UNIT 7

CELL STRUCTURE

# Cytology- the study of cells (cyto-cells ology- study of)

Reasons to study: 1. To understand the underlying functions of your body.

2. for general understanding of the basic unit of life of all organisms

1. The discovery of cells
2. Robert Hooke—first person to observe and name cells; observed dead cork cell
3. Anton van Leeuwenhoek- first person to observe living cell from material he scraped from his teeth; named them “wee beasties”
4. Microscopes improved – scientists were able to observe structures in side cells, such as the nucleus and cytoplasm
5. The Cell Theory
6. People involved:
7. Schleiden- stated that plants and plant parts are made of cells
8. Schwann- stated that animals and animal parts are made of cells
9. Virchow- stated that existing cells give rise to new cells
10. Cell Theory- Summarized the conclusion of these three scientist
11. All living things are made of cells
12. Cells are the basic units of structure and function in organisms
13. Cells come form pre-existing cells
14. Basic structure
15. Cell membrane ( also called Plasma membrane)
16. Composed of a phospholipid bilayer with proteins embedded within: fluid-mosaic model
17. Functions:
18. gives the cell shape
19. selectively permeable- regulates what enters and leaves the cell
20. helps maintain homeostasis
21. Nucleus
22. the control center or brain of the cell
23. contains chromatin (condenses into chromosomes during cell division) which is composed of the genetic material (DNA)
24. cytoplasm- all material between the nucleus and cell membrane, including a fluid jelly-like substance that holds the organelles in suspension
25. Organelles: (“small organs”) contained within the cytoplasm; each surrounded by membranes
26. mitochondria-“powerhouse” of the cell; functions in cellular respiration and production of energy
27. endoplasmic reticulum (ER)- the assembly line of the cell; functions as a communication network
28. rough ER- has ribosomes attached
29. smooth ER – no ribosomes attached
30. ribosomes- sites of protein synthesis within the cell
31. Vacuoles- sites for storage of food, liquid and waste.
32. Centriole- functions during animal cell division
33. chloroplast- contains chlorophyll; site of photosynthesis
34. Differences in cells
35. all cells can be divided into two large categories
36. prokaryotic
37. do not have true nucleus or membrane-bound organelles
38. Do have a single circular chromosome and rings of DNA called plasmids
39. Includes all bacteria and blue-green algae (cyanobacteria)
40. Eukaryotic
41. do have a true nucleus and membrane-bound organelles
42. nucleus contains chromosomes
43. includes all other cells besides bacteria and blue-green algae
44. Viruses do not fall into either of these categories; they are cellular packages of nucleic acid surrounded by a protein coat
45. Plant vs. Animal cells
46. Plants have:
47. cell- wall made of cellulose; rigid and maintains its shape
48. chloroplast
49. large, central vacuole
50. animals have a centriole