

Human Pluripotent Stem Cells

Origins and Applications

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What will we be learning?

DAISY

What is a stem cell?

What are the different types of stem cells?

LUIS

Reprogramming:

Making stem cells from skin!

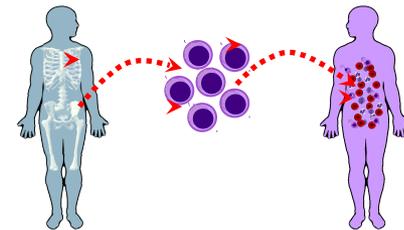
GABRIELLA

Making stem cells for patients.

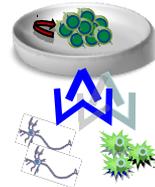
Using stem cells to study disease.

What I'm gonna tell ya!

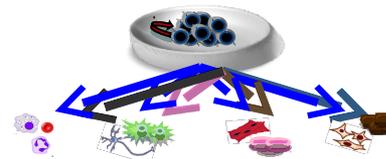
Bone Marrow Transplants



Adult Stem Cells

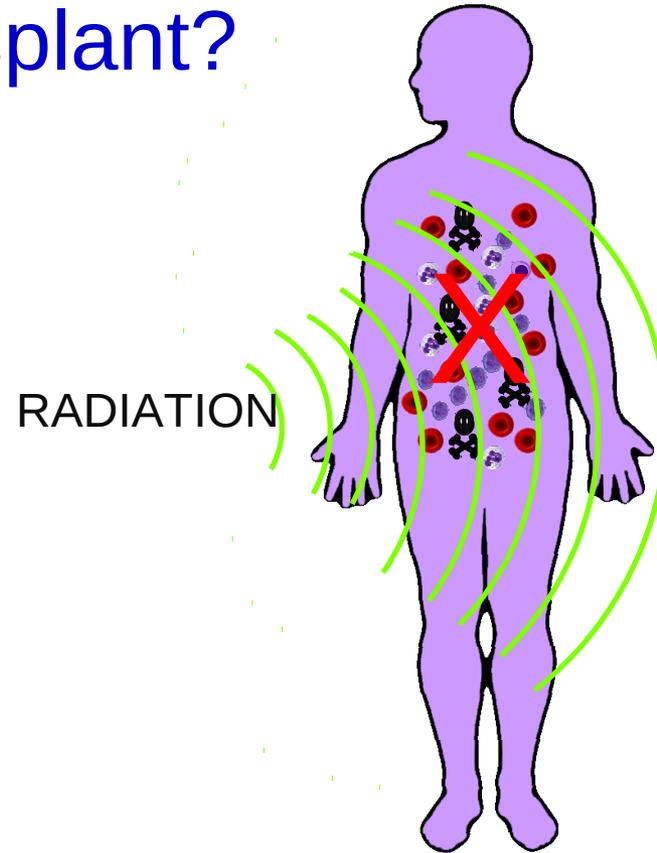
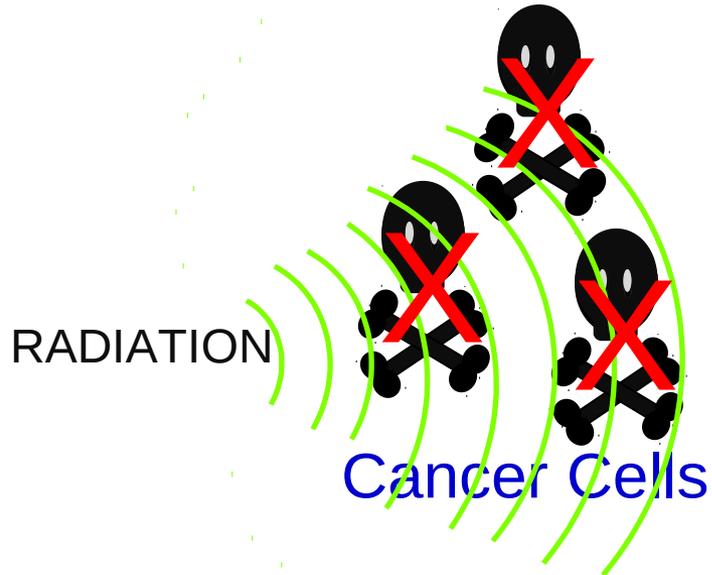


