

# Stem Cells and Cancer

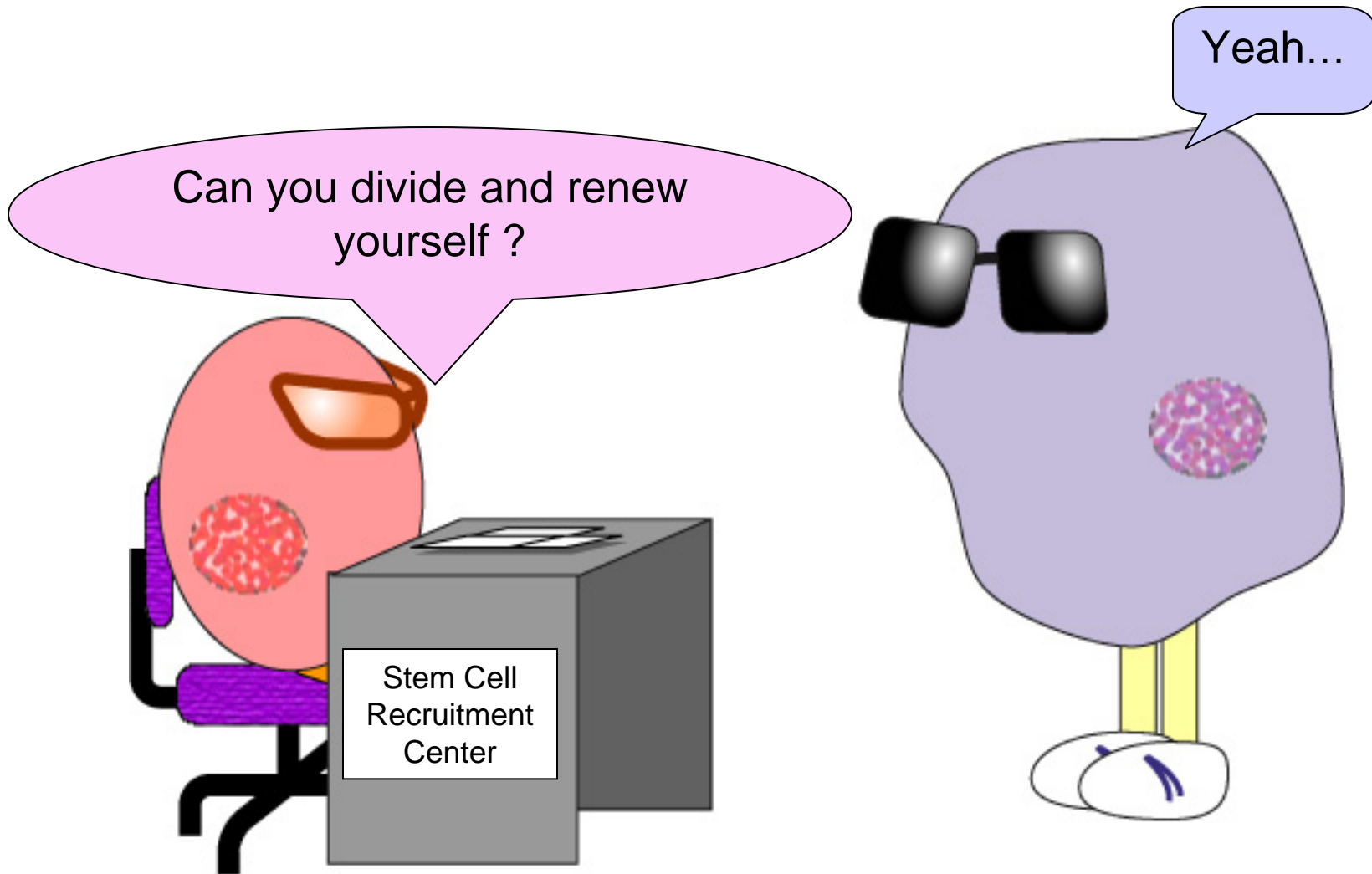
## Cancer Education Project

University of Rochester

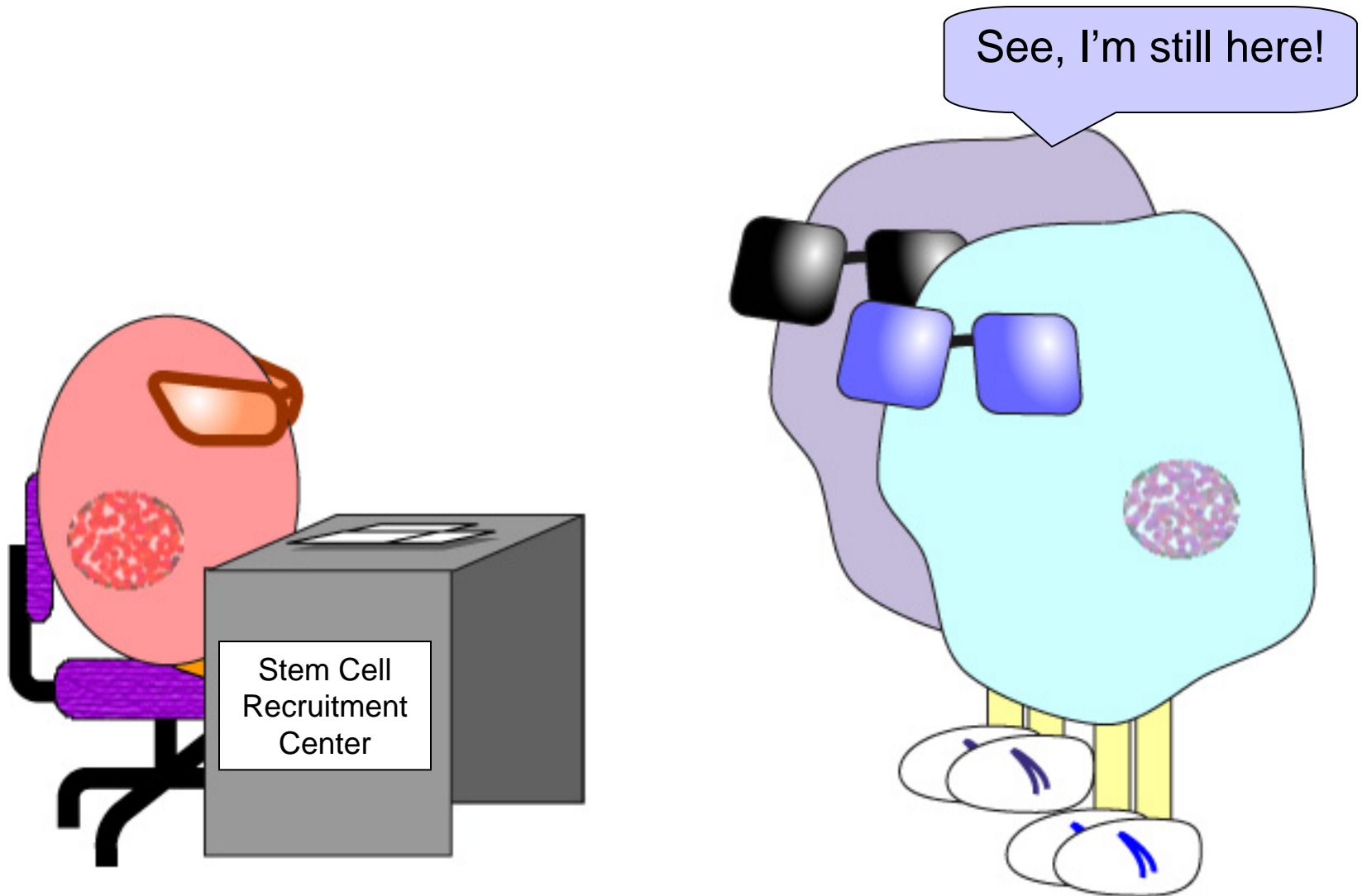


# **Stem Cells: The Good and The Bad**

# Stem Cells: What are they?

