

Review items

# Biology

- Lots of work on classifying and understanding where and how different plants and animals lived.
- After Mendel a switch from studying types of organisms to understanding the chemical basis of life.
- Understanding life: “young science” DNA discovered in 1950’s
- Tremendous personal satisfaction helping humans
- Ethical concerns

# Acoustics

- Musical instruments
  - Typically categorized by type (wind, brass, string, etc...)
  - Compared and contrasted individual instruments
  - Generalized the basics of ***why they work***

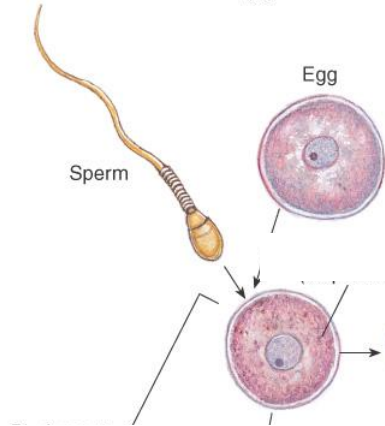
# Seismologists

- Young science: Plate tectonics 1960's
- Geologic time is extremely hard to envision. Rocks move 1 inch per year. We have ~150 years of data on earthquakes.
- Work in the field
- Can only drill 10 miles into earth ~4000 miles deep
- Use sound waves to study the earth.
- Monitor earth's activity (including nuclear activity)



# What is a stem cell?

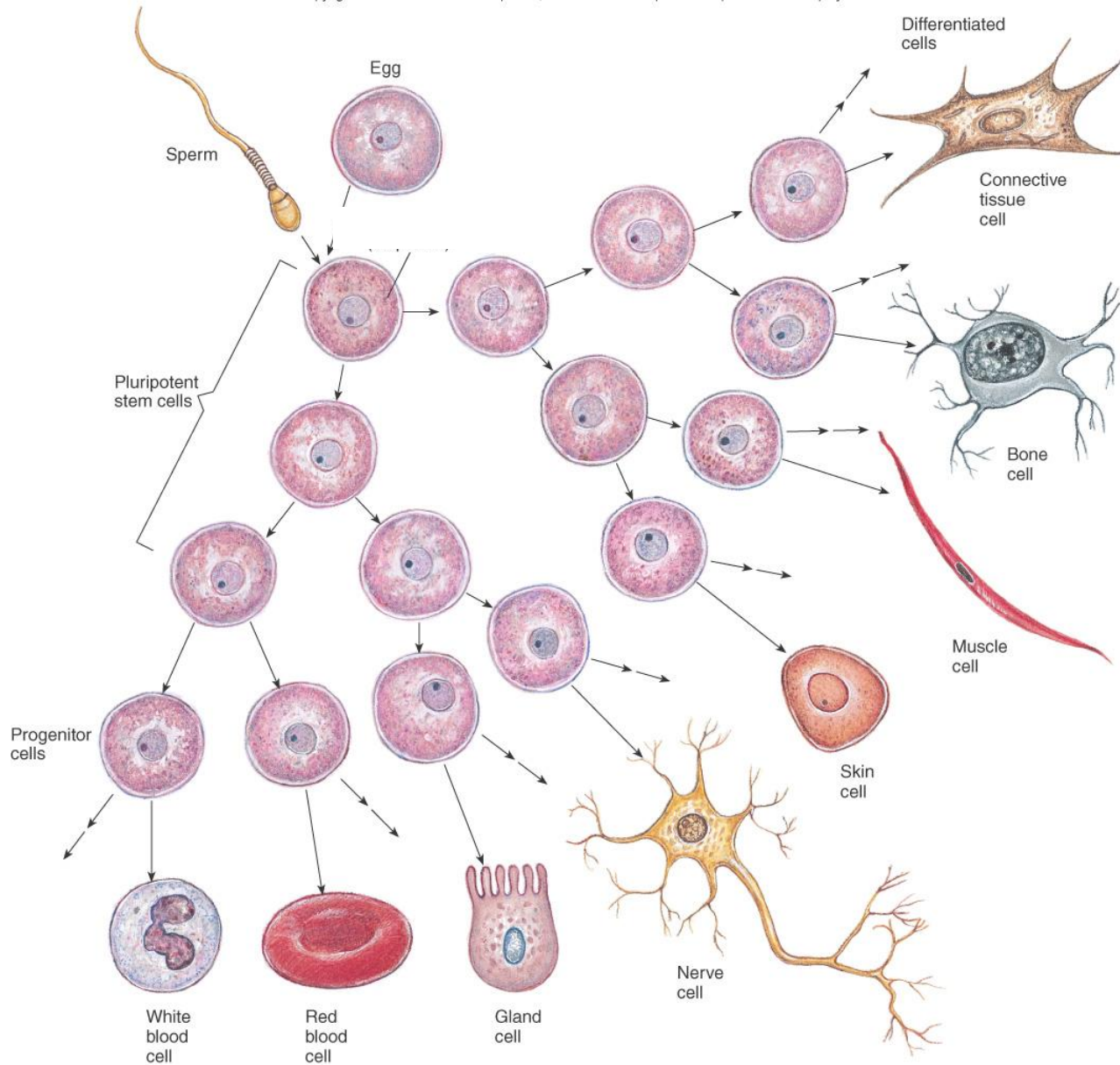
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Differentiated

