



BIOL 1114 Exam #2 (Preview) March 9, 2015

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**. Enter the number **1512** and **darken the corresponding circles** in the **first 4 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.

Myasthenia gravis (MG) is a severe muscular disorder in which muscles that control the eyelids, facial expressions, swallowing or breathing may be weakened. When breathing muscles are weakened, MG can be fatal. The disease is classified as autoimmune because a person’s own antibodies (proteins involved in the immune response to foreign organisms) bind to the body’s own acetylcholine receptors, thus blocking the binding of the neurotransmitter acetylcholine. Researchers have observed that women are most likely to develop MG between the ages of 20 and 40 whereas men are more likely to develop the disease between the age of 50 and 70. Some biologists hypothesize that MG is genetically inherited, although not everyone develops symptoms.

The Hawaiian Islands are home to honeycreepers, a diverse group of birds with curved beaks that feed on the nectar of different flowers. Many of the species of Hawaiian Honeycreepers have recently become extinct or are threatened by extinction. The different species of Hawaiian honeycreepers live in different habitats on the Hawaiian Islands. Temperature decreases substantially as one moves up into the mountains of the Hawaiian Islands. The liwi and Apanane are two species of Hawaiian Honeycreepers that have red feathers. A single species of honeycreeper from the mainland is thought to be the direct ancestor to all species of honeycreeper currently living on the Hawaiian Islands. Evidence from genetic studies suggests that all Hawaiian Honeycreeper species diverged from a common mainland ancestor at approximately the same time. The liwi has a particularly narrow curved beak and feeds on the nectar of lobelid plants with very narrow flowers.

Slugs are shell-less mollusks, a type of soft-bodied invertebrate. Slugs are ectothermic animals, adapted to live in aquatic and terrestrial environments. Many species of marine slugs live in warm tropical oceans. Many species of marine slugs are beautifully colored (Red and yellow wavelengths of light are filtered out at ocean depths greater than 30m). Some sea slugs have venomous cells that can sting potential predators. The cells of marine slugs have a salt concentration equal to that of seawater. A few species of marine sea slugs (such as the green slug *Elysia timida*) that feed on algae are hypothesized to store undigested chloroplasts from algae in their skin cells and harvest photosynthetic energy from the undigested algae stored in their skin cells. Slugs that live on land have never been observed to do this.

Terrestrial slugs were some of the first invertebrates to have colonized land from aquatic habitats. Many terrestrial slugs, which are never photosynthetic, are considered garden pests because of their large appetite for plant leaves.

Dan the beagle is at it again! Dan has an upset stomach caused by his recent illness at the family reunion. He decides that he must find grass to eat to soothe his nausea, but cannot because of all the recent snow! Even though he knows nothing about growing plants, Dan decides to grow a fresh crop of Bermuda grass. You must use your knowledge to help answer Dan’s questions concerning his new plants!

Some of the topics that have sparked Dan’s interest are related to: where the plants get the bulk of their ATP; how well his grass will grow under green wavelengths of light; test what happens when he provides more electron carriers to the grass; find out where a hydrogen gradient takes place in photosynthesis; why he feels friskier in the day time when he is around the Bermuda grass and sluggish at night; where does the bulk mass of his plants come from; why his grass is dying once he stops watering it; what happens to the atoms of carbon in glucose during cellular respiration and where we get the oxygen we use in the electron transport chain; and what happens if a tornado rips part of his Bermuda grass crop and blows it across town. Dan understands that plants need water, sunlight, and soil, but he is unsure where the plants get the bulk of their ATP.