Bemidji State University

BIOL 4449: Gene Expression

A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: *.*
Lab Hours/Week: *.*
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None
MnTC Goals: None

While mutations in genomic DNA play a major role in human health and disease, the control of gene expression plays the pivotal role in establishing developmental patterning, cellular differentiation, responsiveness to environmental stimuli, and defense against pathogens and invasive genetic elements. Changes in genomic DNA over time are a key driver of evolution, but the control of gene expression is also a major generator of species diversity and a driver of genome structure and function. Chromosomes in eukaryotic nuclei are made up of a combination of DNA and proteins packaged and compacted into a composite called chromatin—in turn, chromatin structure and modification determines whether a gene is "open" for transcription or closed.

One of the most efficient and well-characterized systems for studying the relationship between chromatin and gene expression is the so-called position effect variegation (PEV) in the compound eye of Drosophila melanogaster, in which the variable expression of a reporter transgene allows reproducible measurement of gene expression in response to genetic and environmental factors. We will use a combination of classroom and laboratory approaches to understand and complete original research projects using this system.

Successful completion of this course satisfies BSU Biology's capstone requirement. Prerequisite: BIOL 2360.

B. COURSE EFFECTIVE DATES: 08/21/2017 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

None

D. LEARNING OUTCOMES (General)

None

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted