

Lab #5 WS: Physiology of the in situ Amphibian Heart

(1) Use these statements of purpose to frame your thinking about this lab. Study the examples below, and fill in the blanks in a similar style and information content identifying parameters involved in the physiological mechanisms:

Response to temperature _____

Response to stretch -- *We demonstrate the action of Starlings Law on the toad heart which predicts that the energy of cardiac contractions are proportional to the initial length of the cardiac muscle fibers.*

Responses to neurotransmitters and drugs -- *Although the toad heart has a myogenic pacemaker, cardiac performance can be modulated by the Central Nervous System via hormones and other chemical messengers. We demonstrate the action of potential excitatory and inhibitory messengers on cardiac performance.*

Responses to ion concentrations -- *Cardiac muscle contraction should be initiated by action potentials resulting from depolarization of cardiac muscle cells. By changing the _____ we should be able to demonstrate _____.*

Refractory period of cardiac muscle _____

Heart block _____

(2) **Expected Findings:** If these mechanisms in (1) are at work, **what would you expect to see in your data?** Be specific and relate back to observable parameters: (explain how you controlled for confounding parameters, if appropriate):

Response to temperature

Response to stretch

Responses to neurotransmitters and drugs

Responses to ion concentrations

Refractory period of cardiac muscle

Heart block

(3) **Results:** Include either a figure or a table for each important result that addresses (1+2). Write a sentence pointing out what trends are shown in each display item (you may put these together into a paragraph). Follow the lab report guidelines: Don't forget figure captions and NO RAW DATA.

(4) **Discussion:** In paragraph form, briefly discuss the main take-aways that you learned from these experiments. Start by summarizing the main results. Then discuss. Use specific results that back up your statements or speculate on the significance of the results. Organize by hypotheses above.

Instructions: Write a mini-lab report that captures the intellectual content of a full lab report in skeleton form. Please get to straight to the point. Include the four elements arranged as: Introduction (1+2), Results (3), and Discussion (4). If you need to explain methods, please add a brief Methods section before Results (optional). You may edit this sheet.

Individual assignment. Text must be your own, but you may work together with your group to produce figures/tables.