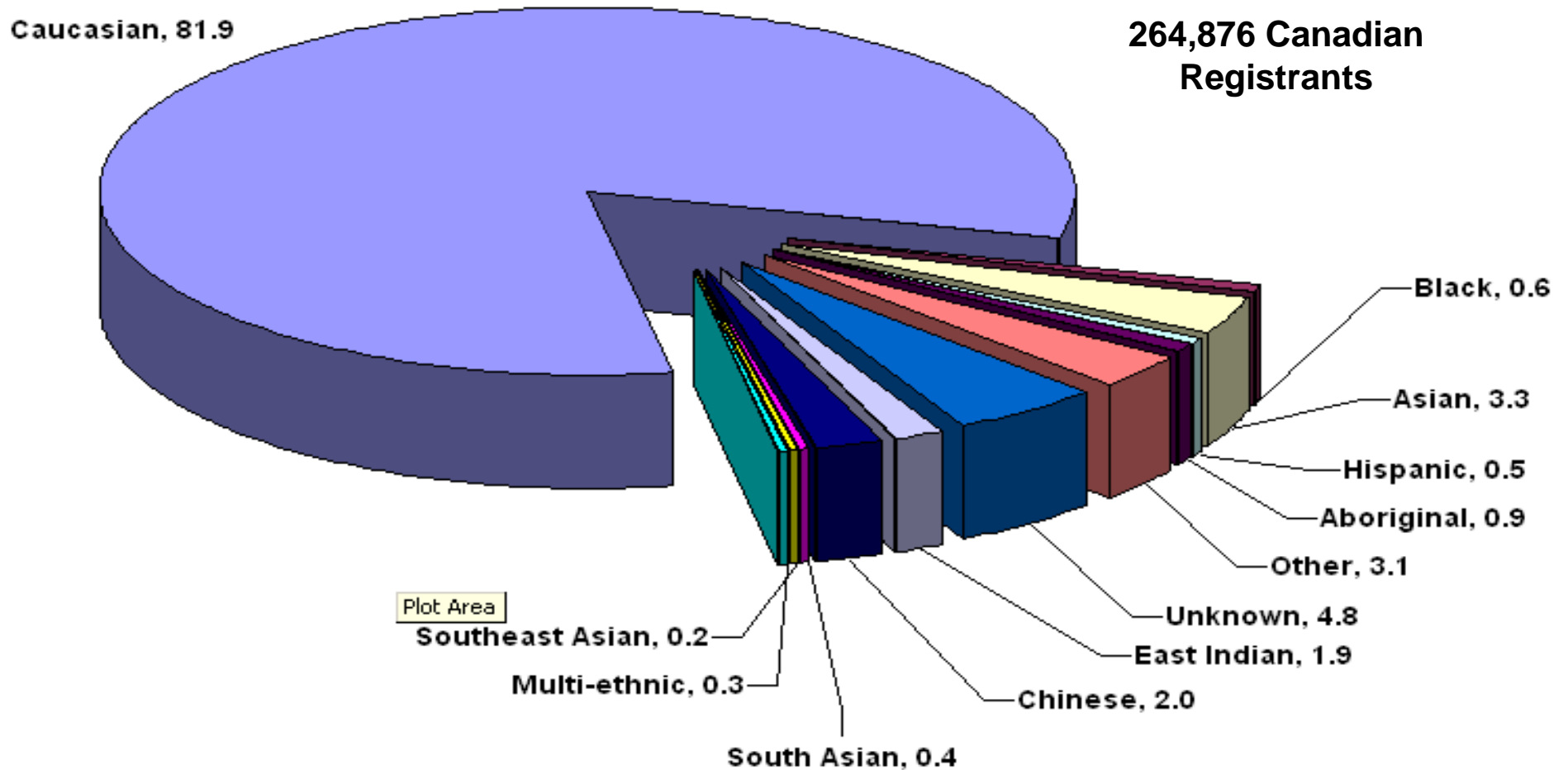


International Stem Cells To Canada

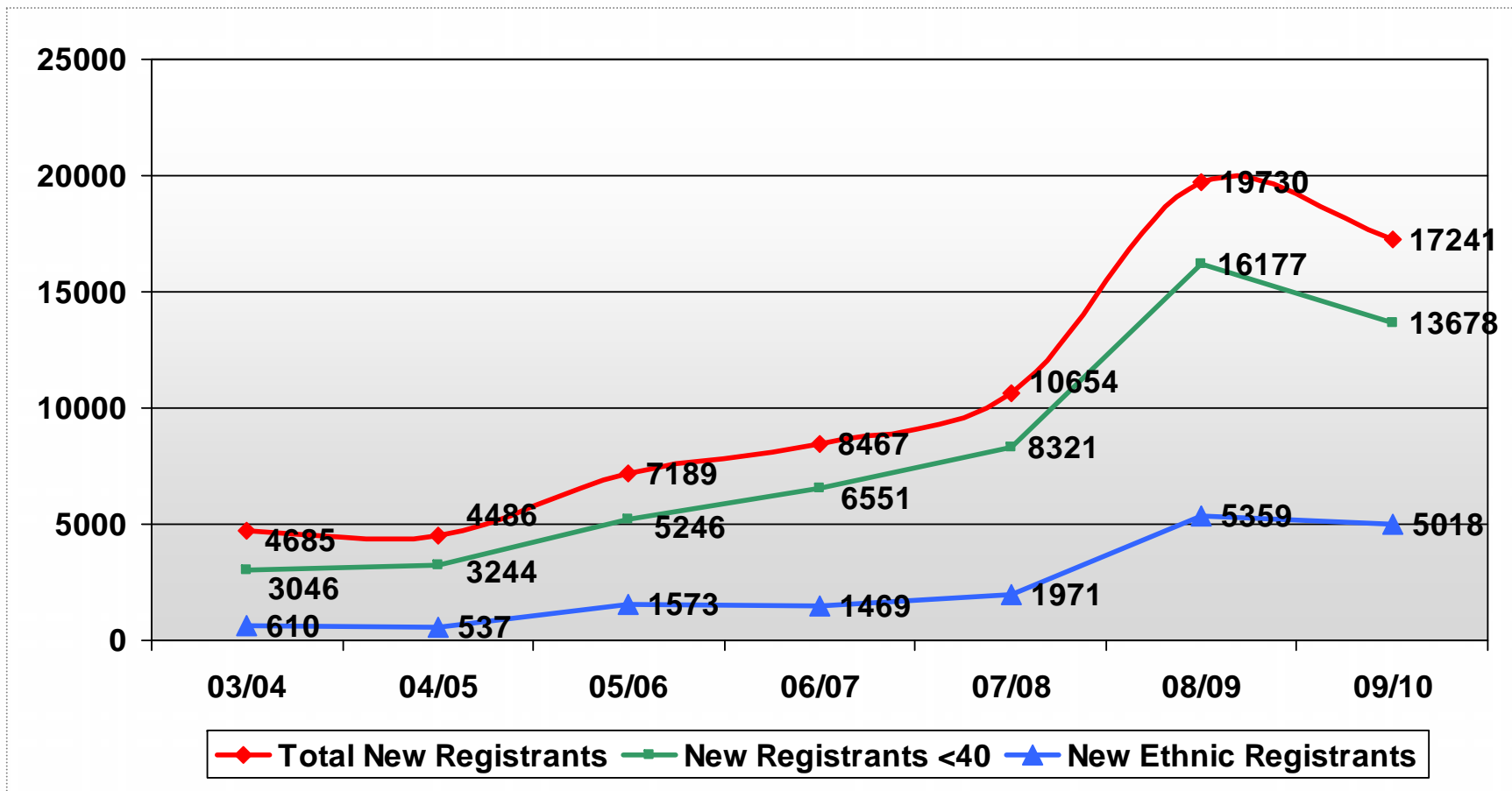
Percentage of Stem Cells Imported



Ethnic Composition of OneMatch Network



OneMatch Recruitment – Last 6 Years (New HLA Typed Registrants Added)



Patient & Transplant Liaison Specialist (Halifax, Toronto, Vancouver)

- Provide information on stem cell transplants to patient, their friends, and family members
- Provide generic information on search process, specifics are for medical team
- Help organise education and swabbing events to promote registration, particularly for non-Caucasian registrants
- Strengthens messages patients receive from TC



Questions?

Thank you!

sue.smith@blood.ca