Overview:

- This course will integrate the use of standard assays with novel technologies to assess alterations in epigenetic markers during cell differentiation and stress responses.
- Emerging topics in epigenetic research will be discussed.
- Students will also gain experience working with mammalian tissue culture and a model plant system.

Selected Lecture Topics:
1. DNA methylation
2. Histone modifications and histone modifying enzymes
3. Polycomb and Trithorax complexes
4. Long-range chromatin interactions
5. Noncoding RNA
6. Manipulating epigenetics

Labs:

1. Mapping genomewide methylation patterns in *Medicago truncatula*
   a. Bisulfite-sequencing: Library preparation
   b. Bisulfite-sequencing: Data analysis
   3 weeks
2. Monitoring changes in histone modifications during differentiation by chromatin immunoprecipitation
   3 weeks