

The Bio 2 Finals Study Guides

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Bio 2 Lecture Final Study Guide!:

Know this! Is this it? NO!. I am not saying this is all you need to know to get every question correct on the final. For that, you need to know everything! BUT, this will help “guide” your path of study. Knowing at least this is a very good start! I would say the study guide covers 90% of the lecture final.

- 1) Make sure you know the geological time scale. Mainly (but not entirely!) the Era’s and Periods. There will be about 10-15 questions on the geological time scale alone!
- 2) Know the general characteristics, examples, and diseases caused (if any) of the following domains of bacteria: Gram +, Proteobacteria, Spirochetes, Chlamydiae, Cyanobacteria.
- 3) Know the following general characteristics, examples, taxonomy and diseases/environmental problems (if any) of the following Protozoa clades/groups: Alveolata, Diplomonadida, Parabasalids, Kinetoplastida. Most taxonomy questions will be at the supergroup level for protozoans! Know the cladograms for the fungi, plants, protozoa, invertebrate animals and vertebrate animals.
- 4) Know the following general characteristics, examples and diseases/environmental problems (if any) of the following fungi divisions: Basidiomycota, Chytridiomycota, Deuteromycota, Zygomycota, and Ascomycota. Know the life cycles of these (if covered in class) but you will not need to draw them (they will be multiple choice if used).
- 5) Know the following general characteristics, life cycles (multiple choice, from pictures), and basic structures of Bryophyta, Pterophyta, Gnetophyta, Ginkgoophyta, Cycadophyta, Hepatophyta, Coniferophyta and Angiosperms. Make sure you know which parts are sporophytes and which are gametophytes.
- 6) Know the locations of the biomes of the world (from the map) and their general characteristics. Know the macro and micronutrients for plants and their general functions. Know the example of drugs we discussed that come from plants. Make sure you know the answers to the questions from the 11th hour video.
- 7) Be able to recognize the following structures from a cross section of a tree: Primary and Secondary Xylem/Phloem, Pith, Vascular Cambium, Late and Early Wood, Cork. Know the parts of a flower. Know the chart of the macro and micro nutrients.
- 8) Invertebrates: Know the taxonomy (to the level we discussed for each), unique characteristics and placement on a cladogram of the following invertebrate taxa: Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematoda, Rotifera, Annelida,

Arthropoda, Mollusca, Echinodermata, Chordata. Make sure you know which ones have an open or closed circulatory system, are diploblastic vs. triploblastic, are acoelomates, pseudocoelomates, or eucoelomates, and which are protostomes vs. deuterostomes. Make sure you know the following structures, their function, and which organisms have them: Ostia, Spongocoel, Osculum, Choanocyte, Cnidocyte, Nematocyst, Polyp, Medusa, Colloblast, Proglottid, Parthenogenesis, Gastrovascular cavity, Alimentary Canal, Protonephridia, Nephridia, Clitellum, Radula, Mantle, Foot, Visceral Mass, Torsion, Coiling, Cheliped, Water Vascular System, madreporite, stone canal, ring canal, ampullae, Aristotle's lantern, Dorsal Hollow Nerve Cord, Notocord, Pharyngeal Gill Slits, Post Anal Tail.

9) Vertebrates: Know the taxonomy (to the level we discussed for each), unique characteristics and placement on a cladogram for the following: Agnatha, Gnathostomata, Chondrichthyes, "Osteichthyes", Amphibia, "Reptilia", Mammalia, Aves. Make sure you know what type of heart each has (2,3, 4 chambered). Make sure you know the following terms associated with vertebrates and which taxa have/lack: Viviparity, Oviparity, Ovoviviparity, amniotic egg (and know the structures and functions of the parts), Anapsid, Diapsid, Synapsid skulls, feathers (and know the types of feathers and functions), homocercal and heterocercal caudal fins, pectoral fins, pelvic fins, anal fins, swim bladder, ampullae of Lorenzenii, Lateral Line, Rostral Organ.

10) Be able to recognize the placement of all major groups of animal phyla on a cladogram including (but not entirely limited to): Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca, Echinodermata, Osteichthyes, Chondrichthyes, Amphibia, Chelonia, Squamata, Crocodylia, Tuatara, Mammalia, Aves (I know these are mostly repeats of what I listed above, but here I am emphasizing the actual picture of the cladogram). Looking over the final, I would guess that there are at least 50 questions on either cladograms or matching a taxa two specific characteristics (that's 25% of the entire exam....minimum!). So, if you know one thing, make sure it's the taxonomy and related characteristics!

