

Life in the Sea
Lab Final Study Guide
Spring 2011

REMEMBER, everything I say in lecture is fair game. Your lab notebook is your best friend, study it well young grasshoppers.

You will notice that this study guide looks suspiciously like your first study guide. That's because you will be tested on the same material, which you have already seen. This should be an advantage to you, because you know full well what to expect. Keep in mind that a majority of the curriculum you learned before the first practical.

However! There have been a few additions to the study guide so pay attention and look over the study guide closely.

Good luck.

Intro

Be able to define the following:

Taxonomy

Natural Selection

Evolution

Species

What is the point of classifying organisms?

What are the 3 domains?

What kingdom are we studying throughout this course?

Phylum Porifera

Why are these animals considered to be “the simplest” (hint: do they have true tissues and organs)?

Know the following:

Ostia

Spicules

Osculum

Feeding Chamber (what are choanocytes?)

Know the three classes of sponges and that the difference between these three classes is what kind of support structures they are composed of.... (for possible bonus points...)

Class Hexactinellida

Class Calcareae

Class Demospongiae

Phylum Cnidaria

How are cnidarians more complex than poriferans?

Know the following classes and what belongs in them:

Schyphozoa

Anthozoa

What kind of symmetry do cnidarians display?

What are their two basic forms?

What are nematocysts and what are their function?

Phylum Platyhelminthes

What kind of symmetry?

How are they more complex than cnidarians? (*hint: do they have tissues? Organs? Muscles? Centralized nervous system?*)

IT HAS A SIMPLE GUT!

KNOW that the gelatinous middle layer (*mesoglea*) found in cnidarians IS NO LONGER FOUND in flatworms and that they have evolved a TISSUE layer called the *mesoderm

KNOW THE DIFFERENCES BETWEEN THE PHYLUM ANNELIDA AND THE PHYLUM PLATYHELMINTHES

Phylum Annelida

KNOW how they are more complex than previous phyla (are you seeing a pattern yet?)

What is a hydrostatic skeleton and what is its function?

What class are most marine Annelids found in?

What are gills? What are their function?

Phylum Arthropoda

KNOW:

Subphylum Crustacea

Class Malacostraca

Class Maxillopoda

Subphylum Cheliceriformes

Subclass Merostomata

.... And what organisms belong in each of them.

What are the 2 primary morphological differences found in arthropods NOT FOUND in annelids?

How are they similar (*ahem! segmentation*) to annelids!

What is chitin? Where is it found in arthropods?

What is the function of an exoskeleton? How does it limit an arthropod?

Arthropods are very diverse, be able to describe at least 1 of 6 characteristics that all arthropods share.

Be able to describe in detail how arthropods grow (i.e how they shed their exoskeleton)

How would you discern whether a crab was male or female?

Phylum Mollusca

Know the classes and what belongs in them!

Class Cephalopoda

Class Gastropoda

Class Bivalvia

Class Polyplacophora

Know the phyla characteristics!

What is the mantle?

What is the radula?

Know which organisms have a reduced shell or no shell at all.

Know what a pen is and what organism it's found in.

What invertebrate group has the most complex nervous system?

Phylum Echinodermata

KNOW

Class Asteroidea

Class Echinoidea

Class Ophiuroidea

Class Holothuroidea

Defining Characteristics

-bilaterally symmetrical AS LARVAE...PENTARADIAL as adults

- WATER vascular system

- complete gut (know what this means)

- capable of both sexual and asexual reproduction (how does it asexually reproduce?)

- defense mechanisms in echinoderms (urchin = spines, loss of limbs, expelling stomach)

Know how to tell the difference between an octopus, a squid and a cuttlefish.

FISHES

Phylum Chordata

Subphylum Vertebrata

Class Myxini (copious amounts of slime!)

Class Petromyzontida

Class Chondrichthyes

Subclass Elasmobranchii

Superclass Actinopterygii

What are the four basic characteristics of chordates?

In what 3 ways do bony fish differ from elasmobranchs?

What is a clasper?

What is the definition of a fish?

What is the function of an operculum?

Know the different feeding strategies and the different reproductive strategies

Class Amphibia

-there are no present day amphibians (that was easy)

Class Reptilia

-Know they are air breathing and poikilothermic/ectothermic

-The marine iguana is the most 'recent' and feeds on algae.

-Sea snakes are venomous (you have to be 'special' to be bitten by one...)

-Sea turtles return to their natal beaches (the females) to lay their eggs. How is this beneficial to turtle species?

-Saltwater crocodiles are not really marine organisms, but they go where they want!

-know that reptiles have salt glands for osmoregulation

Class Aves

-all birds are oviparous (egg laying), have feathers and are homeothermic

- Penguins are endemic (only naturally occurs south of the equator) to the southern hemisphere and are flight less (but flies underwater)

-Some birds like the albatross and fulmar have tubular snout (where the salt glands are located)

-pelicans and their relatives have gular pouches to trap prey.

-know that if an organism gets 51% or more of its food from the sea, it is considered 'a marine organism'

Class Mammalia

-know that otters are the only mammals that lack an insulating layer of fat (they have a very dense pelt). They have the fastest metabolism of any marine organism

-know how to tell the difference between seals and sea lions

-know what makes manatees unique (when compared to the pinnipeds)

-what structure is used to separate the major whale groups?

-how do gray whales feed?

-why do whales breach?

-what is echolocation? What is this used for?

-what is 'bubble netting'? For bonus points I may ask you to tell the difference between dolphins and porpoises.

-what do pygmy sperm whales do when they are threatened?

Be sure you can come up with examples for the major groups covered. Know the identifying characteristics for the groups covered. The exam will mostly be matching, multiple choice, and a few short answer response questions. Happy studying and good luck!