Mechanisms in Physiology and Behavior

Course summary: Research in physiology and behavior advances through observational studies, correlational studies, and experimental approaches. In recent years, advances in technology, including techniques such as satellite telemetry, surgically implanted sensors, and computerized electrophysiological techniques, have revolutionized the kinds of data that can be obtained. Nevertheless, quality research must still be based on sound principles of experimental design, statistical analysis, and the ability to draw correct inferences from data.

In this graduate seminar, we will explore basic principles that underlie research excellence in physiology and behavior, with a particular emphasis on the conceptual underpinnings of experimental design, hypothesis testing, and data analysis. A major focus in the class will be on discussions of papers from the primary literature, in which we will discuss strengths and weaknesses of different approaches, and the validity of conclusions drawn from experimental results. Most discussions will be based on papers chosen by students in consultation with the instructor. In addition, students may, if they wish, present a research plan of their own making (e.g., dissertation research) and invite the group to critique it.

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Seminar meeting time: Monday 3-5 p.m.

Seminar Location: Wilson 310

Note: To increase the number of participants in discussions, this seminar will meet concurrently with Dr. Keith Sockman’s graduate seminar (BIOL 857), which addresses related topics in experimental design. Students should register for only one of the two seminars and cannot receive credit for both this semester.

Intended Audience: This seminar is designed for graduate students in biology or related fields of life science, and for advanced undergraduates with a strong interest in physiology, behavior, or both. Participants should be comfortable reading original research papers.

Format: Discussions each week will focus on papers from the primary scientific literature chosen by students in consultation with the instructor. Most discussions will be led by students in the class.

Grading: Grading will be based on the presentation of papers, and on participation in the discussions.