

- 1 **Phylogeny Discussion Points**
- 2 **What is alive? How do you know?**
- 3 **What is the biogenesis paradox?**
 - ◆What are some alternatives to this conundrum?
- 4 **To UV or not to UV....**
 - ◆Yes we need it for protobionts
 - ◆NO it kills protobionts!
- 5 **Life in a flask....**
 - ◆What to put in the elixir of life
 - ◆What's allowed in the flask?
- 6 **Protobionts? Prions? Virions?**
 - ◆Ugh! Viruses! Now what?
- 7 **RNA**
 - ◆4 nitrogenous bases
 - ◆What's an INTRON!!!!
 - ◆Ribozyme? Ribosome?
- 8 **5 kingdoms**
 - ◆Monera
 - ◆Protista
 - ◆Fungi
 - ◆Plantae
 - ◆Animalia
 - ◆How? Why? Further Divisions?
- 9 **Rise to life**
 - ◆Not on rises
 - ◆What about methane?
 - ◆Cyanobacters! FACULTATIVE?
 - ◆Where?????
 - ◆Toxic oxygen
 - ◆Hot or cold? UV or NOT
 - ◆Membranes!
 - ◆THE AGE OF BACTERIA
- 10 **SEX? Who needs it?**
 - ◆Not prokaryotes! What about genetic variation?
 - ◆What are some of prokaryotic functions in ecosystems, organisms, etc

◆Back to the age of Bacteria! Still in the age of BACTERIA!

11 **Toxins! Symbionts!**

- ◆It's a bacterial free for all and the bacteria are still winning!
- ◆Yogurt or salmonella?

12 **endosymbionts**

- ◆Symbiosis adv disadv
- ◆ do they give up movement?
- ◆Why endosymbionts?
- ◆Toxins?
- ◆RNA? DNA?
- ◆Membrane compartmentalization

13 **NO NO NOT LAND!**

- ◆Why NOT terrestrial?
- ◆Why should plants invade terra firma?
- ◆What do they need?
- ◆Why why why alternation of generations when it is hard enough without!
- ◆Zygotes? Haploids? They are both organisms!

14 **Charophytes**

- ◆Rosettes vs linear protein arrays
- ◆Other homologies: division possesses cytoskeletal elements that are similar, sperm are similar, enzymes in peroxisomes

15 **ANIMALS: your last chance to talk about large eukaryotes!**

- ◆What's an animal?
- ◆What about Poriferans?
- ◆Homeoboxes? Hox genes?
- ◆coeloms and stoma

16 **Protostomes vs Deuterostomes**

1

- ◆Spiral cleavage
- ◆Determinate cleavage
- ◆Schizocoelous mesoderm tissues split to form the coelom
- ◆Blastopore becomes mouth

2

- ◆Radial cleavage
- ◆Indeterminate cleavage
- ◆Enterocoelous development forms coelom from mesodermal buds
- ◆Blastopore becomes anus
- ◆Echinoderms/Chordates

17

18 **Frogs w legs on their backs????**

- ◆ protostomes?
- ◆ Deuterstomes?
- ◆ Cleavage?
- ◆ Totipotent?
- ◆ parasitic trematode
cysts in tadpoles
- ◆ Pesticides

19 **Radial vs bilateral symmetry**

- ◆ Surfaces
- ◆ Echinoderms may have developed at later date
- ◆ Medusa? Polyps?

20 **Shells vs exoskeleton**

- ◆ Mollusks vs arthropods

21 **Movement and coelom**

- ◆ Annelids
- ◆ Does poking a worm hurt the worm?
- ◆ Can worms regenerate if we cut them in half?
- ◆ Why don't we get new limbs?
- ◆ Totipotent!!! Just say clone!

22 **Internal vs external skeletons**