Embryonic Stem Cells



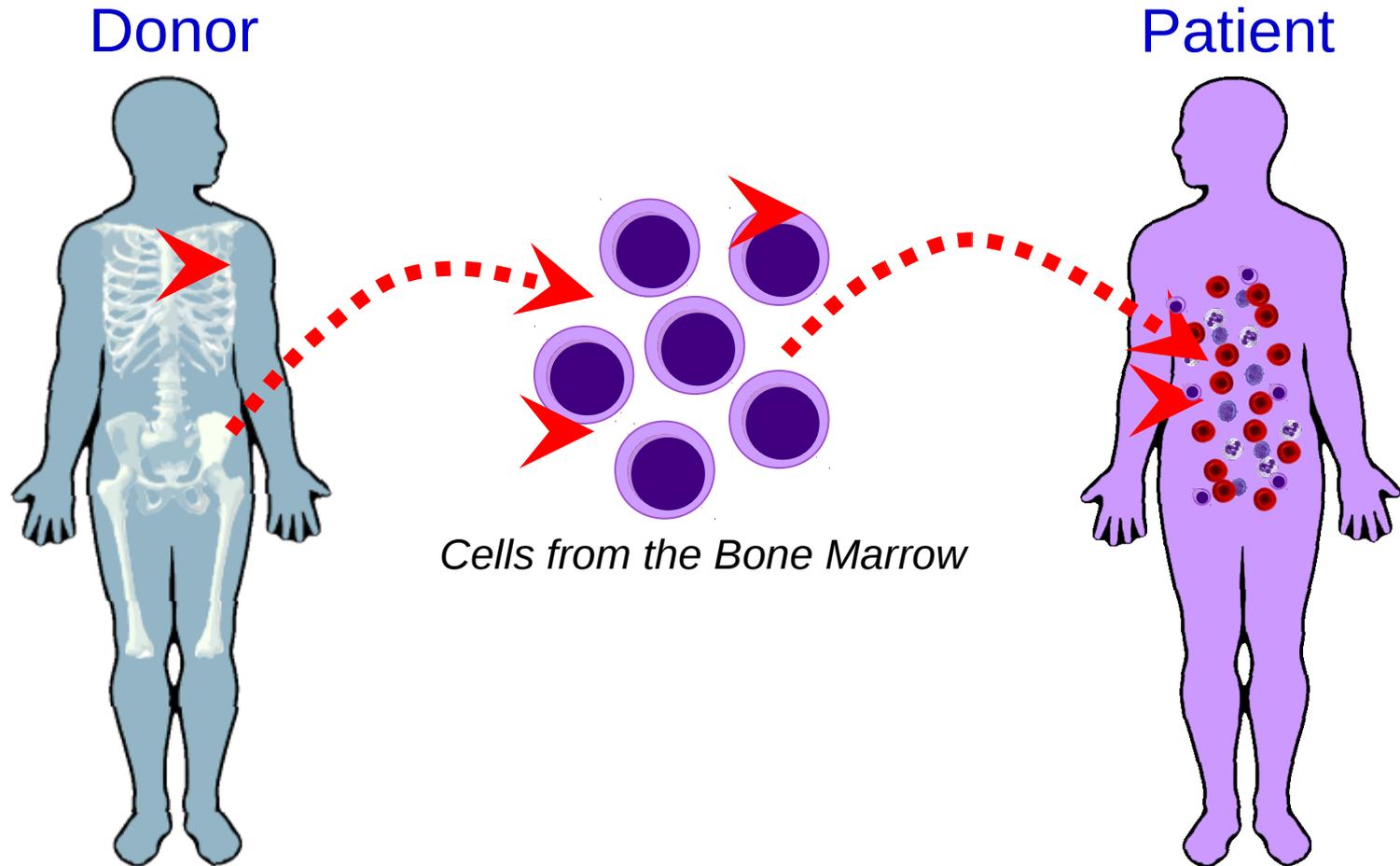
Why do we care?

Why would someone need a bone marrow transplant?



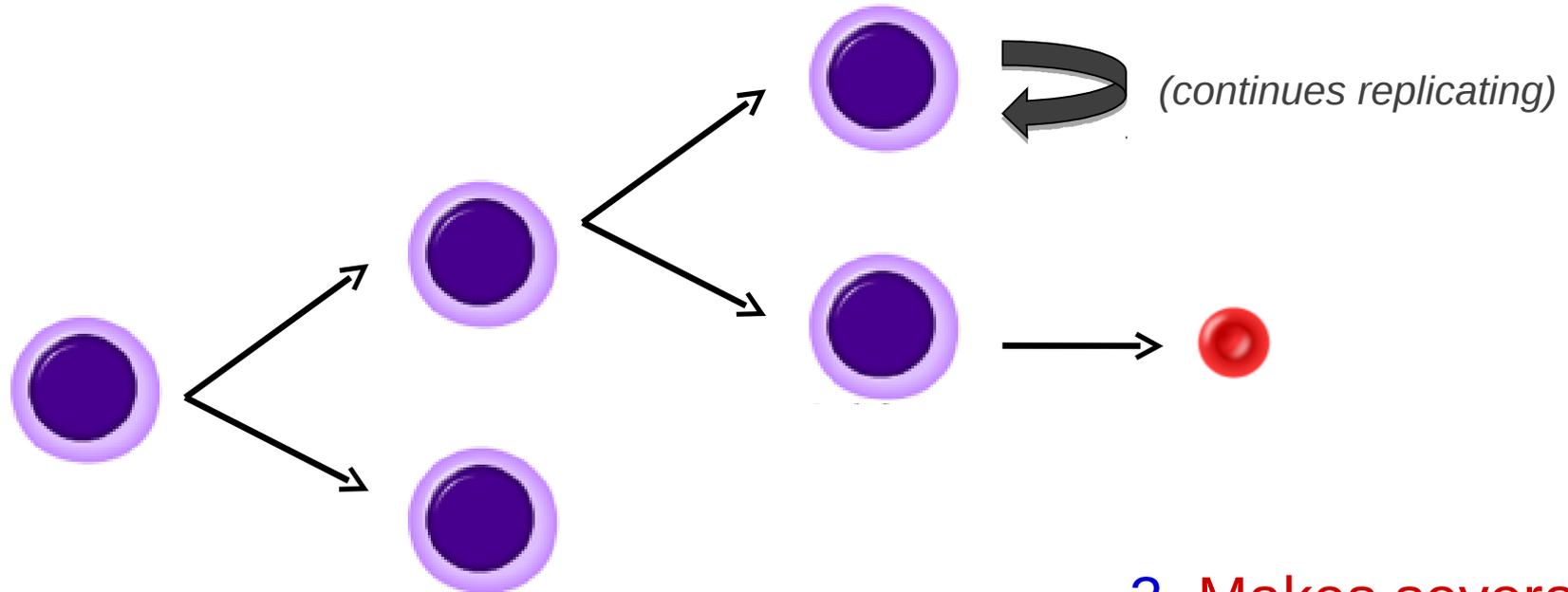
Leukemia Patient

What is a bone marrow transplant?



