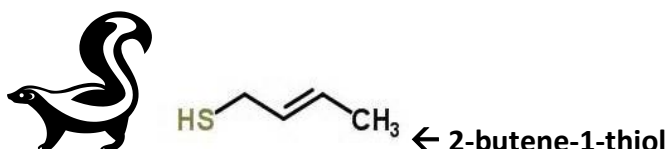


BIOL 1114 Exam #1 (Preview) September 15, 2014

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”** in the space above the boxes containing your **O-Key Account Username**. Darken the **(S)** in the last column of the name circles. Enter the number **1431** 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.



Skunks are more commonplace on campus than ever. Although annoying, skunks are significant mammals in our ecosystem. They feed on worms, lizards, frogs, eggs, roots and berries or act as scavengers. To deter predators, they are capable of producing several odiferous (foul-smelling) chemicals that are released from anal scent glands. The most significant of these is 2-butene-1-thiol, a liquid that is highly volatile (evaporates rapidly) and can be detected a kilometer from its point of release. Skunks do not hibernate but often dwell in burrows during the cold of winter. The long fur of the skunk helps it to endure very cold winters.

You have observed that squirrels on campus appear on the grounds only during the daytime while they are frequently feeding. Although you have just begun to observe them, skunks only appear at night. You soon inform your classmates that “Skunks appear at night in order to feed without competition from squirrels.”

Dr. Donald Blake has begun to market a sports wrap infused with uru, a metal he discovered. Dr. Blake explains that uru heals swollen joints caused by overexertion during sports by absorbing “Asgardian alpha-particles” from the undetectable metaphysical ether that fills the space between atoms. Several well-known athletes have testified to its value. Dr. Blake has demonstrated the effectiveness of the wraps by asking 10 patients to all wear the wraps for a week after exertion and then asked them to rate their pain. Dr. Blake reported that those who felt no improvement were found to emit anti-ions which negated the ether.

The Institute for Feline Biodiversity is concerned about the decline in bobcats in North America and commissions a study to ascertain causation. The researchers mapped the change in forest area in North America and the distribution of bobcats from 1990 to the present using data from satellite images and reported sightings by wildlife professionals working for federal, state, provincial, and local governments. They note that as forests decline so do bobcat populations. The range of bobcats in Canada is limited by the presence of the lynx, a cat with much thicker fur. Bobcats eat woodrats, as do a variety of snakes.

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During an expedition to the Arctic Tundra, Peter, one of the undergraduate volunteers, gets lost and cannot find back his way back to camp. He therefore has to spend a night outside. (surrounded by animals).

Wolf spiders are large, stout-bodied arthropods with 8 legs. A common species in Oklahoma, the Carolina wolf spider, builds burrows lined with silk. A researcher is interested in the effects of temperature on burrow construction by this wolf spider. The researcher finds a bunch of spiders in an area with similar soil hardness.

A large, round-bodied wolf spider and a walking stick insect (i.e., long, thin body and legs) of the same mass are both foraging in the same area. All of a sudden, a cold wind blows in and drops the ambient temperature by 10 degrees.

A new species of wolf spider is discovered. One chemical in the venom of this spider inhibits respiration by blocking the formation of acetyl CoA.

You bring your date to the Natural History Museum. In one of the displays, there is a kangaroo rat, which normally lives in the desert with little rainfall. To impress your date with your biology knowledge, you say: “You know what’s interesting about kangaroo rats?”

You have a pet hamster. You like to keep your apartment fairly cold during the winter but you don’t want the temperature to go below the thermal neutral zone of the hamster. You’ve been watching your hamster very carefully during the summer.

A scientist is studying a new species of marine mammal that was donated to a museum. The scientist doesn’t know where the mammal normally lives. However, upon dissection, the scientist notices that some of the veins and arteries in the flipper of the animal come in very close contact to each other.

A scientist plans to compare the average length of nephron loops of a species of skunk that lives in cool, moist forests, a beaver, and a Dusky hopping mouse (found in Australia’s Strzelecki Desert).

A wolf spider venom is discovered. Experimental results suggest that it reduces ATP formation during cellular respiration. Scientists have two leading hypotheses and test them by injecting the venom into insects. The first hypothesis is that the venom blocks the electron transport chain. The second hypothesis is that the venom allows protons (H^+) to freely pass through the mitochondrial inner membrane.

It is likely that the ancestors of modern mussels (sessile shellfish) were unlikely to tolerate emersion (being out of water) for as long as their descendants.

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Hawaiian silverswords of the genus *Argyroxiphium* have long, dagger-shaped leaves that are covered in silvery hairs. George K. Roderick found genetic evidence that changes in the species of planthoppers (a type of insect) that depend on silverswords for food appear to occur when there are changes in the silverswords such that each species of silverswords is a host to a species of planthopper.