# What is a stem cell?

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# Stem Cells

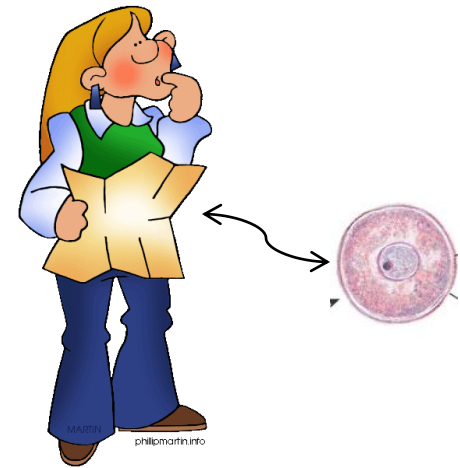
Undifferentiated cells that contain all of our genetic information



**Not just in the umbilical cord**

complete directions to build a person (or frog or...).

- Bone marrow (to make blood)
- Testes (to make sperm)
- Embryo (first two weeks)
- Umbilical cord
- Various other areas in body



- Are eggs and sperm stem cells?

A. Yes

B. No



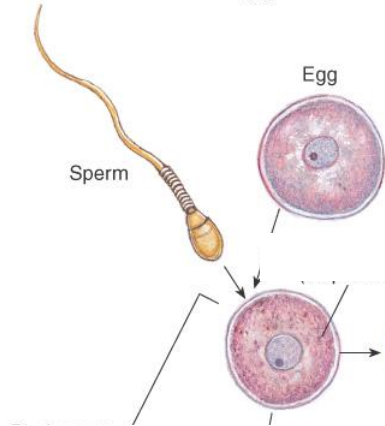
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**B. No**

# What is a stem cell?

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Differentiated

# Mitosis vs. Meiosis

All answers for humans.	Mitosis	Meiosis
# of divisions	1	2
# of daughter cells	2	4
Daughter cells differ or same?	The 2 daughter cells are identical	Each daughter cell is unique
# chromosomes in daughter	46	23
When does it happen?	In nearly every process of plants and animals including A-sexual reproduction	In men, all the time after they mature. In women starts as fetus then resumes if an egg is fertilized.
Purpose in body?	To create more cells (growing leaves, new tissue, basically everything)	Reproduction only. Eggs and Sperm.

# Who undergoes mitosis?

- A. Humans
- B. Animals
- C. Plants
- D. A & B only
- E. All of the above

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