Why does this work?

What is an adult stem cell?



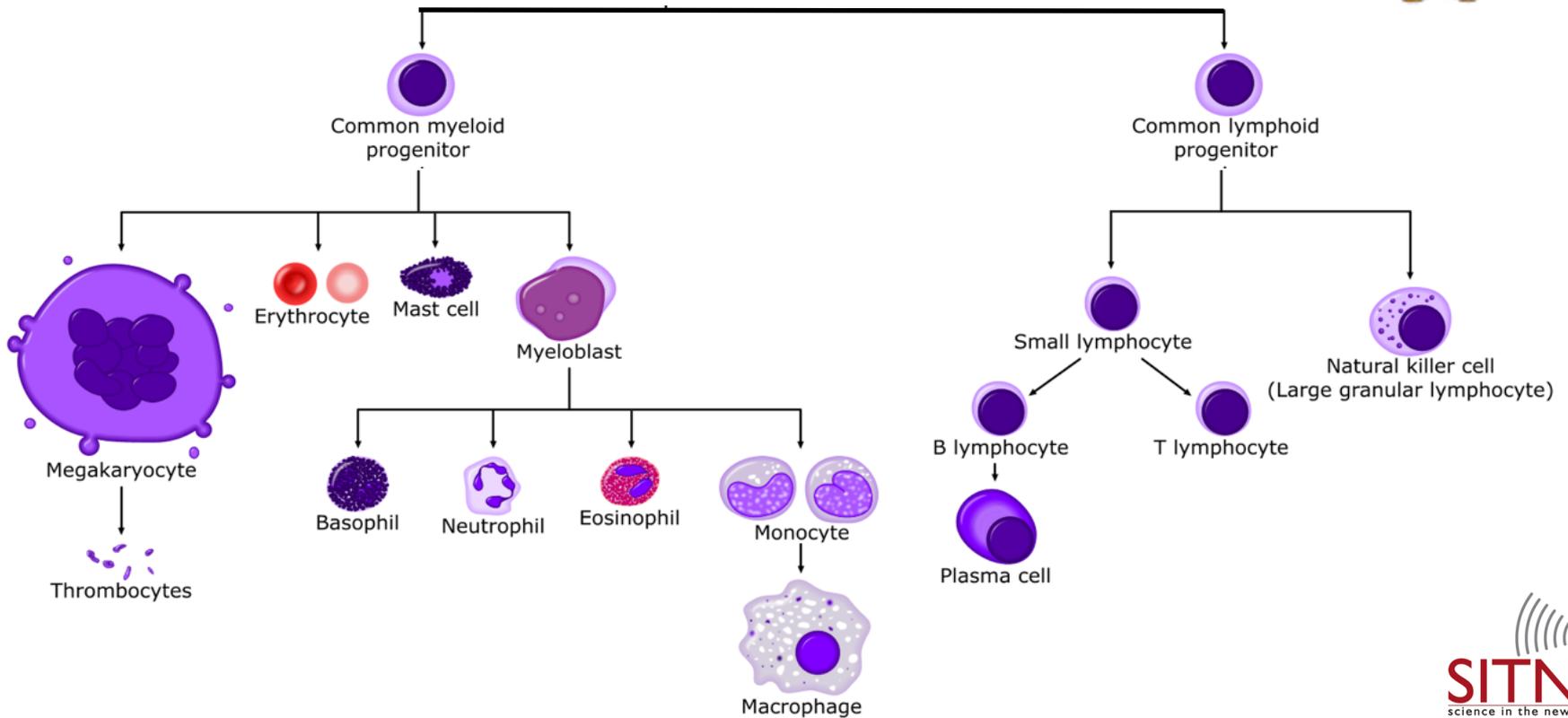
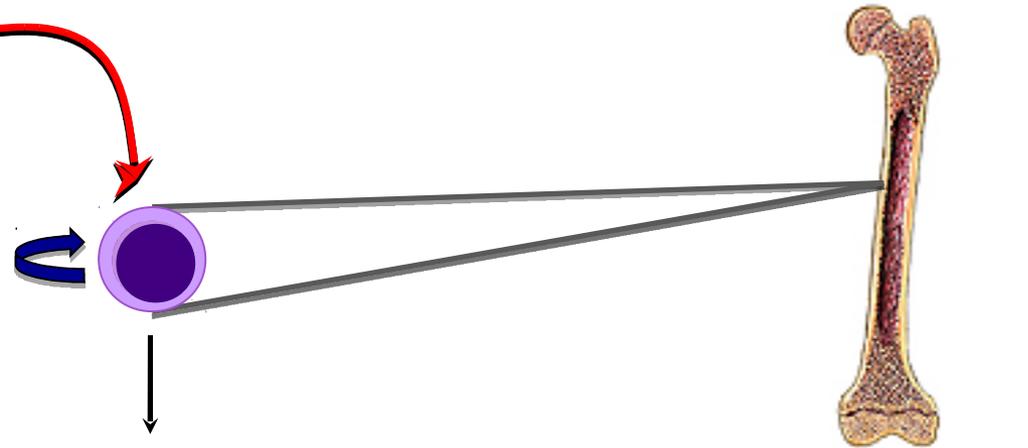
1. Self-replicates

...for long periods of time!

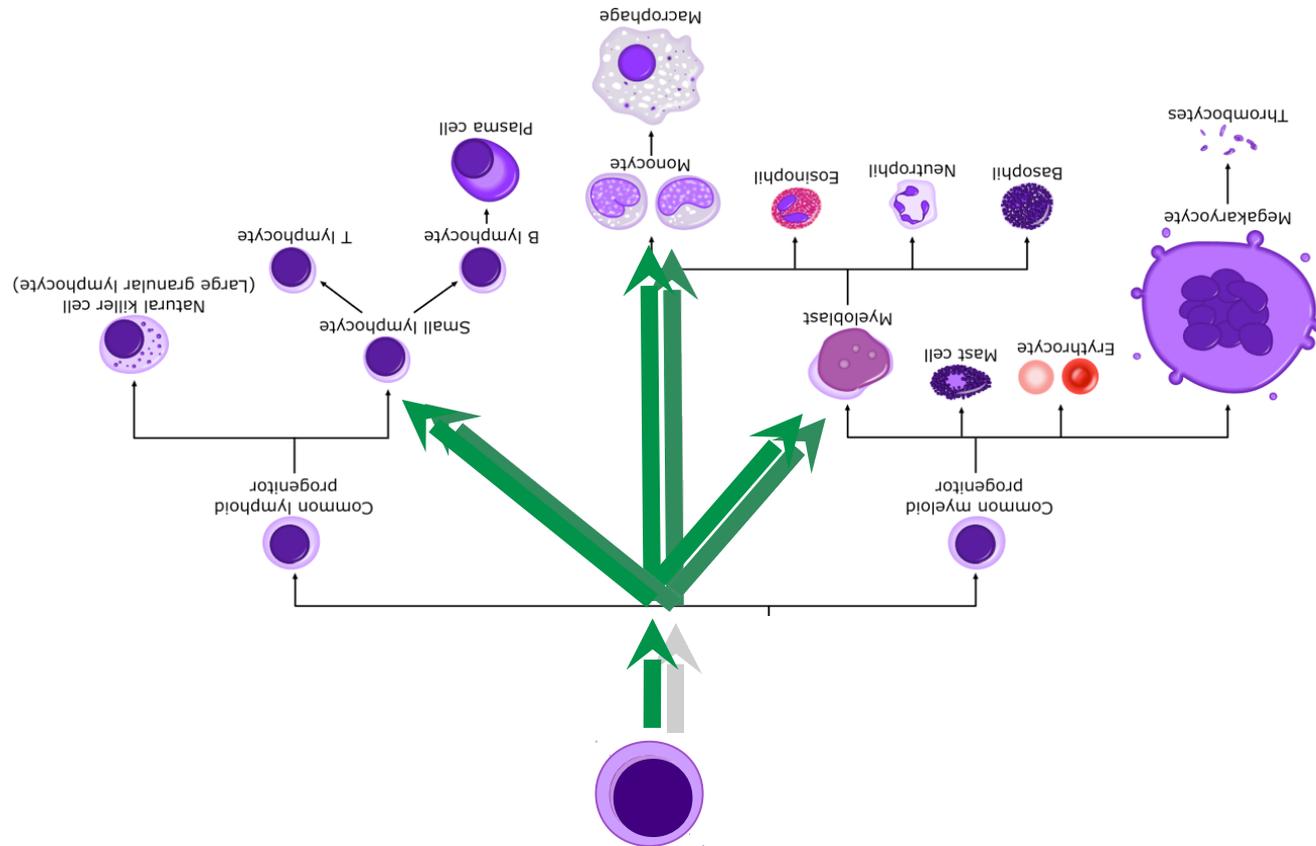
2. Makes several other cell types

...only cells of the tissue they live in!

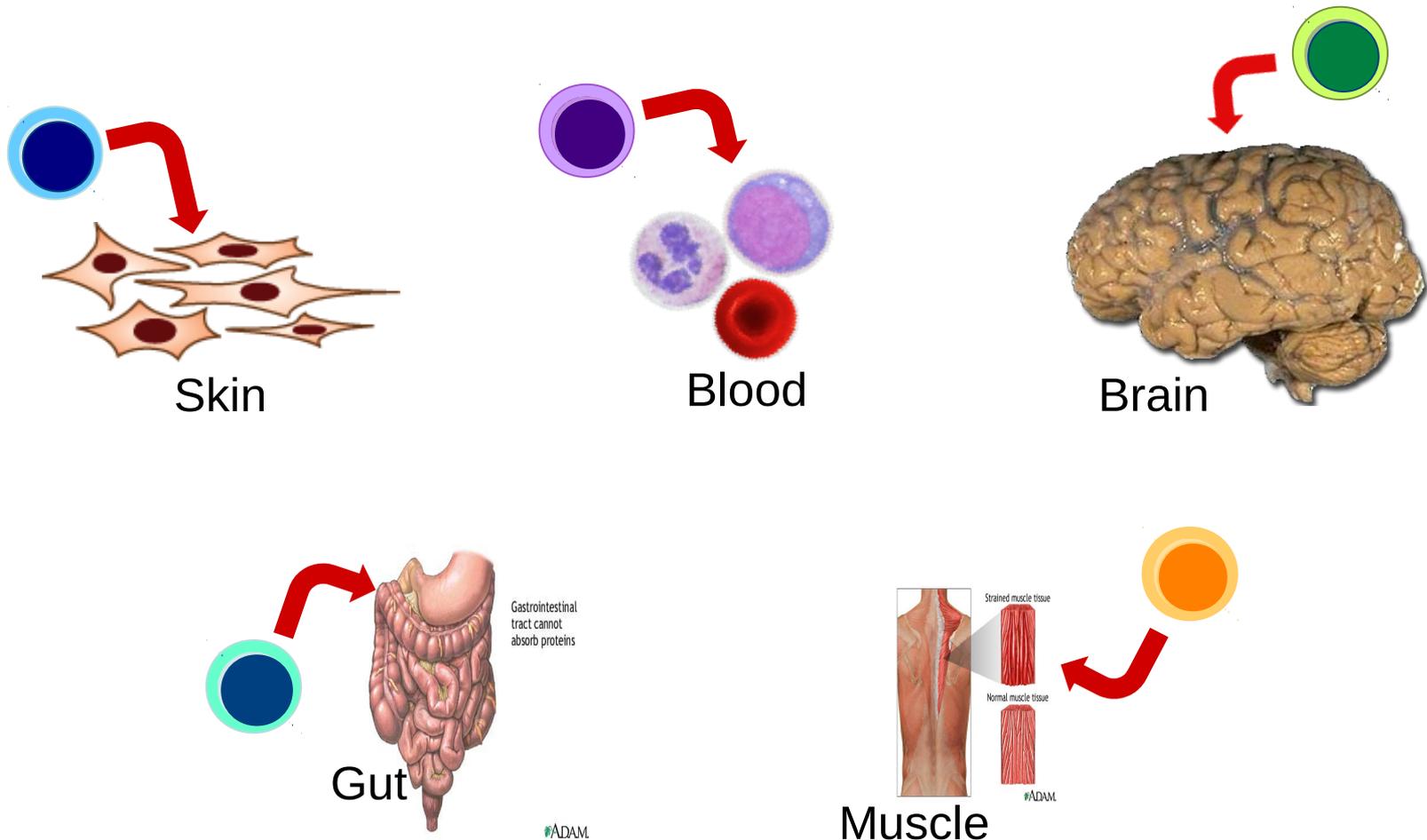
Adult Stem Cell Of the Blood



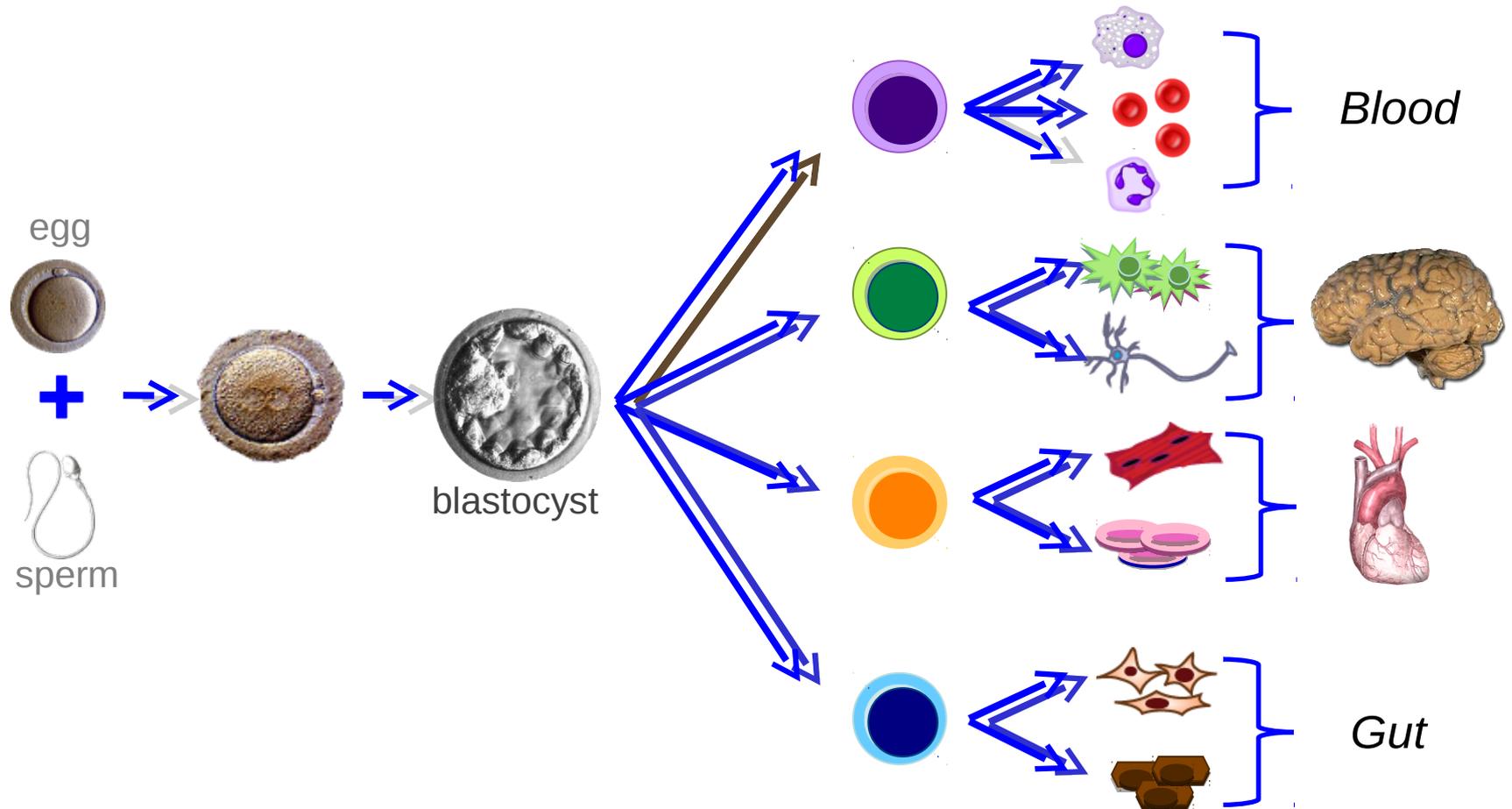
Why are they called “stem” cells?



