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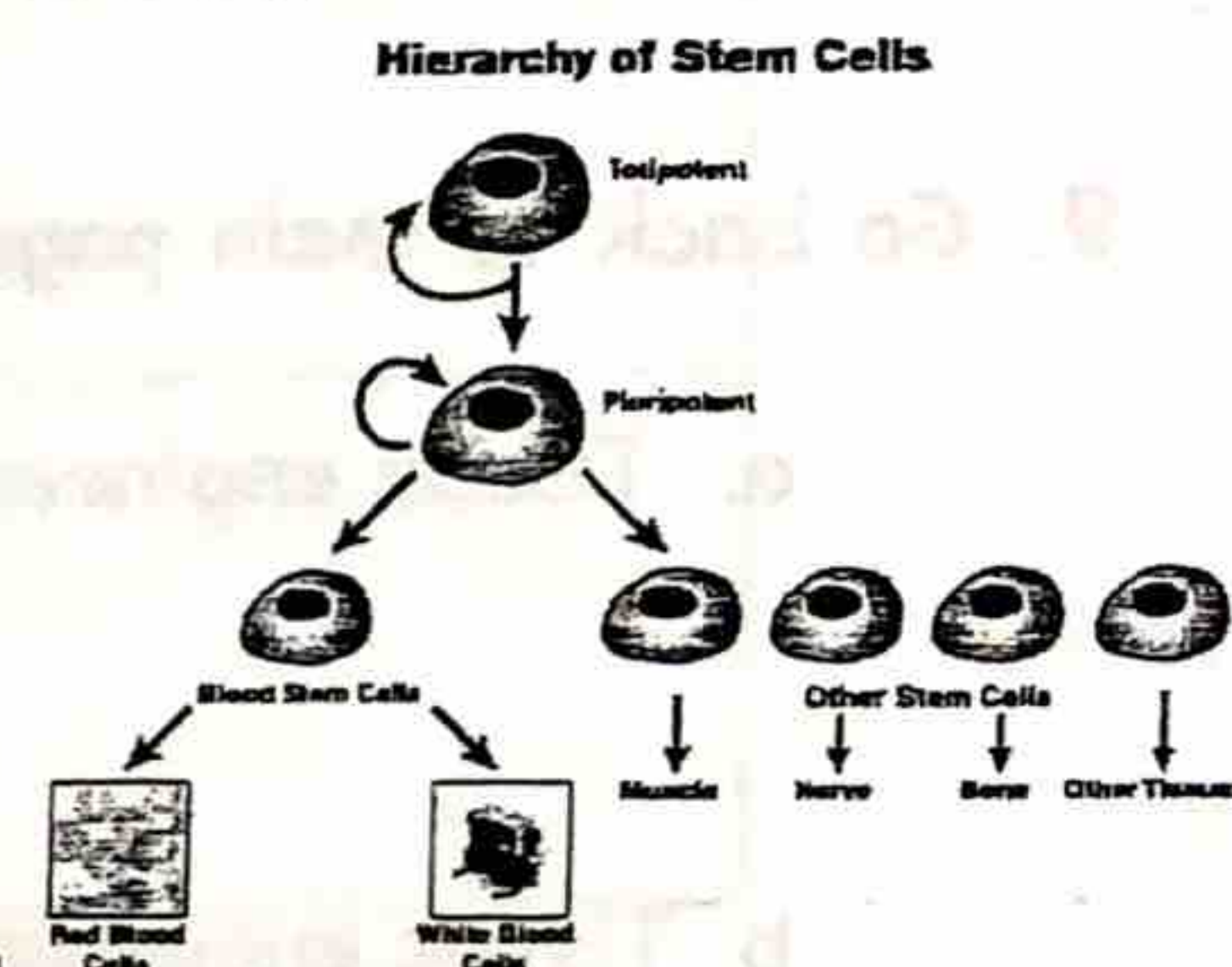
## Webquest: Stem Cells in the Spotlight

**DIRECTIONS:** You will be exploring a website that discusses what stems are, where they come from and how they are used. Following prompts below and answer the questions that correspond with the prompt.

1. Go to the following website: <http://learn.genetics.utah.edu/content/tech/stemcells/>
2. Click on "The Nature of Stem Cells."
3. Click on the "CC" button in the bottom left corner to turn on the closed captioning.
4. To begin, click on the triangle on the right hand side of the screen. You will need to click on the triangle to continue to progress through the slides.

a. What does it mean to differentiate?

b. What is a stem cell?



### "Reversing Cell Differentiation"

5. Go back to main page. Click on ~~The Story of IPS Cells~~.

a. Once a cell becomes specialized, can it become any other type of cell? Explain.

