

Read page 148-153

In-Class Assignment/Homework

Page 153 #2,3,5,6,8,9

Quiz Thursday

→ Know Mitosis diagram

→ including Centrioles and Spindle fibers

→ Know why cells divide

→ know what cell division produces

→ if given an example \bar{w} Chromosomes
find out how many are in daughter cells¹⁴.



Page 153

1) Describe the cell cycle. What happens during interphase?

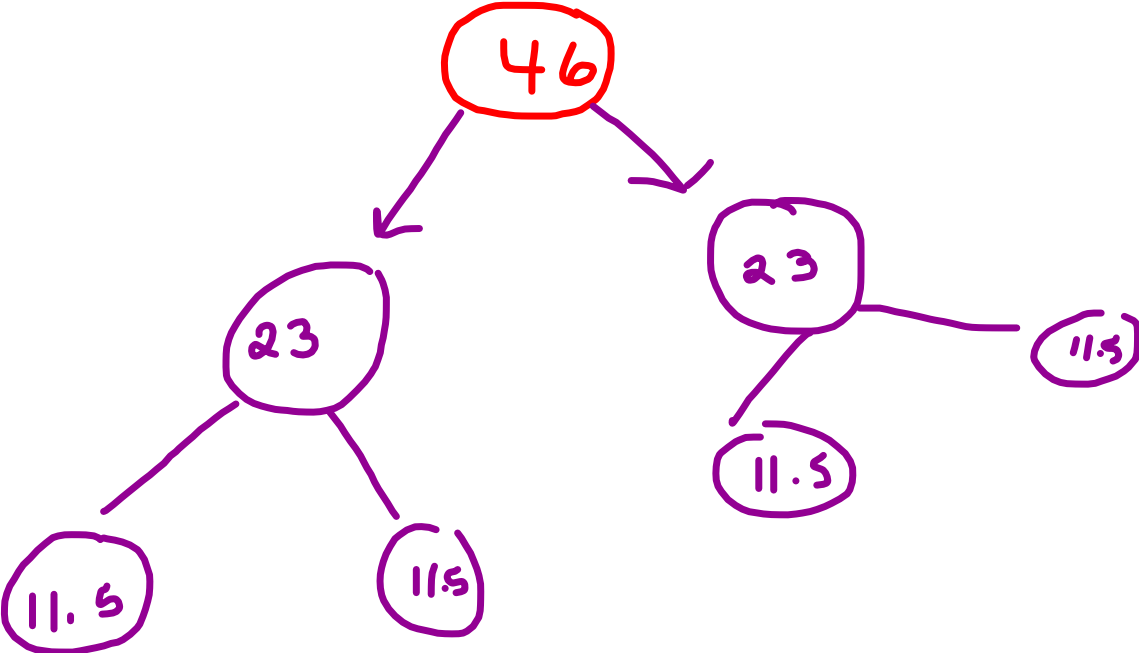
Ans:

Interphase is marked by rapid growth and duplication of genetic material

2) Why is duplication of the nuclear material necessary during the cell division?

Ans:

For the two new daughter cells to carry out the activities necessary for life, they need all the genetic information contained in the nucleus of the parent cell. During cell division the duplication of the genetic information allows cells to meet this requirement.



3) How do the new cells form during cell division compared with the initial cell?

Ans: The new cells are identical to the original cell.

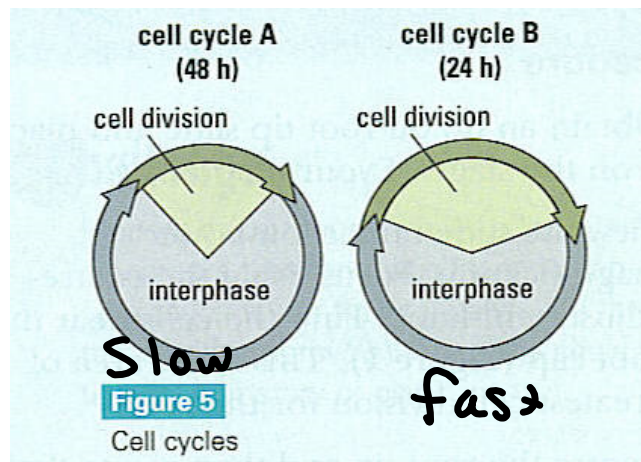
5) A normal human cell has 46 chromosomes. After the cell has undergone mitosis, how many chromosomes would you expect to find in each cell?

