**BIO 1130 An Introduction to Organismal Biology**
**Midterm examination**
**Worth either 15% or 20% of your final grade**
**Total points for both parts of the exam is 85 pts**

**Saturday, November 10, 2012**

## Part B: Written questions

a) Place your name and student number in the space provided below. Be sure that your student number is on the top of each of the following pages – the exam will be separated. ONLY place your student number on the pages where indicated

b) Answer all questions in the space provided on the exam. Do not transfer answers to the back of the page.

c) You may use either pencil of ink for your answers.

d) Answers as written paragraphs are preferred but point form is acceptable as long as the points are logically organized and not random statements or facts

e) This is not an open book exam.

f) There are five pages including this one in part B of the exam, be sure you have all five pages.

g) Enter the multiple choice exam code in the space provided

**Name: _____**

**Student number: _____**

**Multiple Choice Exam Code (MM or FF): _____**

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**12 pts Part 1.** Briefly explain what each of the following terms means or the biological contribution made by the person. Where possible include an example in your explanation from a group or an organism to which the term or name applies.

Unikont

{Type of Protist, must place the organism in the Kingdom Protista, (unicellular eukaryotes must have both terms together to eliminate confusion with prokaryotes}{with one flagella}{flagellum used for feeding/water currents to bring food (no swimming that comes with second lagellum)}{unikonts evolved into the animal and fungal like protists} First point must be there other to bring the score up to three.

Eukarya
Must have any three characters that define the Domain (There is no point for saying it as Domain) {Nuclear envelope with a statement that describes it – surrounds the genetic material/ creates the nucleus } {Multiple linear chromosomes}{presence of an endomembrane system/organelles} {Mitochondria}{centrioles and microtubular cystoskeleton}

Trochophore
{An indication of a group that has this – this may be Trochozoa in the lophotrochozoa, Annelida or Mollusca from groups we covered in class } {Larval stage} {A description of labeled diagram showing ciliated band around middle for feeding and cilia on top and bottom}

Radial symmetry
{Symmetry is defined as a plane/line between the oral (mouth) and aboral (anus) side of an animal.. Anterior and posterior aren't correct these terms result from bilateral symmetry)} {In radial symmetry this line can be in multiple planes all of which can create identical halves}{or example in class are the cnidarian polyps and jellyfish or Echinoderms/starfish}{Animals with this symmetry, no cephalization, tend to be sessile or just float, diploblastic} first two must be there and third point can be from either of the last two.

**28 pts Part 2:** Fill in the missing word, or provide the one word answer in the space provided at the end of the sentence. If the line is missing, add it to the end of the line.

2.1 This type of fission in protists creates two equal daughter cells. **binary**

2.2 The internal structure of a cilia, or flagella, is referred to as a **nine** plus two organization of microtubules. _____

2.3 Planaria, a free-living flatworm, feeds by using this structure to get food into its digestive tract. **Pharynx/mouth**

2.4 Some bacteria survive by using sulfur compounds in their energy pathways and carbon dioxide as a carbon source- it's referred to as this type of nutritional strategy. **Chemolithotrophs/ Chemolithoautotrophs**

2.5 From which domain does the symbiont come from in secondary endosymbiosis. **Eukaraya/Eukaryote**

2.6 Number of microtubular strands in each of the nine outer components of a centriole. **Three**

2.7 If you are looking straight into the mouth of a hydrozoan, this surface is facing you. **Oral (Since these are radial there is no anterior which is only found in bilateral animals**

2.8 The engine for a bacterial flagellum is fuelled by the movements of these across the membrane. **Protons/H+ ions**

2.9 This type of symmetry is found in the phylum Platyhelminthes. **Bilateral**

2.10 In terms of their 'gram' designation these bacteria have the reinforcing elements of the cell wall at the surface, they stain. **Positive**

2.11 The structure on a choanocyte that propels the water through a sponge. **Flagellum**

2.12 Cnidarians remove undigested food from the gastrovascular cavity through this. **Mouth/oral opening**

2.13 Pathogenicity of Gram-negative bacteria is often associated with this membrane layer of bacterial cell wall. **Outer/External/glycolipid**

