

Define the following terms:

Sustained scope

Factorial scope

Phosphagen system

Calorie

Catabolic

Glycolysis

Glycogenesis

Glycogenolysis

Gluconeogenesis

Lipolysis

Torpor

Fill in the blank

Early in a burst of activity (0-5 seconds) most ATP will come from _____, later in the activity (5 seconds – 1 minute) ATP will be produced from _____. If high levels of activity continue for an extended period, significant amounts of ATP may also be produced by _____.

Glucose is sometimes stored in a polymer called _____. The process of putting glucose in this form is called _____, while breaking the polymer down to release glucose is called _____.

Lactate is a common endpoint of _____. Lactate is often toxic at higher concentrations, so it is often converted to _____ in the liver.

The respiratory quotient (RQ) is measured as the ratio of _____ to _____. RQ will be highest when metabolism is fueled by _____.

The metabolic rate of an animal at a standard temperature, with no food, no stress and no activity is called _____. The metabolic rate of an animal in its environment over a typical 24 hour period of activity is _____. The greatest metabolic output for any single period (not sustained) is the _____.

If an ectotherm has a metabolic rate (oxygen consumption) of 10 ml O₂ / g hr at 13 C and a metabolic rate 21 ml O₂ / g hr at 20 C, it has a metabolic Q₁₀ of _____.

What is an oxygen debt? During the period that an oxygen debt is being “repaid” what is happening physiologically?

What is the Cori cycle? What role does this cycle play in regulating energy budgets and energy availability in animals?

Discuss, in detail, the roles of insulin and glucagon in regulating the availability and amount of blood glucose, lipid stores, and glycogen. What processes does each hormone stimulate or inhibit?

What is an energy budget (include descriptions of the various components of an energy budget). In class we discussed the fact that energy budgets are dynamic and change depending on the animal in the context of its environment. Give an example of some changes you would expect in an energy budget as an animals environment changed.

What are the advantages/disadvantages of using lipids, carbohydrates and proteins as an energy and a form of energy storage. Which of these is the best storage medium, which is at immediate energy release? Translate this to animals in their environment – give me an example of an animals that relies primarily on protein vs. carbohydrates in their diet. What are the ecological placations of this diet for that animal?

Describe three methods of measuring metabolic rate. For each method, tell me what specific process is actually being measured. As a researcher, what are the advantages/disadvantages of each method?