11) Know the anatomy and physiology of the following structures we discussed: Kidneys, Brain, Heart, and Muscle (sliding filament model: know the parts.). Understand what a resting potential is and the phases of an action potential and what is happening at a cellular level. Understand how immunity works, particularly the functions of T-cells and B-cells. Know the parts of the brain and the difference between the various animal brains.

Bio 2 Lab Final Study Guide:

FOR ALL ORGANISMS, be able to recognize them from a picture/specimen or microscope slide and (if you had to know them on previous practicals) know what disease or environmental problem the cause, how they are transmitted, and/or how they are used. Also, know the basic taxonomy (Kingdom, Phylum/Division, Class, Order, Family) for each listed IF we learned in class (for example, you do need to know the families of certain plants, but not the families of insects). For the protozoa, know what supergroup each belongs to but that is it. Also, for all the vertebrates listed, you need to know the specific things we mentioned in lab that you needed to know (how big they are, where they are found, what they are used for, etc BUT, most questions will be “what is it type”). For the taxonomic groups that we had “choices” for, you will now need to memorize (ie, you will need to know the orders of insects...there will be no sheet!). This study guide covers 99% of the final.

Bacteria, Archeae, Viruses

- 1) Be able to recognize the following bacterial shapes: Cocci, Bacillus, Spirillum
- 2) Be able to distinguish between Gram + and Gram – bacteria
- 3) Know the following bacteria: *Clostridium*, *E. Coli*, *Treponema*, *Chlamydia*

Protozoa

- 4) Know *Trypanosoma*, *Plasmodium*, *Giardia*, *Entamoeba*, Dinoflagellates, Diatoms, Foramineferans.

Fungi

- 8) Know *Rhizopus*, *Aspergillus*, Chytrids.
- 9) Know the following structures : Conidia, asci, ascospores, Stipe, Cap, annulus, Gills, basidia, basidiospores)
- 9) Know what a liverwort and moss look like., make sure you know a sporophyte from a gametophyte

Know the following plants and what we learned about them: Black Sage, California Buckwheat, California Redbud, California Sagebrush, Catalina Cherry, Cattails, Coast Live Oak, Coffeeberry, Encelia, Ginkgo, California Fan Palm, Mexican Fan palm, Pine Trees, Manzanita, Southern Magnolia, Fremont Cottonwood, Toyon, Western Sycamore, Walnut Tree, White Alder, White Sage, Sugar Bush, Lemonade Berry, Bulrush, Catalina Ironwood, Fringe Tree. Know the rank (in terms of numbers of species), the approximate number of species, and be able to identify the following plant families: Asteraceae, Orchidaceae, Fabaceae, Poaceae, Cactaceae, Crassulaceae, Apocynaceae, Lamiaceae.

Plant Structure and Function –Know the structures and differences

between a monocot/dicot root/stem. Be able to identify heartwood, sapwood, pith, vascular rays, secondary phloem, vascular cambium and cork. Be able to tell how old a tree is.

Invertebrates and Structures

– Know the following animals and their corresponding taxonomy: Sponges, Sea Jellies, Coral, Earthworms, *Ascaris*, Beef Tapeworms (including each parasites), Trichnella, Nematoda worms (including each parasite), Lobsters/Crabs/Crayfish, Spiders, Scorpions, Ticks, Fleas, Coleoptera, Hymenoptera, Diptera, Lepidoptera, Orthropetra. Be able to recognize the following structures radula, pedicellaria, tube feet, scolex,, polyp, medusa, cheliped, telson, uropod, Cervical groove, Aristotle’s lantern, mandilbe, gills, labial palps, Anterior and Posterior foot retractor, anterior and posterior adductor muscles, pallial line, right/left/top/bottom shells, mantel, foot, open vs. closed ambulacral grooves. Also the make sure you know the testis, ovary, shell gland, and yolk gland on the Liver fluke. Make sure you know the different fins found in fish: Heterocercal caudal fin, Homocercal caudal fin, pectoral fin, pelvic fin, anal fins, and dorsal fins. Parotid glands on a toad. Carapace and plastron of a turtle. Myrmecophagous behavior of horned lizards. Parthenogenesis of whiptails. Zygodactylic feet of chameleons. Protostomes vs. Deuterostomes, Diploblastic vs. Triploblastic animals. Gastrovascular cavity vs. Alimentary canal. Open vs. Closed Circulatory Systems.

