

Save a Life - Be a Bone Marrow Donor

Jay Smallwood
Director's Lunch

28 July 2025

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Fun Fact! #0

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Fun Fact! #1

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Fun Fact! #2

Before astronomy, my training was in mathematics...

Major Theorem

Theorem

Registering to be a bone marrow donor through Stem Cell Donors Australia's at-home cheek swab will:

- ▶ *potentially save a life,*
- ▶ *be easy & (mostly) painless, and*
- ▶ *make you feel warm & fuzzy!*

Proof.

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At end of presentation.

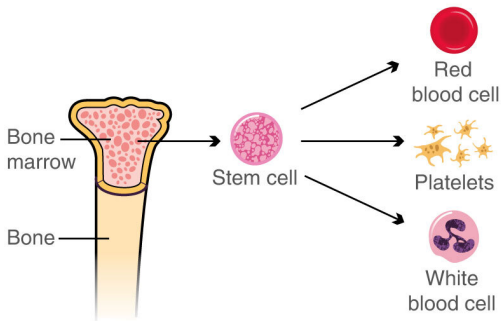


What is bone marrow? What are stem cells?

Definition

- ▶ **Bone marrow** is the soft part in the middle of your bones.
- ▶ **Stem cells** are cells within your bone marrow that create blood cells.

Figure: Credit: Macmillan Cancer Center UK



What is a bone marrow transplant?

Definition

A **bone marrow transplant**, also called a **stem cell transplant**:

- ▶ Is used as a last resort to treat many blood disorders and cancers:
 - ▶ Leukaemia & Lymphoma
 - ▶ Myelodysplastic Syndrome
 - ▶ Intensive cancer treatments
- ▶ Consists of killing existing stem cells using chemotherapy and replacing them.
- ▶ Comes in two types: Autologous (own cells), Allogenic (donor cells)

What is a bone marrow transplant?

Definition

Procedure:

1. Recipient undergoes seven days of intensive chemotherapy to kill existing stem cells.
2. Donor cells are introduced to recipient through the bloodstream.
3. Recipient stays in hospital until first neutrophils are seen 13-14 days post-transplant.
4. Depending on age and luck, initial recovery from transplant can take > 3 months. Risk of complications is high.

Why Donate?

Lemma

A **transplant recipient** is:

- ▶ *Someone who is very sick.*
- ▶ *Currently going through chemotherapy.*
- ▶ *In many cases, completely dependent on weekly blood transfusions.*

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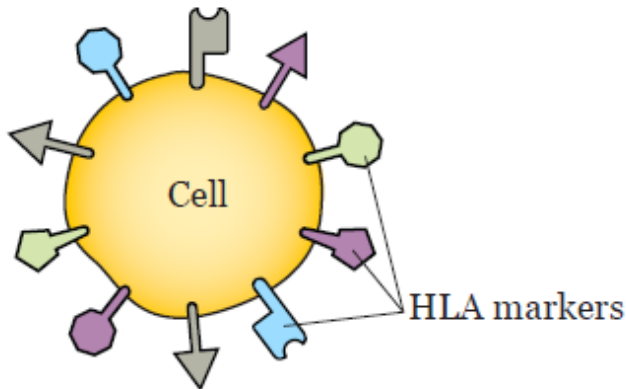
Corollary

- ▶ *A matching bone marrow donor gives a transplant recipient a new chance at life.*
- ▶ *There are currently 1,000 Australians looking for a match.*
- ▶ *If you have First Nations or non-European heritage - there is currently a shortage in the donor pool.*

How does matching work?

Theorem

A **recipient-donor match** occurs when the **Human Leukocyte Antigens** match between the donor and the recipient.



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Corollary

Recipients can change blood type pre and post transplant!

What's Involved?

Definition

A **bone marrow donation** consists of:

- ▶ 10% of donors - Direct Bone Marrow Donation:
 - ▶ An operation to retrieve bone marrow under general anaesthesia, can be done as day procedure.
 - ▶ A few days of mild soreness in lower back.

