

Historical Development of the Cell Theory

Textbook Reference: Section 1.1

Terms

Schleidan	Francesco Redi	Brown
Schwann	Spalanzani	Braun
Abiogenesis	Louis Pasteur	Virchow
Biogenesis	Robert Hooke	
John Needham	Leewenhoek	

Questions

Section Review (Page 11) #'s 1-7

- (a) Distinguish between abiogenesis and biogenesis.
(b) What evidence appeared to support the theory of abiogenesis?
(c) What evidence supported the theory of biogenesis?
- (a) Use a diagram to explain each of the experiments carried out by the following scientists:
(i) Redi (iii) Spallanzani
(ii) Needham (iv) Pasteur
(b) Explain how all experiments were good examples of the scientific method. How was Needham's experiment flawed?
(c) Why do think that scientists were so willing to discount the work of Redi and Spallanzani but accept the conclusions of Needham?
- What is the cell theory?
- What were the contributions made by scientists to the cell theory?
- Why was the work of Brown, Schleiden and Schwann not accepted by others at the time?
- What technological advancement led to the discovery of the cell?

Introduction to the Microscope

Textbook Reference: Sections 1.1 and 1.2

Terms

Resolution	High power objective	Turret
Magnification	Coarse adjustment knob	Iodine
Simple microscope	Fine adjustment knob	Crystal violet
Compound microscope	Arm	TEM
Stereo-microscope	Clip	SEM
Ocular lens	Stage	Field of View
Nosepiece	Diaphragm	Depth of Field
Body tube	Condenser lens	Actual specimen length
Low power objective	Illuminator lamp or mirror	Scale
Medium power objective	Base	

Questions

Section Review (p.22) #'s 1, 2, 3, 4, 5 and 6

- Define resolution.
- How can resolution be improved beyond 0.2 μm ?
- Why will increasing the magnification not improve resolution?

4. Compare and contrast each of the following:
 - (a) light and electron microscopes
 - (b) SEM's and TEM's
 - (c) Stereomicroscopes ton SEM's
5. What is the total magnification of a compound microscope which has an ocular lens magnification 10X and an objective lens of magnification 45X?
6. How are specimens prepared for TEM'S?
7. How are specimens prepared for light microscopes?
8. Why should you never use the coarse adjustment knob on high power?
 - Be familiar with the use and operation of the microscope.
 - Be familiar with the preparation of a wet mount
 - Be familiar with how to stain a specimen and common stains.
 - Be familiar with biological drawings.

Cells

Textbook Reference: Section 1.3

Terms

cytology	prokaryotic	eukaryotic
protoplasm	cytoplasm	cytosol
nucleoplasm	dehydration synthesis	hydrolysis
organelle	cell membrane	nucleus
nuclear envelop	nucleolus	nuclear pores
chromosomes	gene	DNA/RNA
endoplasmic reticulum	rough ER	smooth ER
golgi bodies	vesicles	ribosomes
mitochondria	cristae	lysosome
peroxisome	vacuole	food vacuole
contractile vacuole	microtubule	tubulin
basal body	cytoskeleton	centrosome
actin	cilia	flagella
centrioles	microfilaments	cytoplasmic streaming
cyclosis	central vacuole	turgor pressure
cell sap	cell wall	cellulose
primary cell wall	Secondary cell wall	plastids
leucoplast	amyloplast	chromoplast
chloroplast	thylakoid disc	stroma
grana	chlorophyll	

Questions

Section Review (p.34) #'s 1,2, 5, 6, 7, 8, 9,10,11, 12

1. Distinguish between prokaryotic and eukaryotic cells.
2. Choose any five organelles and compare their structure and function to that of any organ system.
3. Distinguish between the structure of plant and animal cells.