

BIOL 415: Key questions for quiz 4

Hybridization and hybrid speciation (Schumer et al. 2014)

- How important is hybridization to plant evolution?
 - o Vocabulary *slide 4*
 - o How frequent is hybridization in plants? *slide 5*
 - o What are the consequences of hybridization? *slides 6-16*
 - Genetic assimilation/merging, *slide 7*
 - Hybrid zones, *slide 8*
 - Adaptive introgression, *slide 9*
 - Reinforcement/reproductive character displacement, *slides 10 & 11, examples 12-16*

- How does hybrid speciation occur?
 - o What are the kinds of hybrid speciation? *slide 17*
 - o What models do we have to explain homoploid hybrid speciation? *slides 19-23*
 - o What are favorable conditions for homoploid hybrid speciation? (and examples) *slides 24-26*
 - o Ecology's role in hybrid speciation *slide 27*
 - o The creation of novel or extreme phenotypes via hybridization *slides 29-30*

Macroevolution (Kafer et al. 2014)

- What is the scope of macroevolutionary research? *slides 2-3*

- Diversification
 - o What are net diversity/diversification rate and how do we calculate them? *slide 4*
 - o What drives macroevolutionary patterns?
 - Intrinsic factors *example slide 5-6*
 - Extrinsic factors *slide 9*
 - Biotic (Red Queen hypothesis) *slide 10-11*
 - Abiotic (Court Jester hypothesis) *slide 12-13*
 - o Why are some clades so diverse?
 - What are adaptive radiations? *slides 17-19, examples 20-22, counter-example 23-25*
 - o What is a key innovation? *slide 26-40 and paper*
 - Can we identify a key innovation to explain Darwin's abominable mystery? What are some possibilities? What are some caveats?

Plant conservation genetics (Gray et al. 2016)

- How many of the world's species are in danger of extinction? *slide 3*
 - o Major causes and importance? *slides 4-6*
 - o Status in Canada *slides 7-10*

- Conservation genetics
 - o What is conservation genetics? *slide 11*
 - Factors that influence population dynamics *slides 12 & 13*
 - o What role does gene flow play?
 - Inbreeding depression *slides 14-16*
 - Outbreeding depression *slides 17*
 - Genetic swamping and demographic swamping *slide 18*
 - How do these differ?
 - Transgene escape *slide 21, example 22-25*
 - When will genes escape?
 - o What taxonomic unit do conservationists care about? *slide 27*

Climate change and plants (Parmesan & Hanley 2015)

- What are the predicted effects of climate change? *slides 3-5*

- How will species respond to climate change? *slides 6 and 20*
 - o Migration, *slides 7, 9-11*
 - How fast can species migrate?
 - What are the limits to migration?
 - o Phenotypic plasticity, *slides 12-13*
 - What are the limits to plasticity?
 - How can plasticity slow adaptation?
 - o Evolutionary adaptation, *slides 14-19*
 - How can adaptation prevent extinction via climate change? *slide 15 and the paper*
 - How fast can adaptation change a population and what factors affect this? *slide 18*
 - What is a sustainable rate of adaptation? *slide 16*
 - Is there evidence for adaptation to climate change? *slides 19*
 - o Extinction, *slide 22*
 - How can our knowledge inform management strategies to prevent extinction? *slide 21*