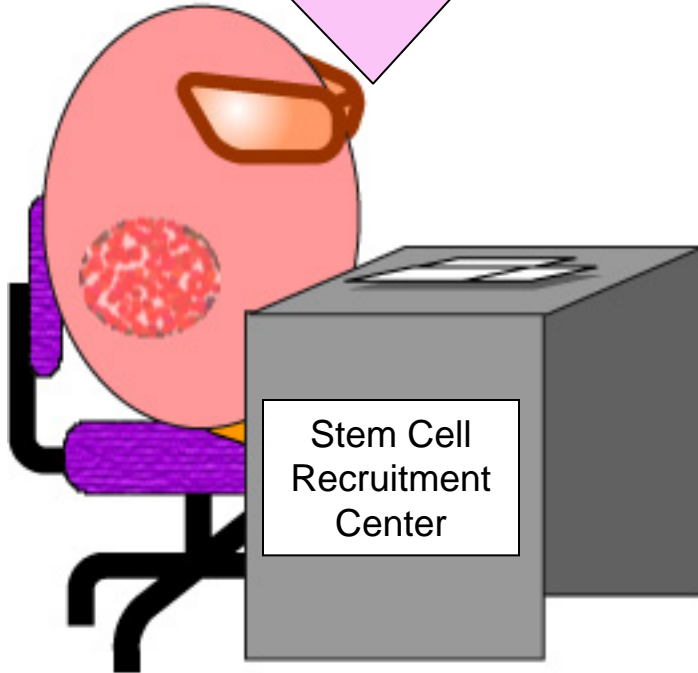


# Stem Cells: What are they?

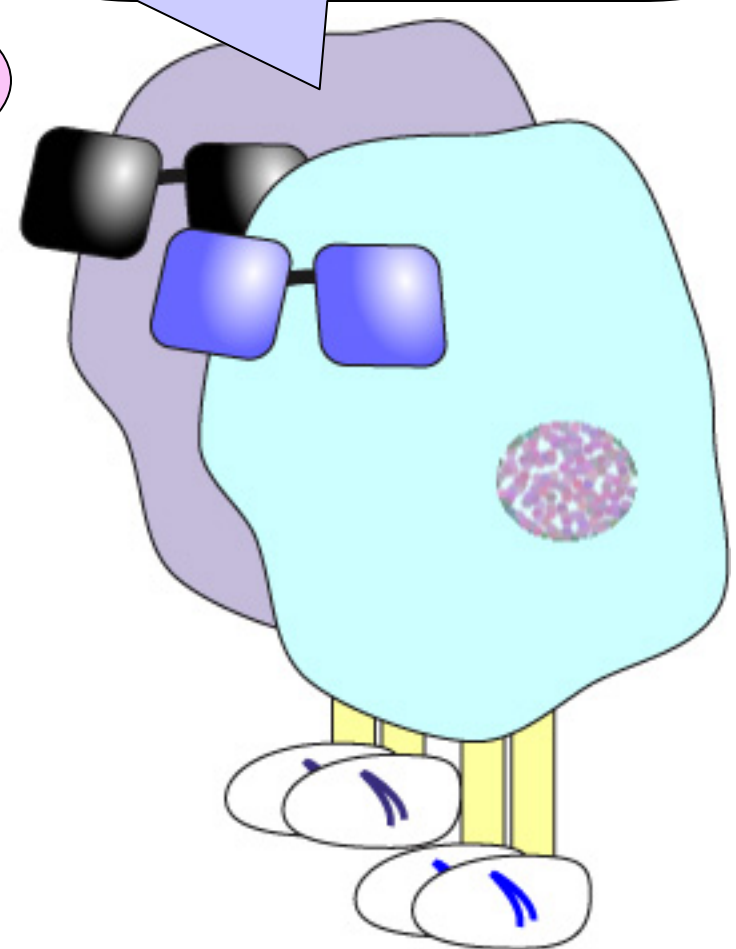


# Stem Cells: What are they?

You seem rather unspecialized. Can you give rise to specialized cells?

