**01/18/2017**  **P/BIO 381**

* Ecological Genomics
  + New field (from molecular ecology and population genetics)
  + “…field of study that seeks to understand the genetic mechanisms underlying adaptive responses of organisms to their environment” – Ecological Genomics Institute, KSU
  + \*Adaptation to environmental change
  + Next-gen sequencing is becoming more important
* Questions asked
  + Variation in gene expressed
  + Genetic variation within individuals vs. expressed phenotype
  + Genes giving rise to novel traits adapted to the environment
  + Speciation, hybridization, local adaptation, parasitism-mutualism life history genes, complex phenotypes, etc.
* Methods
  + De-novo genome assembly
    - Reads for evolutionary history and identification of parallel selection
  + RNA-seq
    - Single end 50bp for differential expression analysis
  + 16S metagenomics (MiSeq)
    - Microbial community diversity (variability across that sample)
  + RAD-Seq/GBS
    - Estimating diversity and population structure
* See handwritten notes for discussion of Pespeni and Keller’s research
* Syllabus: