

Graduate Module Outline

Title: Fluorescent and Luminescent Marker Genes for Applications in Agriculture and Life Sciences

Instructor: Gefu Wang-Pruski

Timing (month/year module will be offered): Winter semester 2009/2010

Note: The module will only be offered if there are 3 or more students.

Course Description:

This module provides an overview of the theory and applications of fluorescence and luminescence in agriculture and life sciences. The module will introduce the powerful fluorescence and luminescence reporter genes for studying spatial and temporal gene expression and regulation, energy transfer, protein localization, protein folding and function. Experiments involved in the module will focus on gene detection, promoter activation, fluorescent microscopy and low-light imaging analysis techniques. This module is suitable for graduate students who are involved in research using bacteria, plants and mammalian model systems. The module will start with a background introduction, followed by experimental demonstrations and imaging analyses. Students who register for the module must have a strong background in cell biology, biochemistry and molecular biology.

Format:

Four lecture sessions will be given; each will be around 1 hour. Some experiments will be carried out by students; others will be demonstrated by the instructor or the lab assistant. A major literature review is required, as well as a public seminar.

Method of Evaluation:

60 % for the completion of the assigned literature review and lab exercises
40% for one public seminar on the assigned topic

Prerequisites :

Undergraduate courses in Cell biology, Biochemistry and Molecular Biology