Ans: 46 chromosomes

6) Cells alternate between phases of dividing and not dividing. The sequence of events from interphase to the next is called the cell cycle.

(a) Describe the differences between the two cell cycles in fig 5.

(b) Which cell cycle represents a cell of an embryo or fetus and which a cell in an adult? Give your reason.



(a) The cell represented by "Cell Cycle A" is dividing much slowly because it takes 48 hours to make one complete cell cycle compared to "Cell cycle B" which only takes 24 hours.

(b) Cell B represent the fetus because a fetus goes from one cell to trillions of cells in just 9 months.

8) X rays and other forms of high-energy radiation can break chromosomes apart. Physicians and dentist ask women if they are pregnant before taking X rays. Why don't they want to X ray pregnant women?

Ans: Cells of the embryo divide rapidly and each cell gives rise to many thousands or hundreds of thousands of similar cells. Damage to a single mother cell can cause problems in a large number of cells. The chromosome damage could cause problems with development

9) Draw a sketch of your body. Under the sketch, list area of the body where you think cell division is most rapid. Why do you think cells from these areas divide most rapidly? Check your answer once again at the end of the chapter.

Ans: Various diagrams can be provided.

- An area of rapid cell division is the skin, especially the hands and feet, which suffer a great many abrasions. These cells must be replaced quickly.
- Generally, cells exposed to wear, such as those that line the esophagus and stomach, are replaced quickly.

Passive

(d) Any reasonable prediction should be accepted.

(e) Accept a variety of answers. Many students will agree with Needham's conclusions at this point. The question is designed not to produce a correct answer, but to initiate thinking about Needham's experiment.

(f) Accept a variety of suggestions. Students check more of the broth for microbes, boil the broth longer, or check the seal on the flask.

(g) There may be only a few microbes left in the flask; however, the drops of fluid containing the microbes are not examined under the microscope. Only a few drops of fluid are examined.

(h) All of the microbes could be killed by increasing boiling times.

(i) It would prevent the invasion of airborne microbes into the nutrient broth.

(j) Fewer microbes or no microbes found.

(k) All the microbes have been killed by increasing boiling time.

(l) These few microbes reproduced into a great many offspring.

(m) New microbes are introduced.

(n) Microbes did not contaminate the beef broth in the flasks. The microbes were trapped in the neck of the flask; however, fresh air flowed into the flask.

(o) Yes, because when the flask was tipped and the broth ran into the neck of the flask, microbes trapped in the neck entered the beef broth and began reproducing.

(p) Microbes were found in the flask after it was tilted. Beef broth was inoculated with microbes (procedure B, see diagram c).

(q) In procedure A, the flask was not tilted. The beef broth did not come into contact with the microbes trapped in the neck of the flask.

Understanding Concepts

1. Spontaneous generation theory proposes that nonliving things can be transformed into living things spontaneously.
2. Redi was attempting to control access of flies to the meat.
3. Boiling time and amount of time the flasks were left undisturbed.

5.3 Case Study: Discovering the Origin of Cells 2-21

search the work of Louis Pasteur, he theory of spontaneous

ent's ideas about cells as life are active only when they invade y contain genetic information but nes, cytoplasm, or true nucleus, considered cells or living.

ound particles, called prions, linked to various diseases. These o chromosomes or hereditary they know how to spread to other ly in numbers. Are they cells? aser, "The Prion Diseases," n, January 1995, teacher Prions are not considered living. mplete BLM 5.3, Life from could.

ans in the text when explaining timeous performed by Pasteur, allauzani. Rewrite so that long, ees, become concise and es.

SDC-330