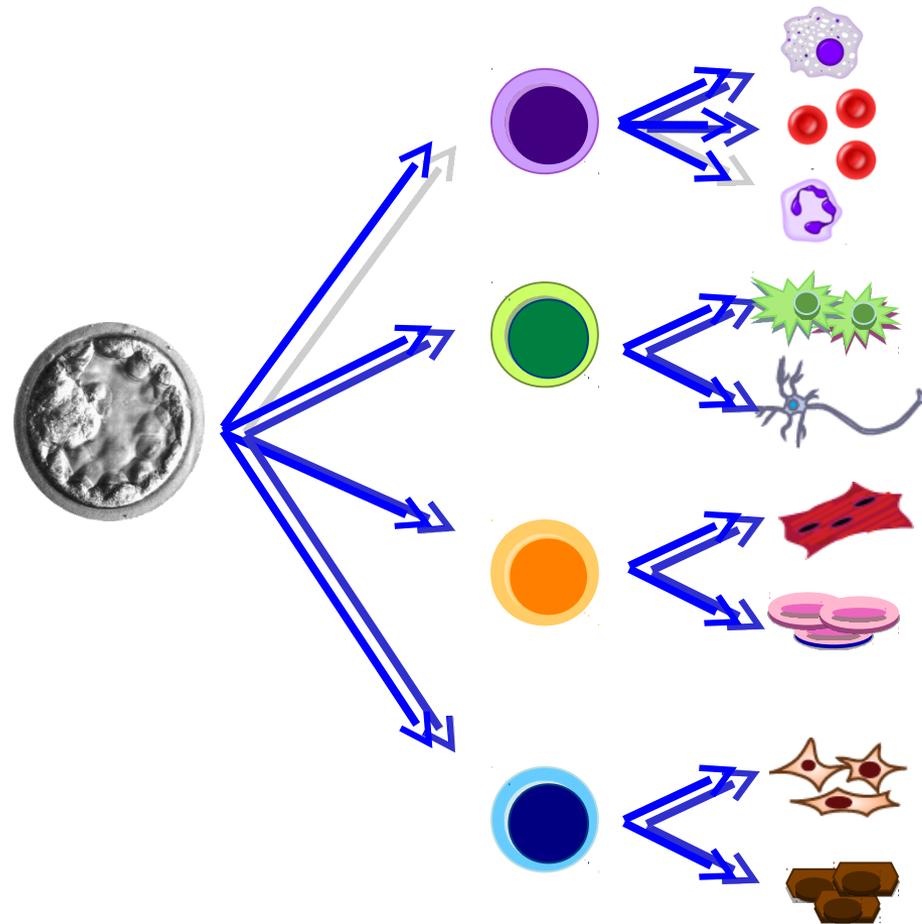
Adult stem cells make specific tissues!



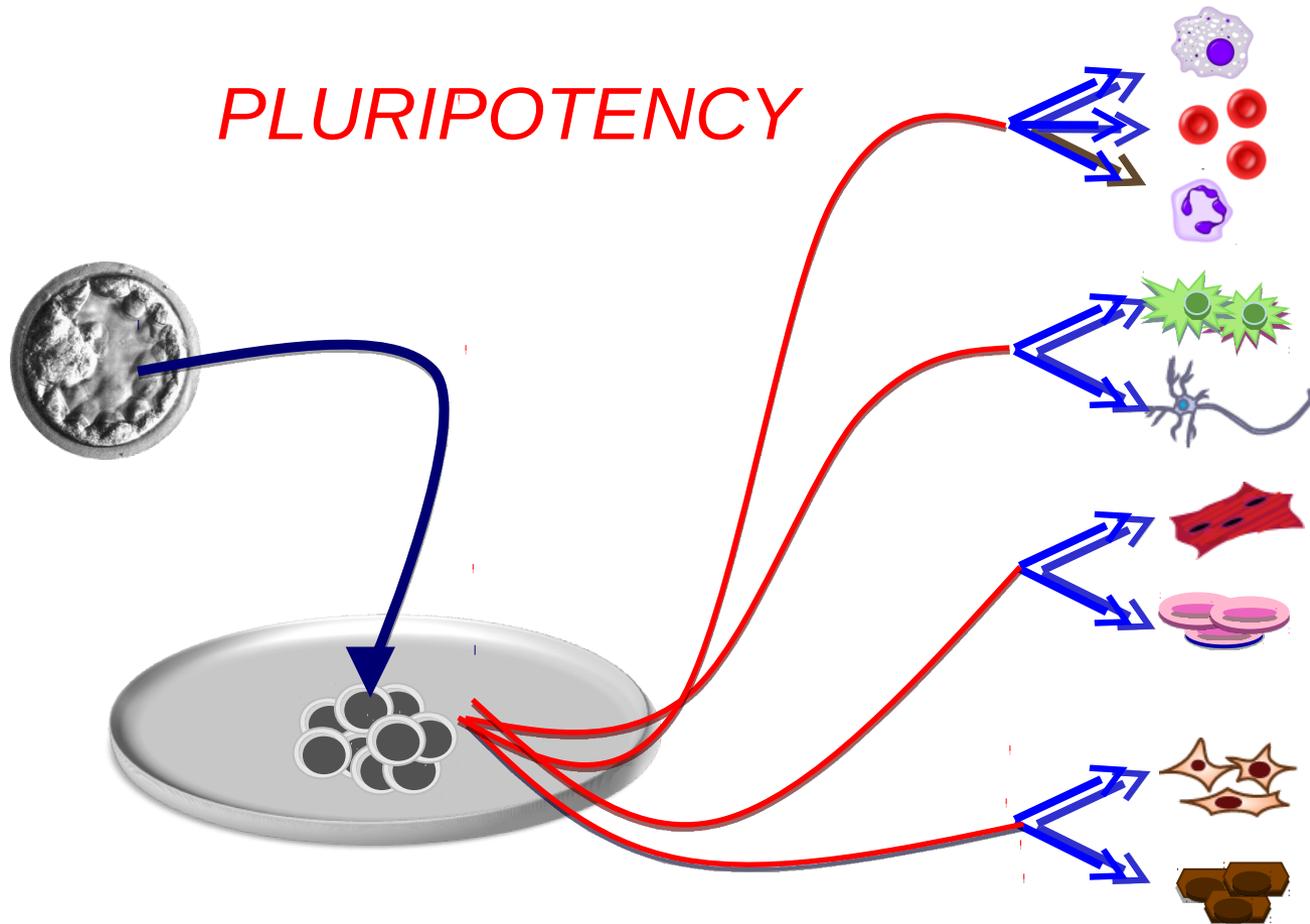
How do organs and tissues develop?



