

## Biol 415 Quiz #2 Study Outline

### Local Adaptation

- What is adaptation and local adaptation? How do they differ? *slides 3-5*
- When plotting fitness in 2 populations and locations, what would local adaptation look like? *slide 6*
  - Do locally adapted populations always do best in their home environment? *slide 6*
- What are reasons for studying local adaptation? *slide 7*
- What prevents local adaptation? *slide 8*
- Natural selection
  - What is fitness? Selection coefficient? *slide 9*
  - What is required for a response to selection? *slide 10*
  - What are the types of selection? *slides 11-13*
- How do we measure genetic variation in quantitative traits? *slides 15-16*
- How can genetic correlations effect adaptation? *slide 18*
- How do you test for local adaptation? *slides 22-25*
- What is a QST-FST comparison asking? *slides 22-24, 26*

### Coevolution

- What is coevolution? What does it entail? *slides 3-5*
- Name some important co-evolved interactions. *slides 6-8*
  - which ones are mutualistic relationships?
- What is the red queen hypothesis? *slides 9-10*
- What is the arms race hypothesis? *slides 11-13*
  - What are the consequences from the arms race?
- What are the types of coevolution? *slides 14-15*
- What is an antagonistic interaction and what is an example? *slides 16-26*
  - plant herbivore interactions *slides 16-20*
  - Plant pathogen interactions *slides 21-23*
  - Competition *slides 24-26*

-What is mutualism? *slide 27-29*

- What is a reason that it is generally rare?
- What is the coevolutionary vortex?

-What is the geographic mosaic theory? What is an example? *slides 30-34*

## **Mating System Evolution**

-Selfing and outcrossing

- What is a selfing rate? How would you measure it? *slide 4*
- How is the outcrossing rate estimated? *slide 4*

-What are the costs of selfing? What causes inbreeding depression? How do you measuring inbreeding depression (experimentally and mathematically)? *slide 7-9*

-What are the benefits of selfing? Why is  $\delta = 0.5$  an important value? *slides 10-11*

-Self fertilization

- What is pollen discounting? *slides 13-16*
- Seed discounting? *slides 17-19*

-How are geitonogamy, autogamy and cleistogamy different? When would one be favored or disfavored? *slide 20*

-Why are perennials rarely selfers? *slide 22*

-Why is selfing thought to be a unidirectional shift? *slide 23*

-What are the two types of self incompatibility? *slide 24*

-How does selfing effect genetic variation? Why? *slide 27*

-What is a selective sweep? What is genetic hitchhiking? How are they related? *slide 28*

-How would a selfing population respond differently to selection than an outcrossing population? *slides 29, 34*

-How does selfing reduce effective recombination? *slides 30-36*

## **Sexual System Evolution**

-What is sexual interference? What is an example of it happening? *slide 4*

-What is protandry and protogyny? Which is better at preventing selfing? *slide 5*

- Why are many dichogamous species self-incompatible? *slide 6*
- Why are larger floral displays beneficial? costly? *slides 7-9*
- What is herkogamy (approach and Reverse)? *slides 10-11*
- What is dioecy? Gynodioecy? Androdioecy? *slide 15*
- How might females produce more seeds than hermaphrodites? *slide 17*
- What is geitonogamy? Is it genetically distinct from autogamy? *slide 21*
- What is heterostyly? What are the advantages of it? How does it evolve? *slides 24-26*
- How are heterostyly flower morph ratios maintained? *slides 27-32*
- What is entantioestyly? *slide 33*