6. Go back to main page. Click on "Stem Cell Quick Reference." Complete the chart.

Stem Cell Type:	Embryonic (ES)	Somatic	Induced Pluripotent (iPS)	Therapeutic Cloning
Where they come from				
Potential as Therapy:				
Special Considerations				
Ethical Considerations				



7. Go back to main page. Click on "Go, Go Stem Cells." Explore several Stem Cell Niches.

a. What is a stem cell niche? (Click on the "show text")

b. Choose and describe one of stem cell niches. (Click on the "show text")

8. Go back to main page. Click on "Stem Cells in Use."

a. What are three sources of stem cells that can be used to treat blood-based diseases?

9. Go back to main page. Click on "Unlocking Stem Cell Potential."

a. Tissue engineers are currently using stem cells to repair what type of tissue?

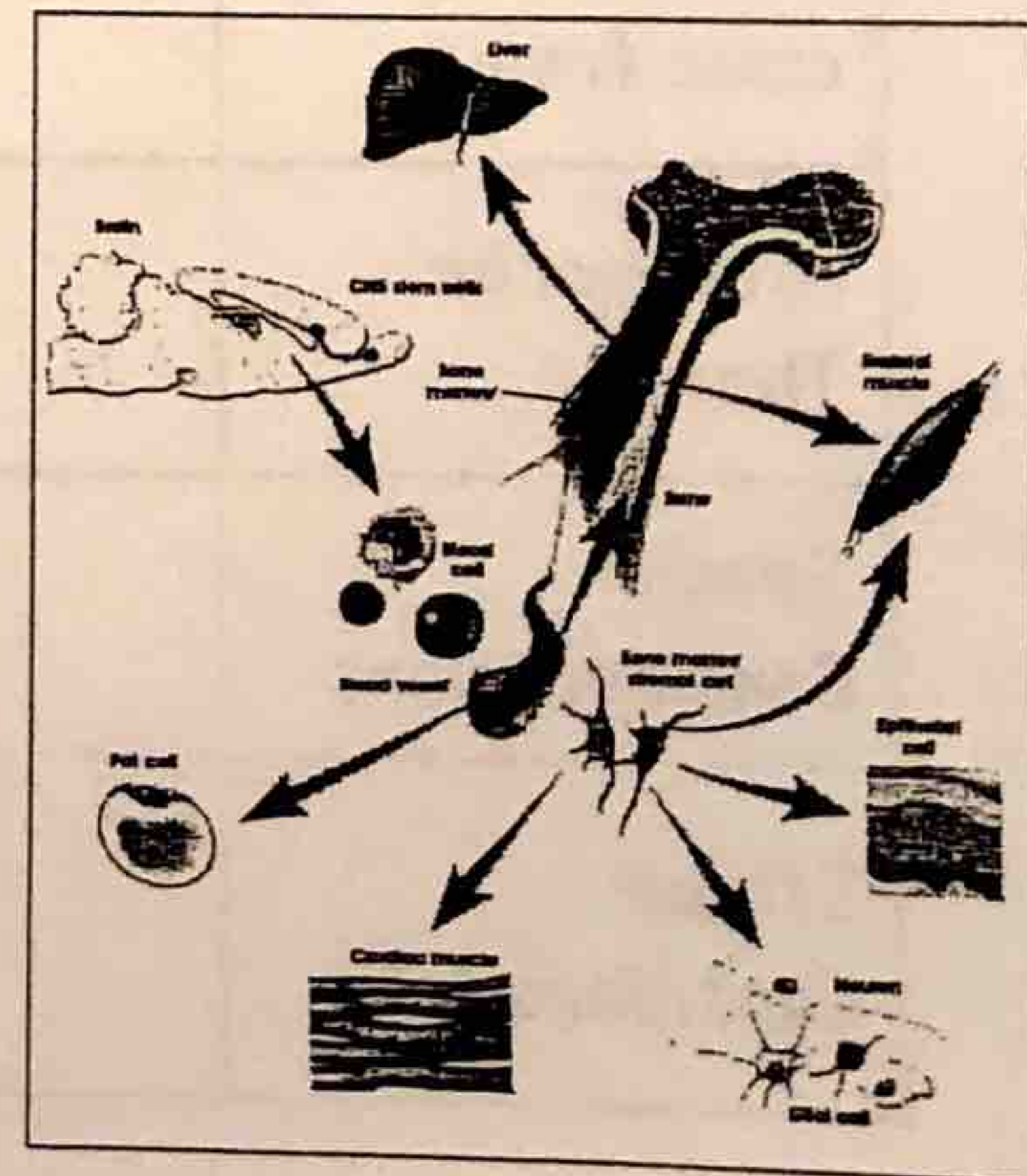
b. Tissue engineers have also grown what whole organs in animals?