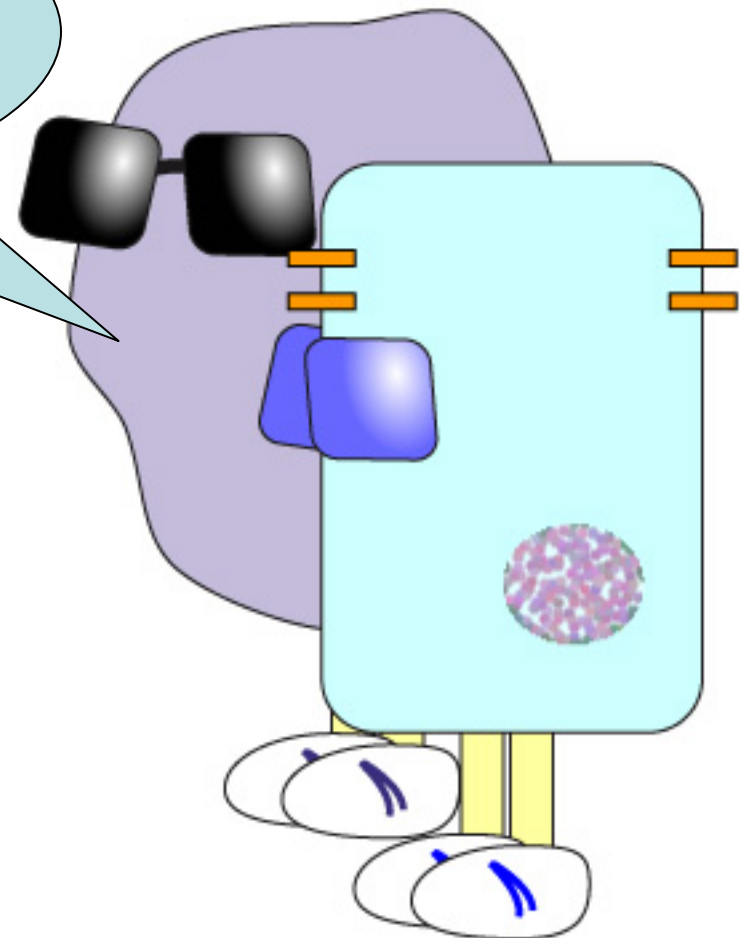
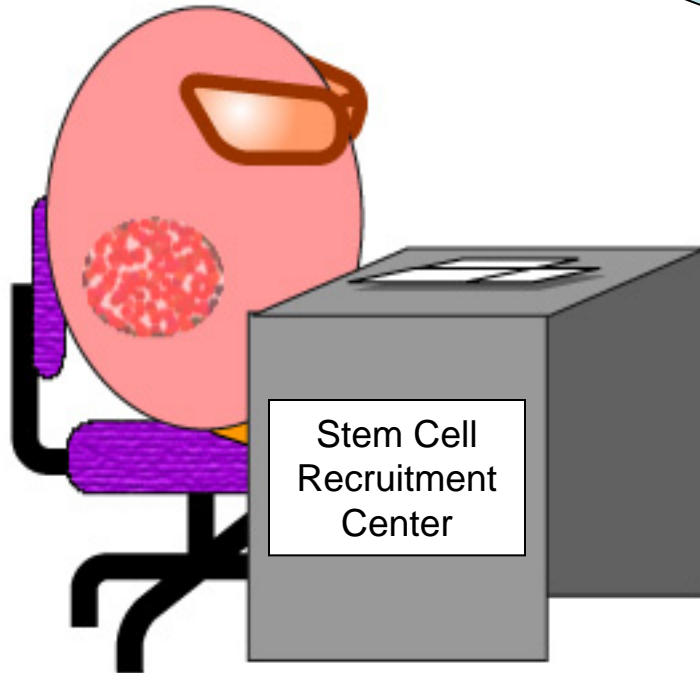


Yes, I'm unspecialized but my brother can become specialized. Watch him.

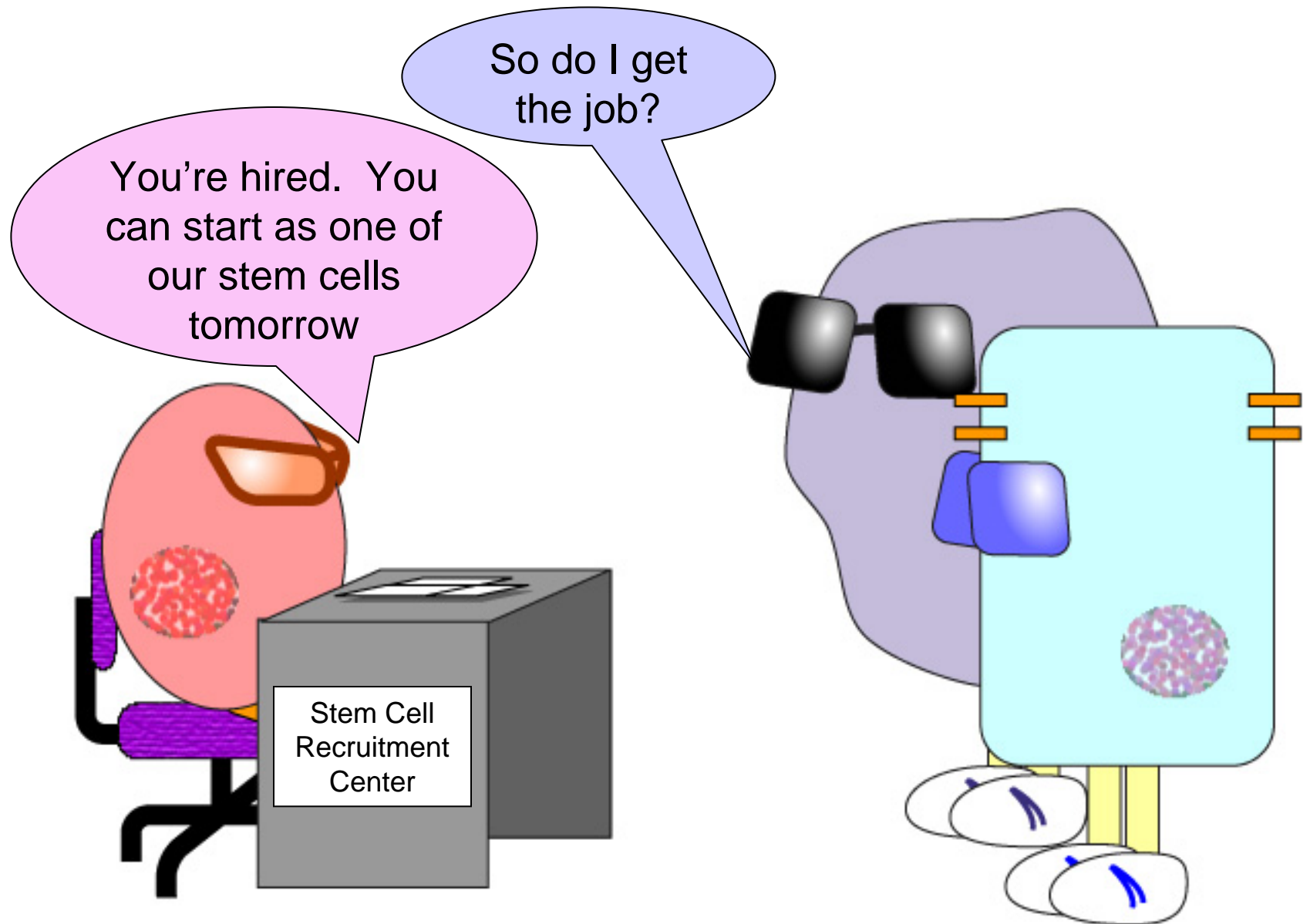


# Stem Cells: What are they?

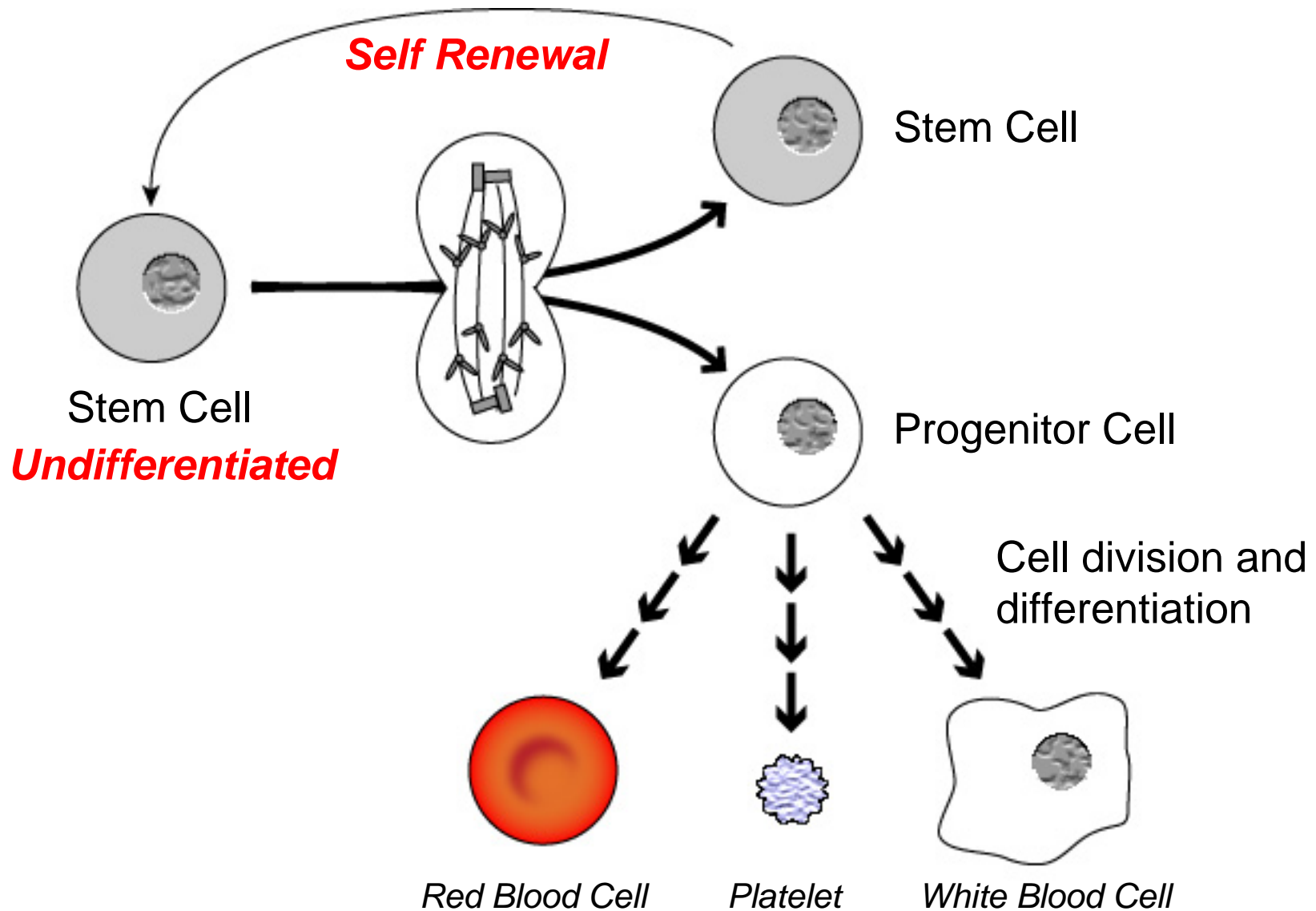
My brother can become a skin cell. He specialized to form tight attachments to his neighbors...



