

## Observing Cell Division – Looking at Onion Root under the Microscope

### p. 47 Answers

- a) Onion root tip (and whitefish embryos) are used because these tissues are growing fast and will have lots of mitosis occurring. It is easy for us to find cells dividing here.
- b) You should notice that rapidly dividing cells are smaller than non-dividing cells
- c) . Remember the cytoplasm is divided into 2 cells and therefore each of the daughter cells are smaller than the original parent cell.
- e) We did not look at animal cells (fish embryos). IF we did, you would notice that plant cells are more rectangular in shape. They have a cell wall. Animal cells tend NOT to be rectangular and do NOT have a cell wall.
- f) This question is up to you. Which stage did you find most difficult to distinguish? Why?
- g) The actively dividing cells are mostly found near the very tip of the root under a protective root cap. (see Figure 1 on page 46)
- h) Whitefish embryo cells will not divide indefinitely (forever). Once the fish has reached its size, the cells will divide much less frequently. Remember, cells divide for 3 reasons: growth, repair and reproduction. Once the growing is largely done, the mitosis slows down immensely. The fish embryo does not need to repair and it not ready to reproduce yet.
- i) A herbicide that makes cells divide more rapidly would kill the plant because it forces the plant to stay in mitosis. If its dividing, the cell is not doing its job. This is essentially what cancer is. For the organism (the plant) to live, the cells must do their job and not just divide. This toxin would also be harmful to humans for the same reason.
- j) If two daughter cells did not have identical chromosomes, then at least one of them is mutated and likely would die. To be 'viable' (live-able), the cells need the proper number of chromosomes.