

Chapter 5 – Phenotypic Plasticity - Questions for Discussion

Come to class on Tuesday – September 29 prepared to discuss these questions over chapter 5 as well as your own questions.

1. Differentiate between phenotypic plasticity and norms of reaction. Can you have one without the other?

2. If phenotypic plasticity reduces the number of genotypes needed to produce a range of phenotypes, how can phenotypic plasticity maintain genetic variation in a population?

3. How does phenotypic plasticity affect estimates of heritability for a trait; in terms of additive genetic variance; in terms of phenotypic variance?

4. What did Bradshaw (1965) mean when he stated that phenotypic plasticity is environment and trait specific?

5. What are the assumptions of the “adaptive plasticity” hypothesis? How can one demonstrate that plasticity is adaptive? Would you expect most phenotypic plasticity to be adaptive? Why or why not?

6. Why should one expect little phenotypic plasticity for fitness?

7. What is meant by the statement that “if there were no cost of plasticity, then all traits should be adaptively plastic”?

8. What are some of the potential costs of plasticity, and what might limit the evolution of plasticity? Can you envision ways to potentially measure any of these costs?

9. What is thought to be the molecular basis for phenotypic plasticity? How would one go about identifying “plasticity genes”?