

Study Questions for Survey of Biology: Test 4

Sections Covered: Chapter 14 pages 287-289 (taxonomy), 15 (Archaea, Bacteria, Protista), 16 (Plantae and Fungae) and 17 (Animalia)

This is not an all inclusive guide. Study your class notes and read the textbook. Spaces below are not necessarily the size of information to be written. Use this as an organizing principle. Try flashcards or larger tables.

Terms:

Carolus Linnaeus and taxonomic classifications (DKPCOFGS)

- D = Domain
- K = Kingdom
- P = Phylum
- C = Class
- O = Order
- F = Family
- G = Genus
- S = Species

Photoautotrophs ^{CO₂}
Photosynthetic, carbon dioxide as carbon source. Cyanobacteria & Plantae

Chemoautotroph
Energy from inorganic chemicals, CO₂ as carbon source. Includes some bacteria, archaea.

Chemoheterotroph
Energy AND carbon from organic compounds — Animalia and Fungae.

Photoheterotroph
Photosynthetic, carbon from organic molecules

Binary fission Cell grows & divides without mitosis — prokaryotic (bacteria & archaea)

Nucleoid DNA is here in prokaryotic cells — part of cytoplasm

Domain Archaea Inhabit extreme environments — prokaryotes no nucleus

Domain Bacteria No nucleus — divide by binary fission

Domain Eukarya Have nuclei — Animalia, Plantae, Fungae, Protista

Gametophyte and sporophyte → diploid — makes spores by meiosis (2N)

haploid → 2N
Haploid and diploid → 2N

Flower: petals, anther, ovary, ovule
→ makes pollen → develops into fruit
→ develops into seed

Acoelom, pseudocoelom, eucoelom = coelom → "false" body cavity — in between mesoderm & endoderm

One versus two hole body plan
One hole: hydra, jellyfish, etc.
Two hole: roundworm or earthworm




Ectoderm, mesoderm, endoderm
↓
mostly external layer
↓
middle layer
↓
innermost digestive layer

attracts bees & other insects
no body cavity



Tetrapod Terrestrial vertebrates, 4 legs

1) What are the three shapes of bacteria?

- Bacillus = Brick or rod-shaped 
- Coccus = Spherical (circle 3-D) 
- Spirilla = Spiral or s-shaped 

2) What is the proper way to write a Genus species name? Homo sapiens

3) Which prokaryotic domain is closest to the Eukarya domain? Archaea

4) What characteristics distinguish the Kingdoms :

- Protista most are unicellular — don't fit in to the other kingdoms
- Plantae photosynthesis & waxy cuticle
- Fungae decompose for food
- Animalia chemoheterotrophs — eat food for carbon & energy

5) What organisms were the ancestors of land plants? green algae

6) What are the terrestrial adaptations of bryophytes? What characteristics of land plants do bryophytes lack?
 → avascular → have flagella for sperm — require water

7) Which were the first vascular plants? ferns → waxy cuticle, retention of embryos in the mother's reproductive structure

8) Which were the first plants with seeds and pollen? Gymnosperms

9) What are the characteristics of each group of plants (bryophytes, ferns, gymnosperms and angiosperms) or avascular (nonvascular) vs. vascular; seed bearing vs. seedless; pollen or flagellated sperm, etc.)? What is pollen and which group of plants first evolved pollen? In which group of plants is the gametophyte dominant and which is group of plants is the sporophyte generation dominant?

	Avascular vs. vascular	Seedless vs. seed bearing	Flagellated sperm vs. pollen	Dominant generation is sporophyte or gametophyte	Pollen Fruit
Bryophyta (moss)	avascular	seedless	sperm	gametophyte	NO
Fern	vascular	seedless	sperm	sporophyte	NO
Gymnosperm	vascular	seed bearing	pollen	sporophyte	NO
Angiosperm	vascular	seed bearing	pollen	sporophyte	YES

sperm = water required (+ centrioles)
 pollen = no water (no centrioles)

10) List the major body characteristics (i.e., number of holes to body plan, symmetry, type of coelom, and other distinguishing characteristics) of all Phyla in the kingdom Animalia. Know examples of each group.

	Body plan (hole)	Symmetry Asymmetric, Radial, bilateral	Coelom	Examples
				<i>Spongia officinalis</i>
Porifera (sponges)	none	none	No tissues can't have coelom	kitchen sponge
Cnidaria	one	radial	Two tissues can't have coelom	jellyfish, sea anemone, coral
Platyhelminthes (flatworms)	one	bilateral	Acoelomate 3 tissues	blood flukes, tapeworms, planarians
Nematoda (roundworms)	two	bilateral	Pseudocoelomate	roundworms
Annelida (segmented worms) earthworms	two	bilateral	true coelom	earthworms, leeches, polychaetes
Arthropoda	two	bilateral	true coelom	spiders, crabs, insects, millipedes
Mollusca	two	bilateral	true coelom/ eucoelomate	snails & slugs, clams, squids, octopuses
Echinodermata	two	radial as adult	true coelom	sea stars, sand dollars, sea urchins
Chordata	two	bilateral	true coelom	mammals, birds, reptiles, some fish

Know evolutionary relationships (see figures on evolutionary relationships to determine which groups are more primitive (earlier) and which are closely related).

11) What are the four characteristics of Chordata? (in any order)

- a. a dorsal, hollow nerve cord
- b. a notochord
- c. Pharyngeal slits
- d. a post-anal tail

12) What are examples of invertebrate Chordata? lancelets & tunicates

13) What are the distinguishing characteristics of the classes of Vertebrata? Know examples of the classes.

<u>Class</u>	<u>Diagnostic characteristic</u>	<u>Example(s)</u>
Agnatha	lacked jaws (jawless)	lamprey
Chondrichthyes	cartilaginous fish (completely)	sharks, skates, rays
Osteichthyes	bony fish w/ a bony operculum ^{over} gills	trout, salmon
Amphibia	moist skin, many glands, land & water adaptations	frogs
Reptilia	scales, lungs for air, amniotic eggs	crocodiles, snakes, turtles, lizards, tuatara
Aves	Feathers	pigeons, owls, robins, penguins, ostriches
Mammalia	Hair, mammary glands	humans, dogs, cats, kangaroos, whales

→ most are cold-blooded & lay eggs → lobe-finned fishes

14) What group of fish evolved into Amphibians? What group of mammals laid eggs? Which group(s) of mammals have placentas?

→ marsupials AND eutherians

→ monotremes

15) What evidence leads to classification of Phylum Echinodermata being closer to the Phylum Chordata, than to the other animal phyla? Both develop anus before mouth in embryonic development.

16) Know examples of each animal phyla? Which is the most diverse phyla of animals?

pg. 3

~~Chordata~~ Arthropoda

17) Which living anthropoid is most closely related to humans? (chimps) (in # of species)

18) What is the "out of Africa" hypothesis? Homo sapiens evolved in and migrated from Africa

19) Which group of "Homo" was "handy" man? Homo habilis, "handy-man"