# Stem Cells: What are they?

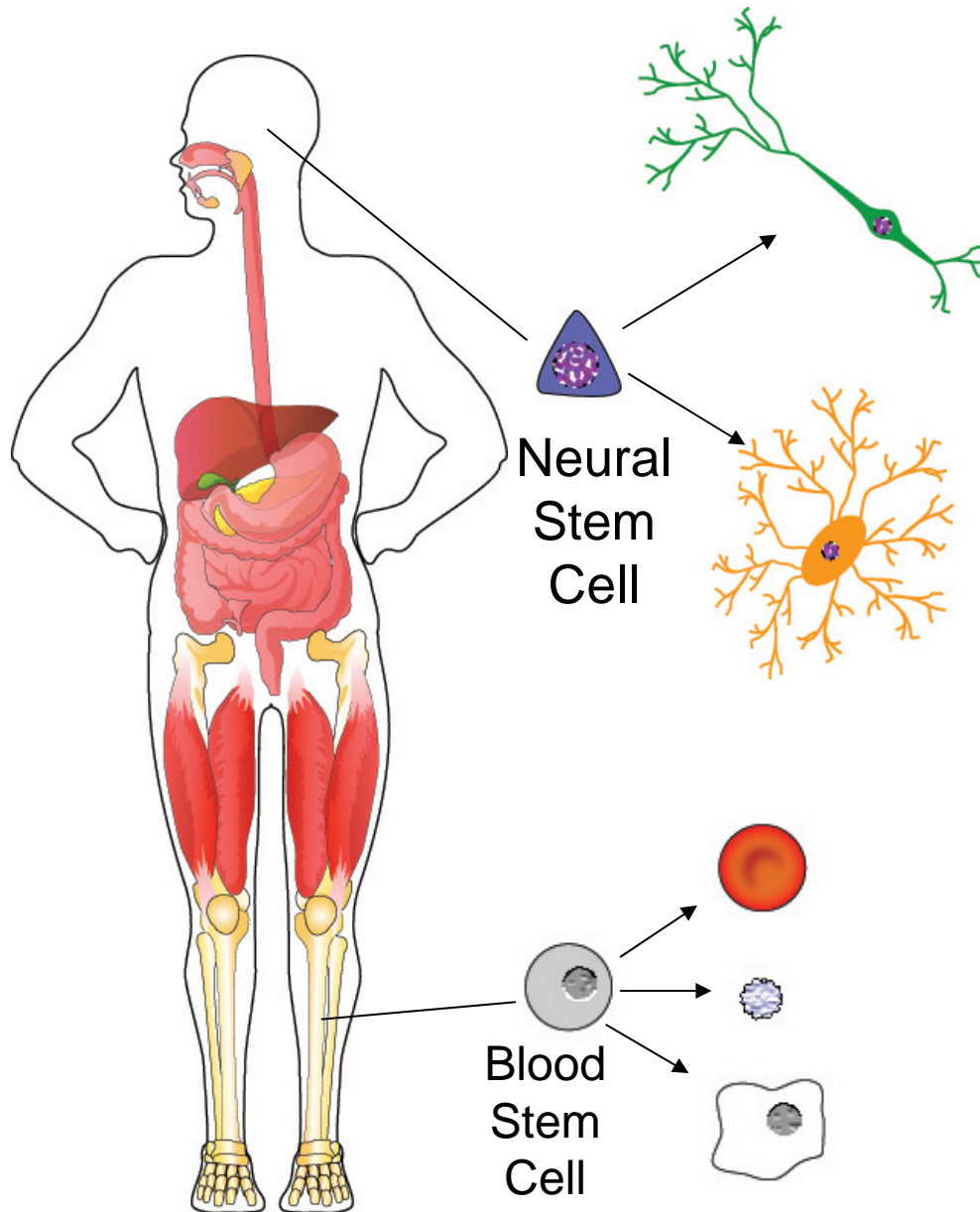


# Stem Cells: Not like other cells...





# Adult stem cells: Many different types...

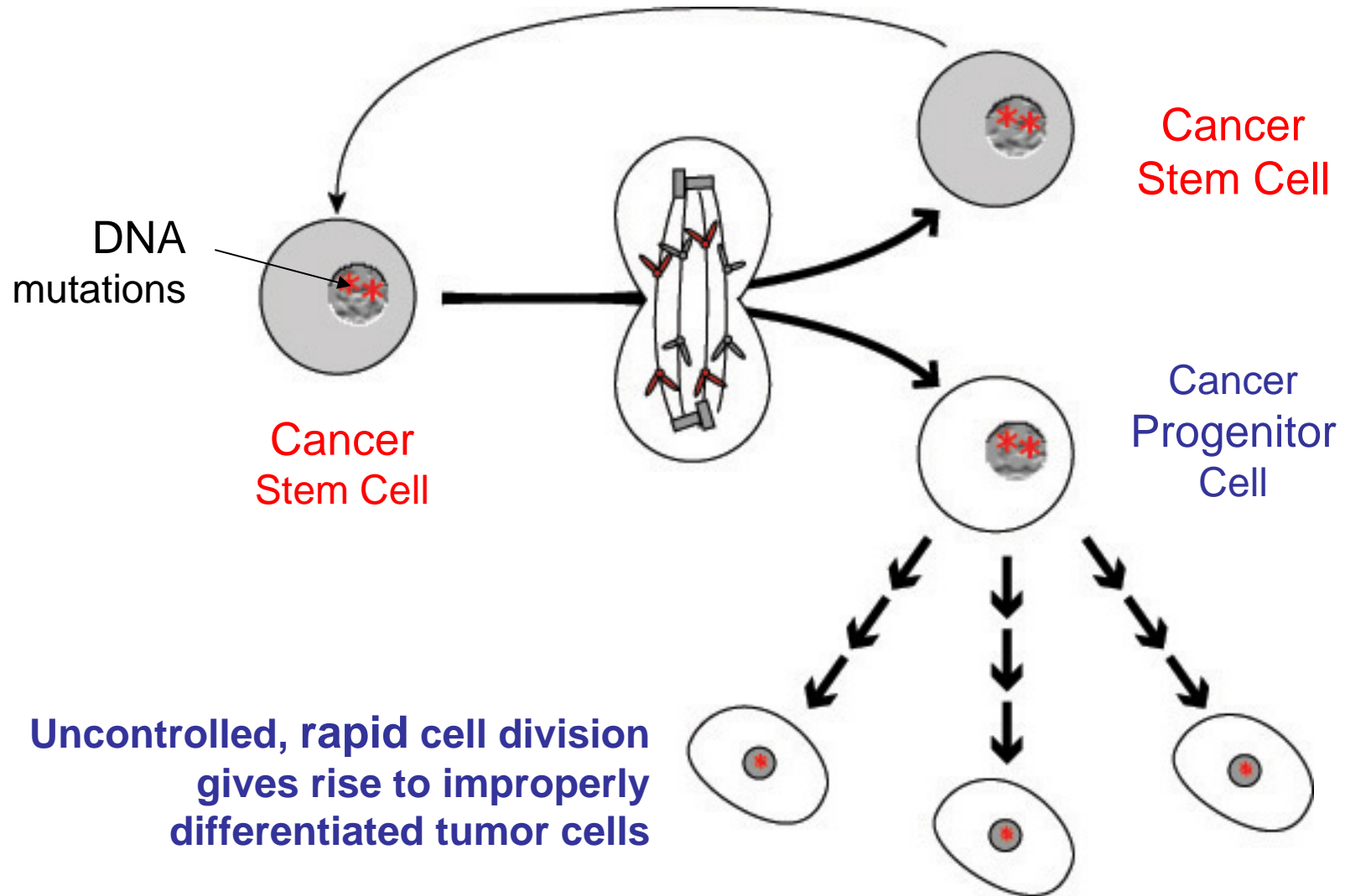


Adult stem cells contribute to homeostasis

They **divide only when needed**

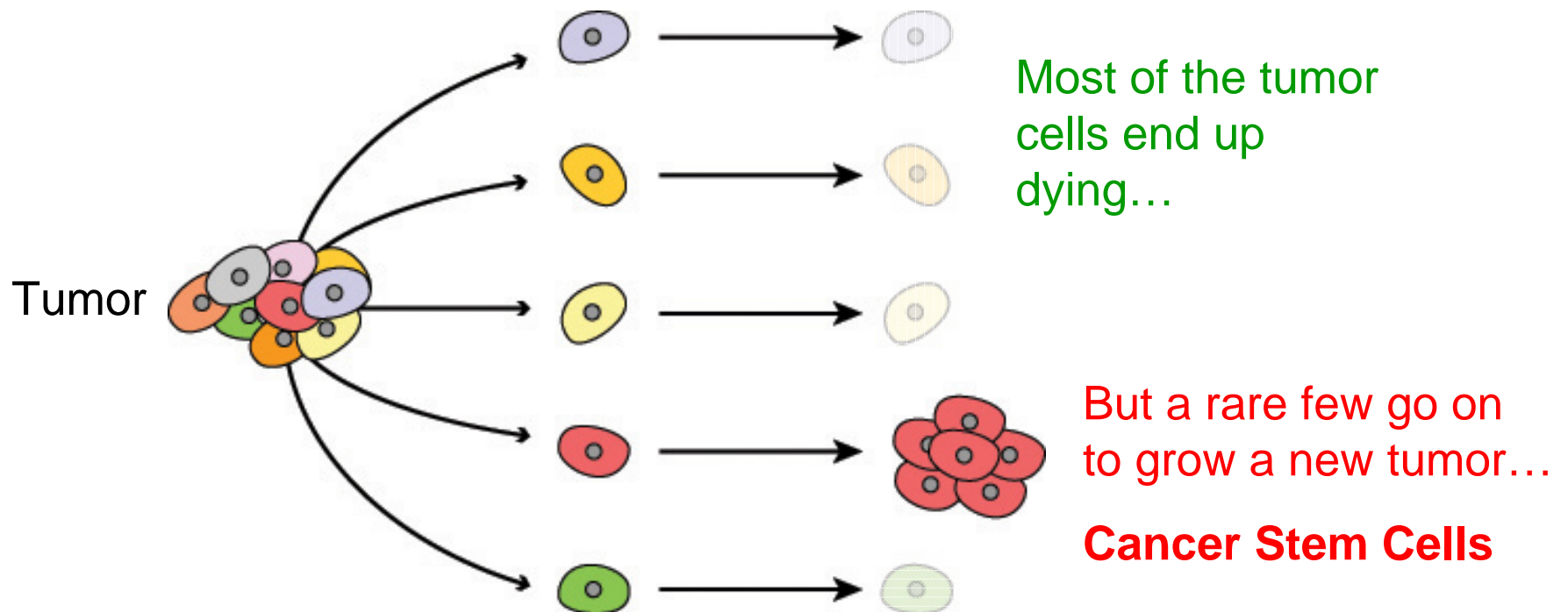
Their **progeny differentiate into cells that perform essential body functions.**

# Cancer Stem Cells

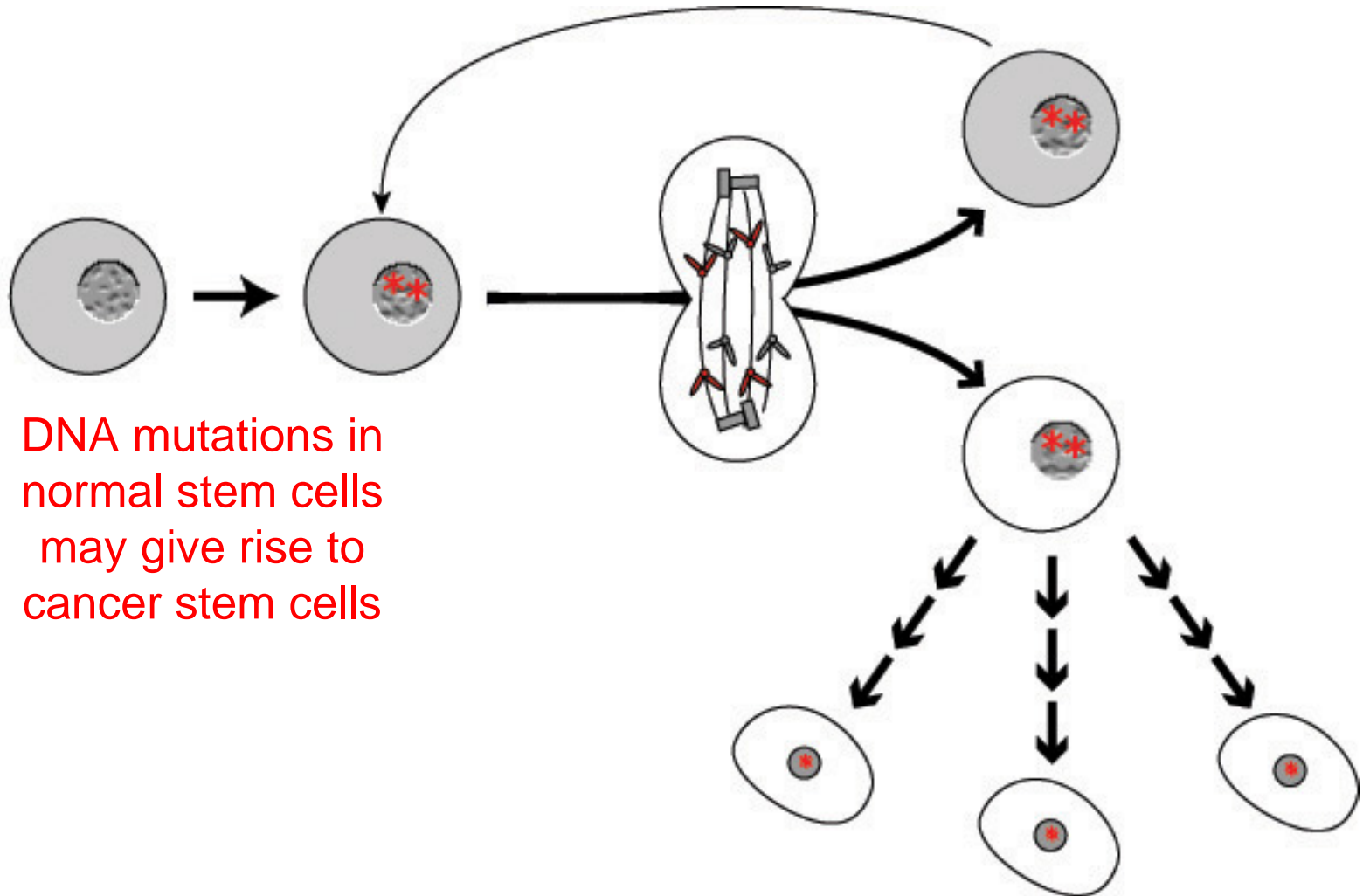


# Identifying Cancer Stem Cells

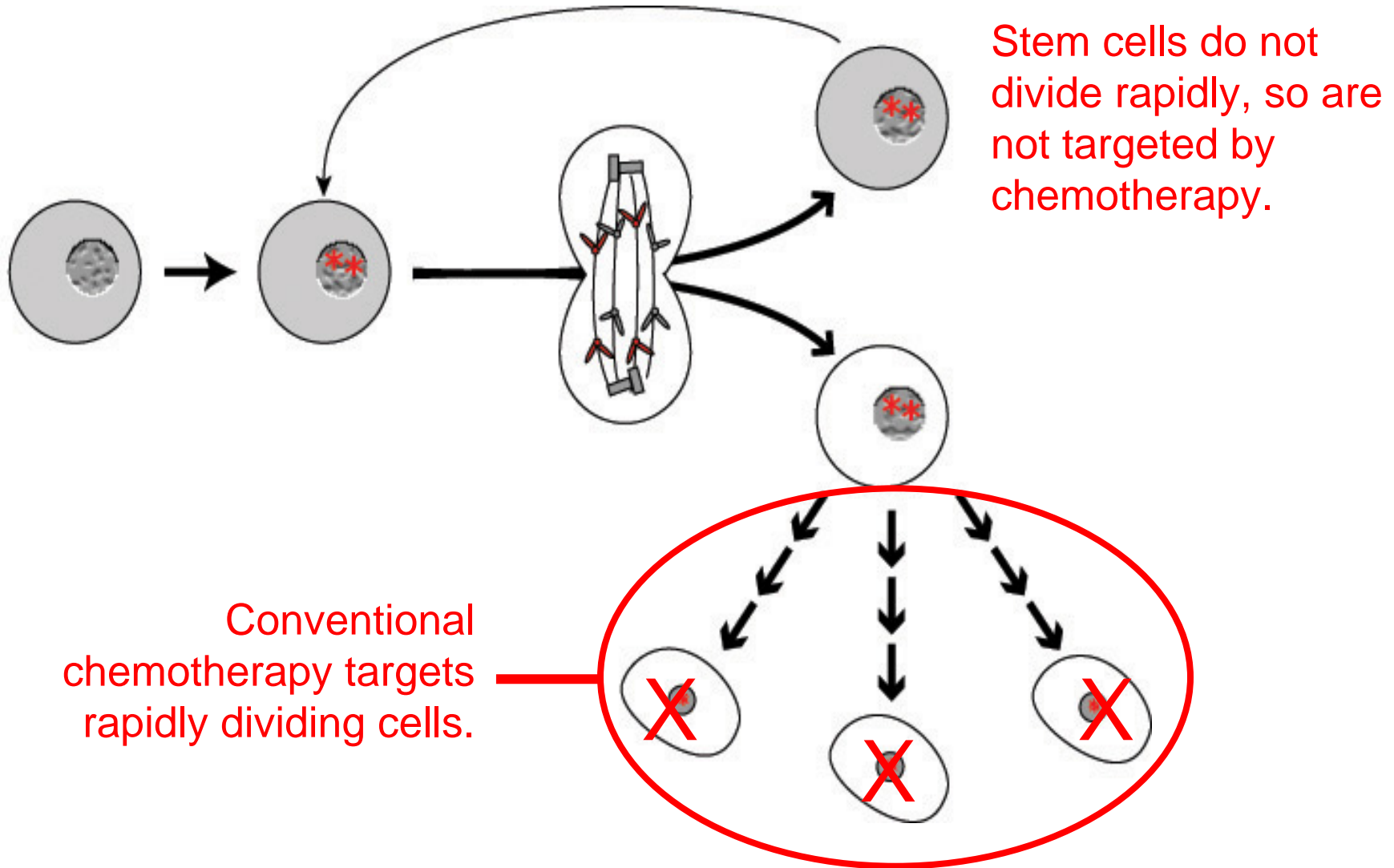
Scientists can break up the cells of a tumor, then transplant each tumor cell into a new location....



