

BIOL 415: Key questions for quiz 3

Species (Rieseberg *et al.* 2006)

- Are plant species real entities? *slides 3-6, evidence from paper*
 - o Need to understand debate and evidence (no 'right' answer)
 - o If species are real, why? What evolutionary forces are responsible? *slides 7-10*
- How do we define a 'species'? *slides 11-22, examples in between*
 - o Don't need to memorize the wide variety of these
 - o What are the differences? What are the caveats?

Reproductive Isolation (Lowry *et al.* 2008)

- How do new species evolve? Or, what is speciation? *slide 5*
- Reproductive barriers
 - o What is a reproductive barrier? *slide 6*
 - o What kinds of reproductive barriers isolate plant species? *slide 7, examples 8-20*
 - more important to understand the broad categories than specific instances
 - o Which kinds of barriers are more important in isolating plant species? *slides 23 & 24, example slide 25 and from paper*
 - o How do they evolve?
 - Drift or selection? *slides 27 & 28*
- Genetics of speciation
 - o What is underdominance? How does it relate to reproductive isolation?
 - o How can underdominant alleles evolve (e.g. BDMs)? *slide 30, examples 31 & 32*
- Geography of speciation
 - o What are the modes of geographic speciation? *slides 34 & 35*
 - most important to understand allo- vs. sympatry
 - o How do the geographic modes relate to gene flow? *slide 34*

Chromosomal speciation (Fishman *et al.* 2013)

- What is chromosomal speciation? *slide 4, examples slides 5–10*
- Types of rearrangements *slides 11, 16 & 17*
 - What are their effects on recombination? *slides 12, 13, 15, 18, 19*
 - What are their effects on hybrid fertility? Why? *slides 14–15, 18, 19*
 - How can chromosomal rearrangements facilitate speciation/local adaptation? *slides 26–28*
- Underdominance
 - What is the paradox of underdominance? *slides 20–22*
 - How is this paradox resolved theoretically, in regards to chromosomal evolution? *slides 22–25*
 - Why would reduced recombination be important in speciation? *Slides 26–28*

Polyploid speciation (Wood *et al.* 2009)

- What is polyploidy/ polyploid speciation? *slide 3 & 4*
 - What kinds of polyploidy can occur? *slide 5*
 - How does polyploidy occur? *slide 6 & 7*
- How common is polyploidy? *slides 8–10*
 - What are some advantages of polyploidy? *slides 11–16*
 - What are some disadvantages of polyploidy? *slide 17*
- How can polyploidy cause reproductive isolation? *slide 18, 24–27*
- How can polyploids establish? *slides 19–23*