What makes embryonic stem cells different from adult stem cells?



What makes embryonic stem cells different from adult stem cells?



What does it mean to be **pluripotent?**

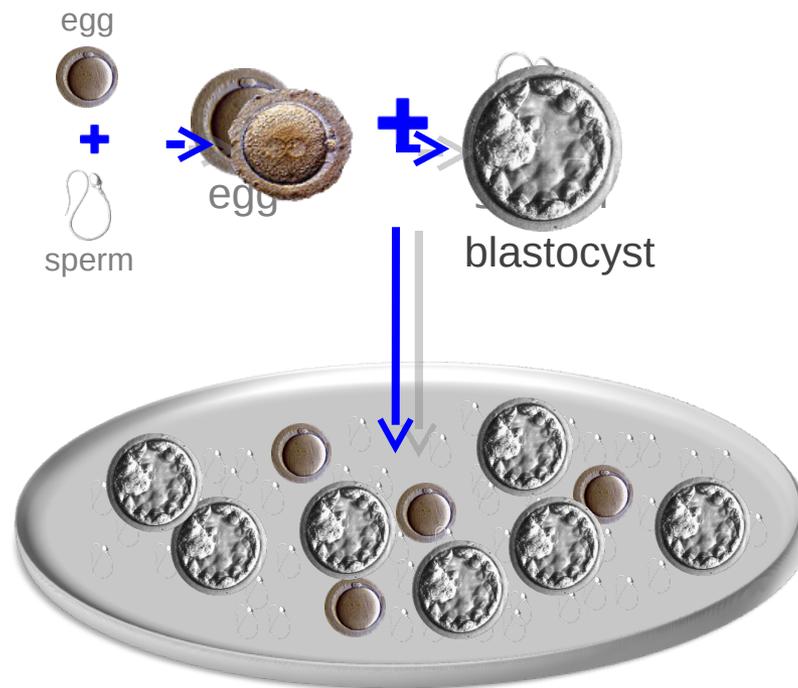
PLURI = many

POTENT = to be able

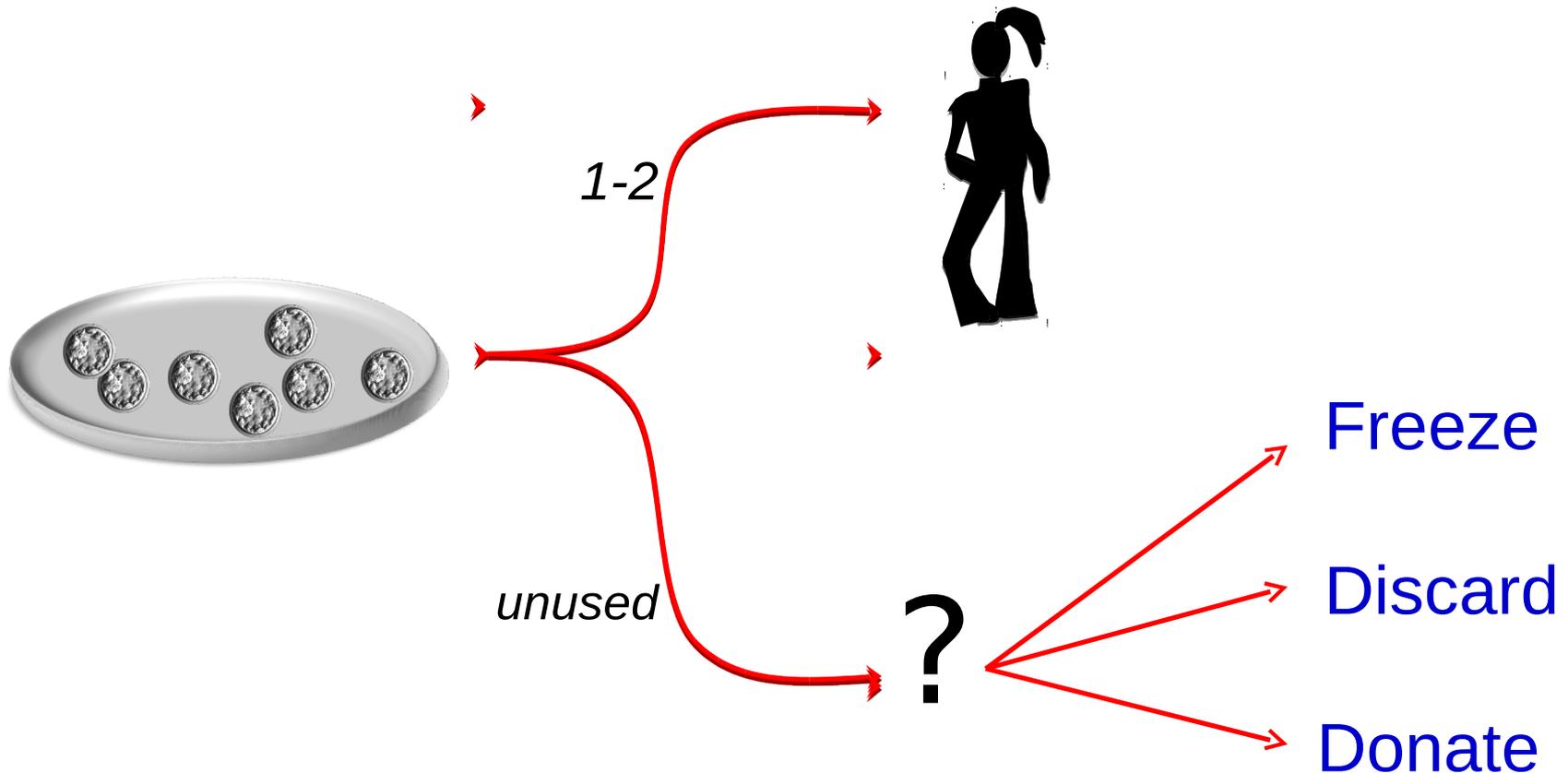
The ability to make many cell types

...in this case ALL cell types in the body!

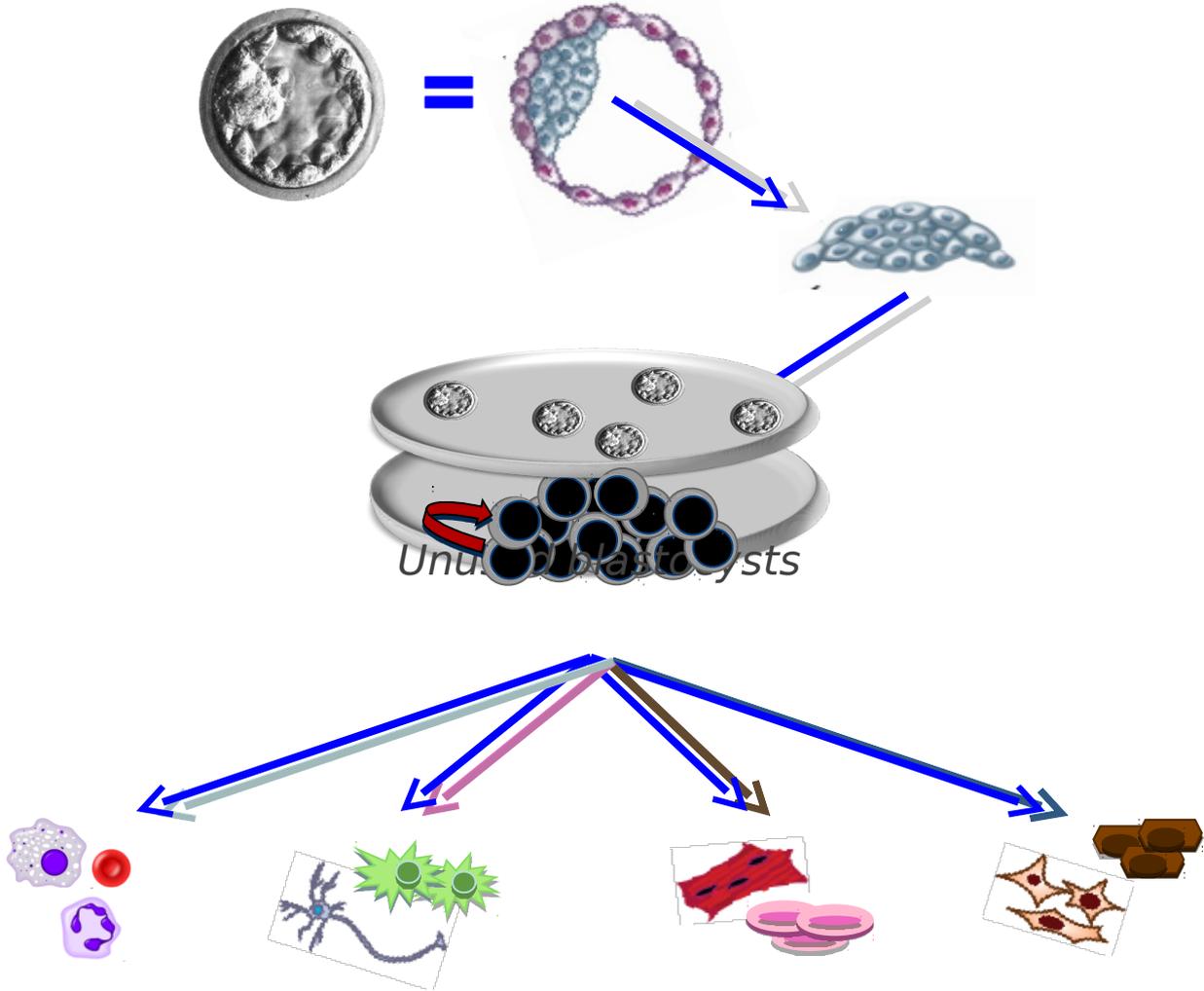
What is *in vitro* fertilization?



What is done with the blastocysts?



How are embryonic stem cells made?



How do ES cells and adult stem cells compare?

Embryonic
Stem Cells

Adult
Stem Cells



Thank you!

...Questions?