2.14 Of the two types of muscles in worms important in the function of the hydrostatic skeleton, these stretch the muscles oriented in line with the anterior to posterior axis of the worm. **Circular (longitudinal muscles are aligned from anterior to posterior)**

2.15 Unlike the Archean eon before it, the Proterozoic was characterized by this type of respiration. **Aerobic**

2.16 This type of gliding was probably a precursor to movement in the first eukaryote cells. **Cellular/Cell**

2.17 In the life cycle of the plant-like protists the diploid stage is this. **Sporophyte**

2.18 Number of membranous lipid bilayers surrounding the contents of mitochondria. **Two (The question is limited to the mitochondria. If this were a multicellular**

2.19 This additional circular piece of DNA is found in some bacterial cells. **Plasmid**

2.20 Term for the feeding strategy of bacteria that consume their carbon in an organic form. **Heterotrophic**

2.21 This unique cell gives the Cnidaria its name. **Cnidocyte**

2.22 Bacteria that get their ATP from existing high energy bonds and carbon from carbon dioxide. **Chemoorganotrophs/ Chemoorganoheterotrophs**

2.23 These suspension feeding and the simplest of animals architectures appears prior to the Cambrian period. **Sponges/Porifera**

2.24 The common name for the phylum Platyhelminthes. **Flatworms**

2.25 This geological period follows the Cambrian period. **Ordivician**

2.26 This is the sessile stage in the cnidarian life cycle. **Polyp**

2.27 Membrane system surrounding the genetic material in eukaryote cells (two words). **Nuclear envelope/matrix/membrane**

2.28 The part of the amoeba where the ectoplasm is converted back into endoplasm. **Back/Posterior**

**5 pts Part 3:** Use the letter for the pathogen, the cause of the disease, in the first column to identify the type of pathogen that causes the disease in the second column by placing the appropriate letter in the space before the disease. You may have to use a pathogen type twice in your answer and if there are two possible answers use the pathogen that is most precise and accurate.

| Pathogen | Disease |
|---|---|
| A: Retrovirus | __D__ Mad cow disease |
| B: Virus | __E__ Hepatitus D |
| C: Protists | __A__ Acquired immune deficiency syndrome |
| D: Prion | __C__ Malaria |
| E: Viroid | __B__ Influenza |
| F:Bacterium | |

## Part four of the exam is on the next page

**12 pts Part 4:** Answer the following two questions in the space provided.

4.1 What are the similarities and differences in the skeleton and muscle organization between a Platyhelminthe, flatworm, and a nematode, roundworm? How does this affect the way they move? In your answer be sure that the similarities and differences are clear. When you describe either be sure that both animals are mentioned at the same time.

There are no points for explaining ciliary movement the question clearly asks about muscles. There are also no points for statements in the answer that have nothing to do with skeletons and locomotion.

Similarities:

- {Both have longitudinal muscles},
- {Both use a hydrostatic skeleton}

Differences – when differences are stated there must be a comparison with both components to get the point for the answer.

- {Only flatworms have circular muscle}
- {Worms use the fluids of a coelom and the flatworms don't have a coelom}
- {Worms use a series of hydrostatic skeletons created by the repeating coeloms and flatworms use the compressible, squishy cells that fill the body}
- {Worms contracting boxes create accordion like movement with segments having different shapes – Flatworms also use accordion like movements with muscles contracting (long.vs circ.) in different regions of the body.}

4.2 How is the dynein motor used for locomotion in protists

Note: A proton gradient is not a part

{found in flagellum and cilia}
{Dyenin motors move along microtubules}
{Arranged in a 9+2 organization of microtubules}
{9+2 explained with nine doublet of tubules on outside and a pair inside – this can also be done using a diagram}
{Dyenin found in arms between the outer doublets – may be stated or shown in diagram/ one end of the dynein motor is attached to a doublet and the other end can walk along the microtubules of the doublet next to it causing it to bend – any part of this but it must explain how movement results}
{ATP powered}