

## Biology 216 Theory of Evolution, Fall, 2010

Lecture & Discussion      MW12-2PM      Spieth 1239 (Darwin Room)

David Reznick, SPH 3346, xt. 25820, [david.reznick@ucr.edu](mailto:david.reznick@ucr.edu)

Joel Sachs, SPH 3314, xt. 26357 [joels@ucr.edu](mailto:joels@ucr.edu)

Week	Day/Date	Readings
1	M 27, Sept.	Darwin, The Origin of Species; Historical sketch, Variation Under Domestication (1), Variation Under Nature (2)
	W 29, Sept.	Origin; Struggle For Existence (3), Natural Selection (4)
2	M 4, Oct.	Difficulties On Theory (6), Hybridism (8)
	W 6, Oct.	Origin, On the Imperfections of the Geological Record (9), Geographical Distribution (11)
3.	M 11, Oct.	Origin; Mutual Affinities of Organic Beings (13), Recapitulation and Conclusion (14)
	W 13, Oct.	Mendel, 1865
4.	M 18, Oct.	Weldon, 1899 Presidential Address, Provine chs. 1 and 2 "The Origins of Theoretical Population Genetics"
	W 20, Oct.	Provine, chs. 2 and 3 <b>Paper topics due</b>
5.	M 25, Oct.	Provine, Ch. 4
	W 27, Oct.	The evolutionary synthesis – Mutations versus selection <ul style="list-style-type: none"><li>• Wright S. 1932. The roles of mutation, inbreeding, crossbreeding and selection in evolution. <i>Proc. 6<sup>th</sup>. Intl. Con. Genet.</i> 1:356-366.</li><li>• Haldane, J.B.S. 1933. The part played by recurrent mutation in evolution. <i>Am. Nat.</i> 67: 5-19.</li></ul>
6.	M 1, Nov.	Macro-evolutionary patterns and extinction <ul style="list-style-type: none"><li>• McKinney, M.L. 1997. Extinction vulnerability and selectivity: Combining ecological and paleontological views. <i>Ann. Rev. Ecol. Syst.</i> 28: 495-516.</li><li>• Raup, D.M. 1994. The role of extinction in evolution. <i>Proc. Natl. Acad. Sci.</i> 15: 6758-6763.</li></ul>
	W 3, Nov.	The principle of divergence debate <ul style="list-style-type: none"><li>• Mayr, E. 1992. Darwin's Principle of Divergence <i>J. Hist. Biol.</i> 25: 343-359.</li><li>• Reznick D.N. and Ricklefs, R.E. 2009. Darwin's bridge between microevolution and macroevolution. <i>Nature</i> 457: 837-842</li></ul>

Week	Day/Date	Readings
7.	M 8, Nov.	Diversification and adaptive radiation <ul style="list-style-type: none"> <li>• Barraclough, T.G. &amp; Nee, S. 2001. Phylogenetics and speciation. <i>TREE</i> 16:391-399.</li> <li>• Seehausen, O. 2006. African cichlid fish: a model system in adaptive radiation research. <i>Proc. R. Soc. B.</i> 273: 1987-1998.</li> </ul>
	W 10, Nov.	Modes of Speciation debate I – <b>Paper outlines due –</b> <ul style="list-style-type: none"> <li>• Bush, G. L. 1975. Modes of animal speciation <i>Ann. Rev. Ecol. Sys.</i> 6:339-364.</li> <li>• Schluter, D. 2001. Ecology and the origin of species. <i>TREE</i> 16:372-380.</li> </ul>
8.	M 15, Nov.	Modes of Speciation debate II <ul style="list-style-type: none"> <li>• Coyne, J.A. &amp; Orr, H.A. 1989. Patterns of speciation in <i>Drosophila</i>. <i>Evolution</i> 43: 362-381.</li> <li>• Rice W.R. &amp; Hostert E.E. 1993. Laboratory experiments on speciation: what have we learned in 40 years? <i>Evolution</i> 47: 1637-1653.</li> </ul>
	W 17, Nov.	Ecological divergence and the origin of species <ul style="list-style-type: none"> <li>• Schluter, D. 1994. Experimental evidence that competition promotes divergence in adaptive radiation. <i>Science</i> 266: 798-801.</li> <li>• Berner, D., Grandchamp A-C., and Hendry, A.P. 2009. Variable progress toward ecological speciation in parapatry: Stickleback across eight lake-stream transitions. <i>Evolution</i> 63: 1740–1753.</li> </ul>
9.	M 22, Nov.	Intragenomic conflict <ul style="list-style-type: none"> <li>• Charlesworth, B. Sniegowski, P &amp; Stephan W. 1994. The evolutionary dynamics of repetitive DNA in eukaryotes. <i>Nature</i> 371: 215-220.</li> <li>• Vinogradov, A.E. 2003. Selfish DNA is maladaptive: evidence from the plant Red list. <i>Trends Genet.</i> 19:609-614.</li> </ul>
	W 24, Nov.	Intergenomic conflict: Sex and parasitism <ul style="list-style-type: none"> <li>• Burt, A. &amp; Bell, G. 1987. Mammalian chiasma frequencies as a test of two theories of recombination. <i>Nature</i> 326:803-805.</li> <li>• Rice, W.R. 1996. Sexually antagonistic male adaptation triggered by experimental arrest of female evolution <i>Nature</i> 381: 232-234.</li> </ul>
10.	M 29, Nov.	Evo-Devo: Debate over the <i>cis</i> -Regulatory Theory <ul style="list-style-type: none"> <li>• Hoekstra, H.E., Coyne, J.A. 2007. The locus of evolution: Evo devo and the genetics of adaptation. <i>Evolution</i> 61: 995-1016.</li> <li>• Carroll, S.B. 2008. Evo-devo and an expanding evolutionary synthesis: A genetic theory of morphological evolution. <i>Cell</i> 134: 25-36.</li> </ul>
	W 1, Dec.	Macroevolution and the role of non-adaptive forces – <b>Final Papers Due–</b> <ul style="list-style-type: none"> <li>• Koonin, E.V. 2009. Darwinian evolution in the light of genomics <i>Nucl. Acids Res.</i> 37:1011-1034.</li> <li>• Lynch, M. 2007. The frailty of adaptive hypotheses for the origins of organismal complexity. <i>Proc. Natl. Acad. Sci.</i> 104:8597-8604.</li> </ul>