BIOL1114 **Exam #2 Preview** **20 October 2008**

The following material will appear on the exam. Feel Free to discuss it with others or to ask questions about it

Use a #2 pencil to fill in the information on your NCS answer sheet. Put your **O-Key Account Username** in the boxes indicated **for LAST NAME** and darken the appropriate circles. **Write your Name (Last, First)** and "**Star**" or "**NoStar**" **in the space above the boxes containing your O-Key Account Username**. Darken the **S or N** in the **last column of the name circles** depending on your test form. Enter the number **832** and **darken the corresponding circles** in the **first 3 columns** of the **"Student ID."** Failure to perform this correctly will incur a **-10pt handling fee**. Read all questions and answers ***carefully*** before choosing the **single BEST response** for each question. Feel free to ask the instructor for clarification.

We return to the thrilling saga of Big Foot. After the discovery of the Big Foot in Georgia, there was a heightened quest for the animal throughout North and South America. Researchers discover a Big Foot in Ecuador, a country which is hotter and wetter than North American environments. Over time, it is noticed that the Ecuadorian Big Foot are getting smaller.

One frog species in Ecuador is known to produce a toxin (X) which causes paralysis in other animals. Toxin X is a specialized protein secreted on the frog's skin. The production of toxin X costs frogs a great deal of energy (ATP). It is observed that Ecuadorian Big Foot offspring are taught by their parents at a young age to avoid brightly colored frogs, which may be highly poisonous, from among the many frog species in the forest.

Hawaiian honeycreepers are small songbirds that are endemic (they are found nowhere else) to the Hawaiian Islands. There are different species on each of the Hawaiian islands. Dr. Trevor Price has gone to the islands to study the distributions and characteristics of the species. On the Northwestern Hawaiian islands Dr. Price has discovered that the beak of the Laysan Finches has become heavier because of natural selection. A strong storm hit the Northwestern Hawaiian Islands and killed 90% of the population of Laysan Finches.

Two of the honeycreepers species look similar and some people have suggested that they are the same species. One of the honeycreepers, the Medium Ground Honeycreeper, lives on the forest floor. The forest is so dense where they live that the tree leaves absorb **all** of the red wavelengths of light. The bird has all red feathers.

On one Hawaiian Island, Dr. Price studies a bird called the i'iwi that has a bill that is longer than the bills of birds that belong to the same group of species (honeycreepers) on other islands. The i'iwi feeds from flowers that are also longer than similar species of flowers on other islands.

Recently, there have been health concerns about a chemical found in plastics, BPA. It is a very common component of the plastics that are used for refillable water bottles. To test whether BPA causes diabetes, investigators measured the concentration of BPA in the urine of 1500 volunteers and also recorded who had diabetes. They found that the volunteers with the highest BPA in their urine were more likely to have diabetes.

Potatoes contain a large amount of energy in the form of starch (created from glucose). Despite the high food quality of the tuber (what we eat and call a potato), many parts of the potato plant, including the seeds, sprouts, and green potato skins, contain large amounts of glycoalkaloids. These bitter tasting compounds inhibit acetylcholinesterase. Herbivores tend to avoid these parts of the potato plant due to the toxins. The ability of wild potato plants to make glycoalkaloids takes significant energy and reduces the reproduction rate. Glycoalkloids are made primarily in the cytoplasm of the cell.

Alzheimer's patients suffer from memory loss which may result from the disruption of synaptic transmission at synapses that use acetylcholine. The drug, Aricept, appears to alleviate this by extending the longevity of acetylcholine molecules in synapses in the brain.