LECTURE OUTLINE:

1. Plasticity is the process by which one genotype can produce more than one phenotype in response to the environment (Broad definition).
   a. Sometimes developmentally fixed, but sometimes reversible
   b. Sometimes graded, but sometimes discrete
   c. Sometimes rapid, but sometimes slow.
2. Plasticity is not independent of the genome.
   a. There are genetic mechanisms for plasticity
   b. Plasticity itself can be considered a trait
   c. Plasticity is not always adaptive
3. Genetic assimilation is a process by which a phenotype originally produced in response to an environmental condition becomes genetically encoded by selection.
   a. Initially proposed as a mechanism of inheritance of learned behaviors by Baldwin
   b. Empirical example of Drosophila wing phenotype selection by Waddington
   c. Now scientifically accepted but poorly understood mechanistically
4. Genetic accommodation is a broader term that encompasses Genetic Assimilation but describes any evolved change in plasticity.
5. To study genetic mechanisms that underlie genetic assimilation/accommodation one needs:
   a. Quantifiable Plastic Phenotype
   b. Ancestral Phenotype that exhibits plasticity &Derived Population(s) w/ fixed phenotype
   c. Ability to induce plasticity in a controlled setting
   d. Genomic Resources
6. Example Julidochromis - sex-biased behavior
7. Example ecotoxicology – fundulus fish
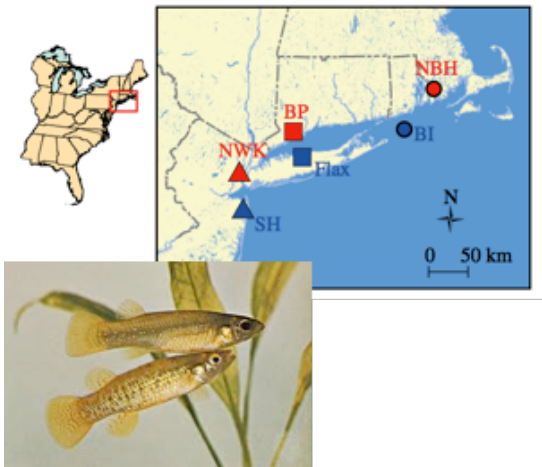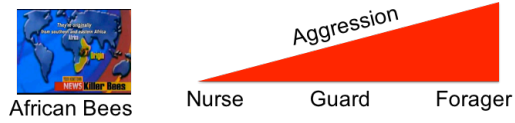8. Example high predation – guppies

HELPFUL FIGURES & NOTES:
(All PowerPoint files will be available on the courses server after lecture. The subset of figures and notes here are meant to assist your note taking or studying.)
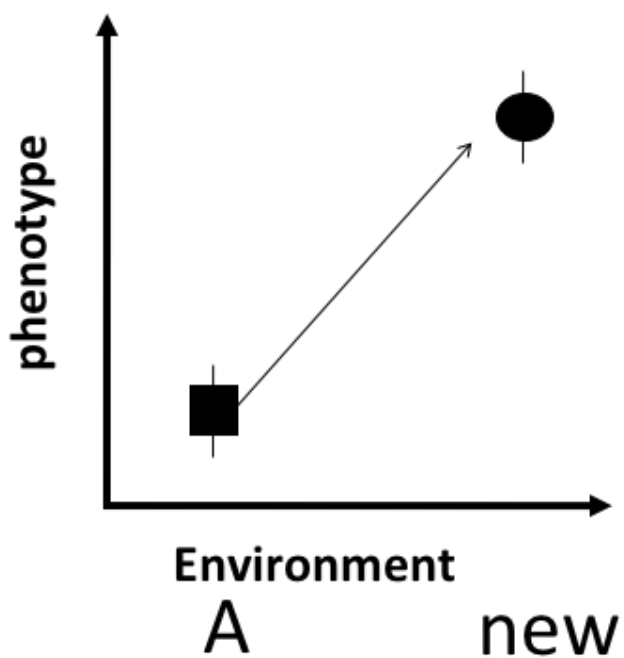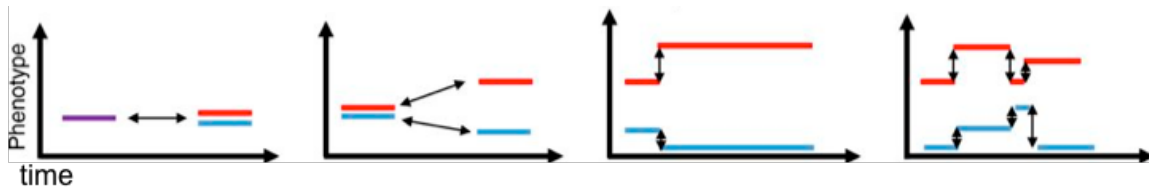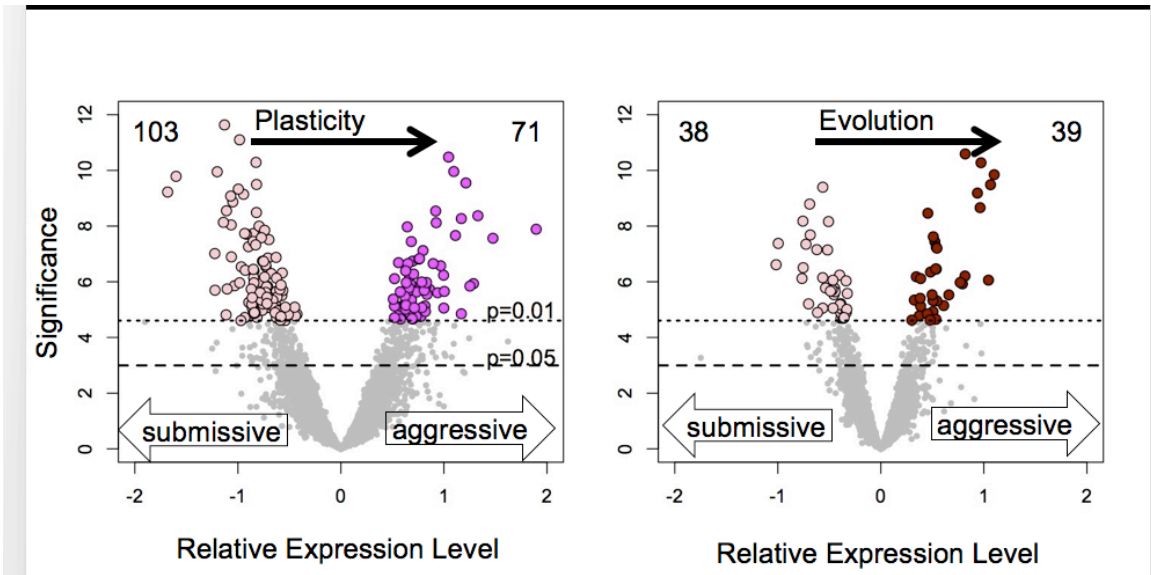
Behavioral Plasticity Bees

VOCABULARY:
(Practice writing interesting, informative sentences that include, and capture the meaning of, 4-5 words from this list. To simply memorize a definition, is not sufficient.)

Plasticity   GXE
Flexibility   Heritability
Adaptation   Inherited
Accommodation   Transgenerational
Genetic assimilation   Epigenetic
Genetic accommodation
Evolution
Diversification
Buffering

PRACTICE EXAM QUESTIONS:
1. Present an argument/example by which plasticity may buffer against evolutionary change.
2. Present an argument/example by which plasticity may facilitate evolutionary change.