# Where might cancer stem cells come from?

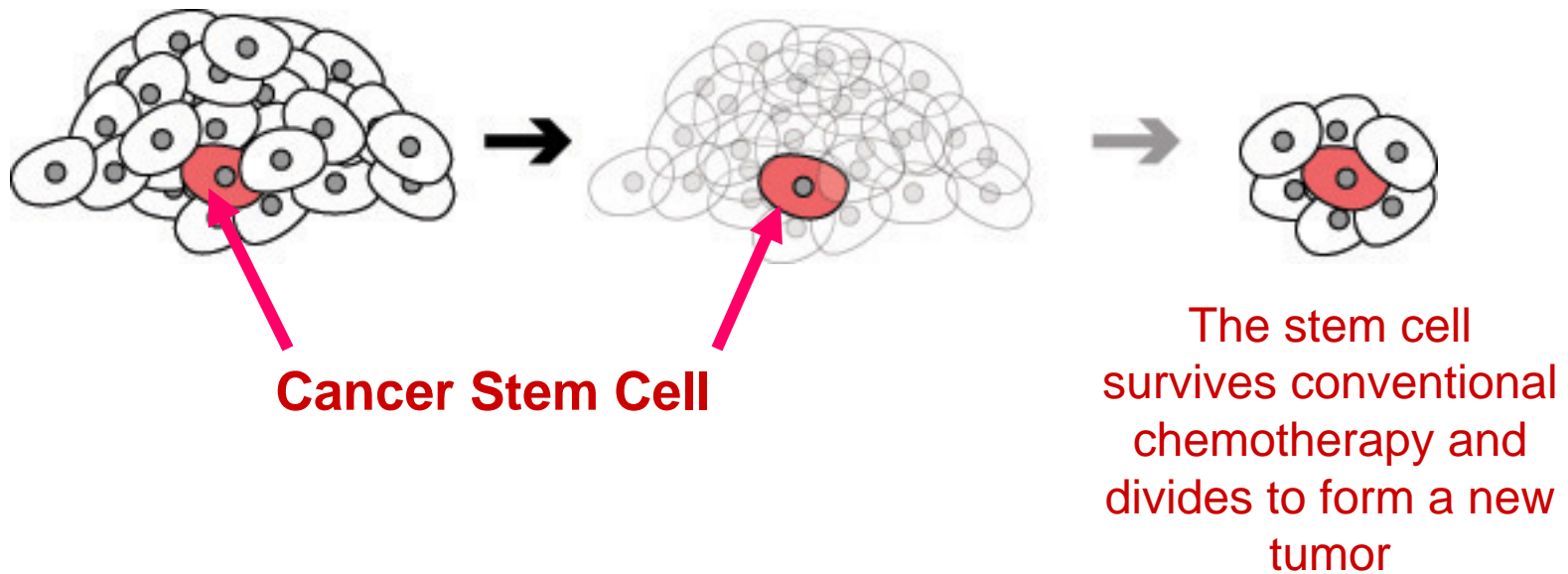


# Chemotherapy: Targets Rapidly Dividing Cells

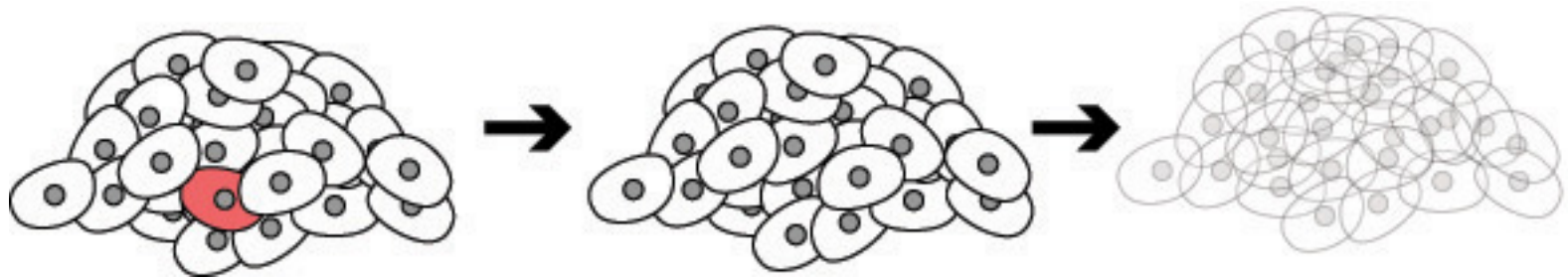


# Chemotherapy: Targets Rapidly Dividing Cells

## Tumor treated with chemotherapy



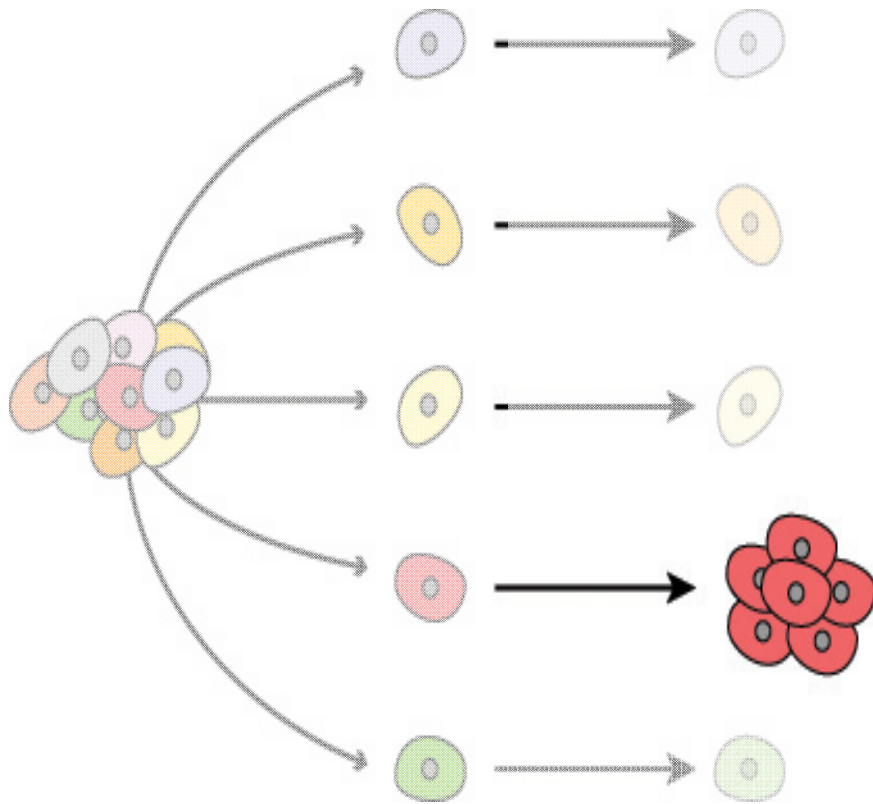
# What's coming in cancer therapy?



New targeted drugs that specifically kill cancer stem cells **without harming normal stem cells** should remove the “root” of the cancer.

The rest of the cancer cells should die on their own, or conventional chemotherapy drugs can be used to kill these cells

# Scientists are searching for answers to these questions about cancer stem cells...



What makes these cells different?

What kinds of drugs can target these cells?

What cellular pathways are affected by drugs that target these cells?

Are there other possible drugs that target those pathways?



# Cancer Stem Cell Cartoon

Work with your team to draw a stem cell cartoon strip that illustrates the answers to questions:

- 3, 4 and 5, or
- 6 and 7, or
- 8 and 9

