

Characterize *C. elegans*

1. Are daughter cells always the same size or can they be different sizes?
2. Does cell number increase in the rate of 2 X (1 -> 2 -> 4 -> 8 -> 16 ---)?
3. Why do cells divide at different time?
4. Why are the daughter cells different sizes?
5. How do cells know where to divide or to go?
6. Do all the cells divide?
7. Does the embryo grow while its cell number increases?
8. Does the size (e.g.: volume) of a mother cell equal to the sum of its two daughter cells? (You might want to use measurement tools, such as ImageJ, for comparison.)

Human Family Tree

1. What is a human family tree?
2. What does your family tree look like ?
3. What can you discover from your family tree?
4. How is your family tree different or similar to another person's family tree?
5. Are you any different, in terms of development, from your ancestors?

C. elegans Cell Lineage

1. What does the lineage (family tree) look like for each focal plane?
2. Does a cell always have the same neighbors and how important this might be in its development?
3. Why is the cell lineage/cell pattern of lineage the way it is?
4. Does a specific cell always appear at around the same time (or location) in every embryo?
5. Which of the daughter cells divides first?
6. Why are two daughter cells unequal size after cell division?
7. Why do the edges of the cells wiggle so much?
8. When is a cell's fate determined?
9. How are different cell types generated?
10. How does a cell know where to divide or where to go?
11. Do all *C. elegans* embryos divide and develop in a similar fashion? How important is it to have similar or different developmental patterns?

Family Tree vs. Cell Lineage

1. What might be the similarities and differences between your family tree and a cell's family tree?
2. Are the successor daughter cells in the *C. elegans* embryo developmentally more differentiated than their predecessors?
3. Developmentally, are you more advanced/specified/differentiated than your grandparents?
4. How do the fully differentiated cells, such as intestinal cells differ from their mother cell?