10. Go back to main page. Click on "The Stem Cell Debate: Is it Over?"

a. When were stem cells first removed from embryos?

b. Why is this controversial?

c. What are the current U.S. laws regarding embryonic stem cells?





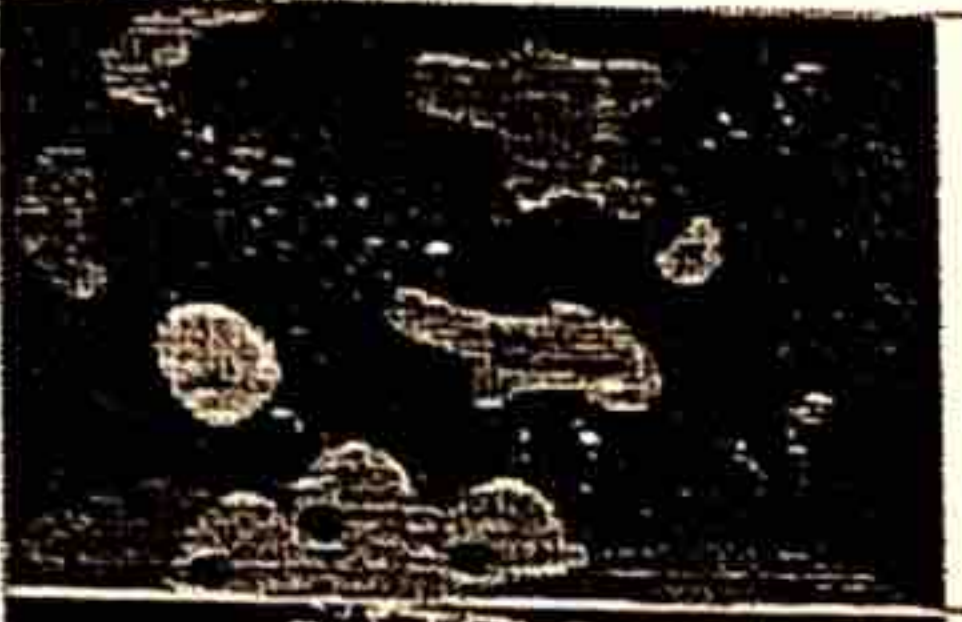


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# GO GO STEM CELLS


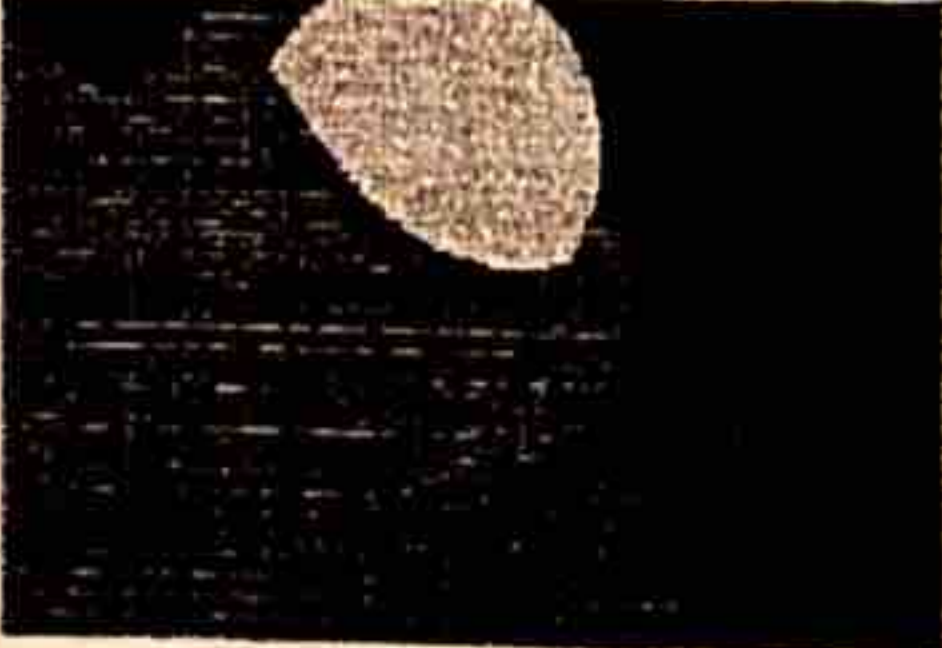
## An Introduction to the Stem Cell Niche

	What is a stem cell niche?	
	How does the niche control stem cell differentiation?	
	What can happen if the niche doesn't function properly?	

## Brain Cell Niche

	What two types of cells did the stem cells differentiate into?	
	What are functions of the newly differentiated cells?	

## Blood Cell Niche

	Newly differentiated red blood cells from this niche produce hemoglobin. What is hemoglobin?	
	How long will the red blood cell live in the bloodstream before a new one takes its place?	

Cell Cycle Quiz  
Review Sheet