Fish, Amphibians, & Reptiles –lamprey, hagfish, Great white shark, Manta ray, Hammerhead Shark, Coelacanth, gar, moray eel, hatchet fish, Loach, Sardine, catfish, salmon, grunion, sea horse, Sculpin, Garibaldi, Calif. Sheephead, Clownfish, Mosquito Fish, Pike, Knife fish, Dragonfish, Lantern Fish, Flying Fish, Clingfish, Cowfish, Ocean Sunfish, Mullet, Halibut, California newt, Bullfrog, Western Toad, Pacific Tree Frog, California Tree Frog, Red spotted Toad, Western fence lizard, Desert Horned Lizard, Southern alligator lizard, Side Blotched Lizard, Western Rattlesnake, Mojave Rattlesnake, Sidewinder, Gopher Snake, Common Kingsnake, Garter snake, Desert Tortoise, Red-Eared Slider, Desert Iguana, Mata mata, Inland Taipan Snake, Alligator, Crocodile, Gavial

Birds – Know the following birds: Black Phoebe, European Starling, Brewers Blackbird, Northern Mocking Bird, House Finch, House Sparrow, Great Blue Heron, Snowy Egret, Great Egret, Black Crowned Night Heron, Green Egret, Acorn Woodpecker, Bushtit, Yellow Rumped-Wabler, Western Bluebird, Road Runner, Crow, Turkey Vulture, Mallard.

Mammals – Know the following mammals: Opossum, elephants (both), pronghorn antelope, bighorn sheep, mt. lion, bobcat, blue whale, orca, white-sided dolphin, zebra, coyote, red fox, brown bear, black bear, grizzly, raccoon, otter, skunk, Calif. Sea lion, Harbor Seal, bat, beaver, ground squirrel, desert cottontail, jackrabbit, Primate skulls (Gorilla, Orangutan, Chimp, Bonobo, *Austraopithicus*, *Homo*). Sable Antelope, Defassa Waterbuck, Mouse, Oryx, Cape Buffalo, Lion, Leopard, White Rhino.

Other Items: Know the following organs on any dissection we did: Liver, Kidney, Heart, Stomach, Gizzard, Pancreas, Trachea. Make sure you know what city and county the Desert and Beach trips were in. Make sure you know what causes tides and the differences between spring and neap tides and the four zones found in the intertidal zone and the animals you would find in there. Know the following sounds/calls: Bullfrog, Pacific Tree Frog, Great Horned Owl, Barn Owl, Acorn Woodpecker, Cicada, Rattlesnake, Baby Alligator, Bushtit, Mocking Bird, From our Fieldtrips, make sure you know: Creosote Bush, Periwinkle, Owl Limpet, Blue-Banded Hermit Crab, Striped Shore Crab, Norris Top Shell, Dead Man's Fingers, Turban Snail, Wavy Turban Snail, Red Algae, Feather Boa Kelp, Willet, Cactus Wren, Mocking Bird, Black Phoebe, Meerkat, Badger, Coati, Bobcat, Mountain Lion, African Wild Dog, Hyena, Coyote, Mexican Wolf, Black-Crowned Night Heron, Great Egret, Snowy Egret, Green Heron, Great Blue Heron, American Kestrel, Arabian Oryx, Camel, Cheetah, Barn Owl, Great Horned Owl, Gila Monster, Leopard, Ring-tailed cat, and Desert Iguana!!!

How It will play out:

Lecture final will be worth:

200 points. Also, I will take your percent out of that 200 and count that as a third lecture exam. I will then count the top 2 out of 3 lecture exams. So the final counts as a final and as 3rd lecture exam.

The lab final/5th practicum:

There will be two exams on this day. First, Birds and Mammals will be regular 100 point lab practicum. This score will count as your 5th practicum.

The second exam will be a multiple-choice comprehensive practicum. This will count as your lab final worth 100 points. This will also count as a 6th practicum and I will take the best 5 of the 6. To make sure you do not blow this lab final, it will be multiple choice and **the study guide above will cover 99% of the lab final practicum.**