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- ▶ 10% of donors - Direct Bone Marrow Donation:
 - ▶ An operation to retrieve bone marrow under general anaesthesia, can be done as day procedure.
 - ▶ A few days of mild soreness in lower back.
- ▶ 90% of donors - Peripheral Blood Stem Cell Collection:
 - ▶ A few small injections to stimulate stem cell growth.
 - ▶ 4-6 hours in a chair (with snacks!) - all done through the bloodstream.

What's Involved?

Definition

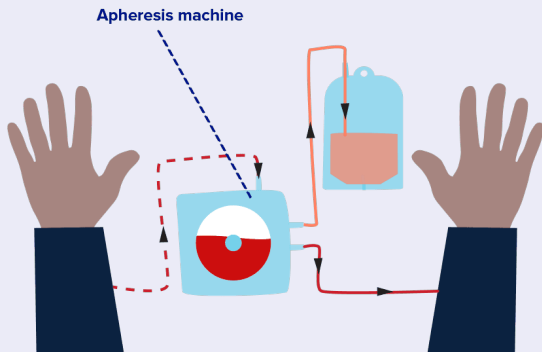


Figure: Credit: Leukaemia Foundation

Am I eligible?

Definition

A person is **eligible to register** as a bone marrow donor if they:

- ▶ Are aged between 18-35, and
- ▶ Have no blood or autoimmune disorders or diseases (see Stem Cell Donors Australia website for full exclusions).

Not between 18-35? Donate Blood!

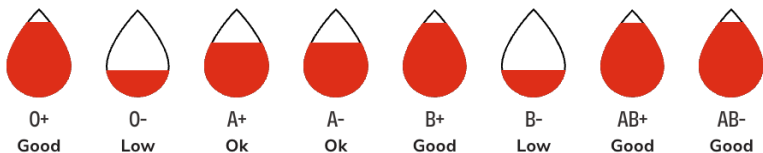
Lemma

*A person not aged between 18-35 can still help by **donating blood** at our closest donation centers - **Lifeblood Camberwell & Melbourne City**.*

Current red cell supply levels for Victoria ▾

Updated 6:00am (AEST), 28 July 2025

What does this mean?

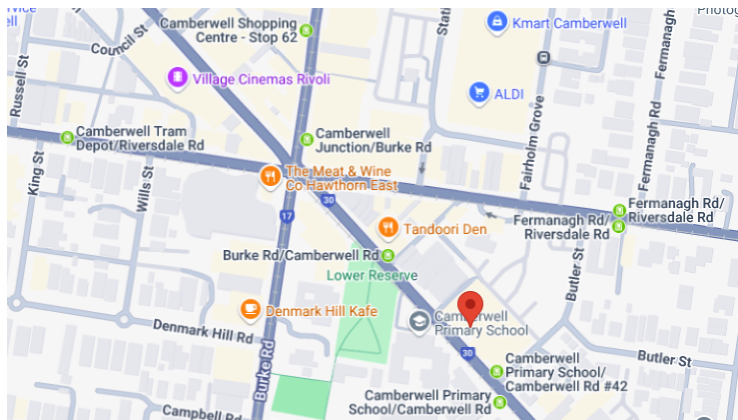


Book your donation today to help stop the drop – even if you don't know your blood type.

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Lemma

*A person not aged between 18-35 can still help by **donating blood** at our closest donation centers - **Lifeblood Camberwell & Melbourne City**.*



Between 18-35? Sign up as a stem cell donor

Lemma

A person who is eligible to register as a bone marrow donor can follow these instructions to sign up:

- 1. Go to Stem Cell Donors Australia website.*
- 2. Register for a home-delivered cheek swab, or take a blood sample next time you donate blood.*
- 3. Wait for the call that you can help save a life.*

Main Theorem - Proof

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Left as an exercise for the reader. □

Any Questions?