

MB/Z 578 Genetics of Natural Populations - Fall 2007

Instructors: Michael F. Antolin, Biology Dept.

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TIME: MWF 11

PLACE: Yates 206

TEXTS: (H) Hedrick, Genetics of Populations, 3rd ed, ISBN 0763747726, Jones and Bartlett Publishers, 40 Tall Pine Drive, Sudbury, MA 01776

(CH) Conner and Hartl, A Primer of Ecological Genetics. 1st Ed. ISBN 0-87893-202-X (pbk) Sinauer and Assoc. 23 Plum Tree Road, Sunderland, MA 01375

(A) Avise, Molecular Markers, Natural History, and Evolution. 2nd Ed. ISBN 0-87893-041-8 (pbk) Sinauer and Assoc., 23 Plum Tree Road, Sunderland, MA

Aug. 20	Introduction, Basic Genetics/Terminology	Black	(H) Chap1
Aug. 22	Detecting genetic variation at discrete loci	Black	(A) Chap1
Aug. 24	Detecting genetic variation at discrete loci	Black	(CH) Chap1,Chap2(9-22)
Recitation:	Review of Basic Genetics, Quiz 1 Hand out reading assignment #1 Hand out problem set #1		
Aug. 27	Detecting genetic variation at discrete loci	Black	(A) Chap1
Aug. 29	Estimating allelic and genotypic frequencies	Black	(H) Chap2, (CH)Chap2(22-24)
Aug. 31	Random mating/random union of gametes	Black	(H) Chap2, (CH)Chap2(24-45)
Recitation:	Problem set #1 due, Quiz 2		
Sept. 3	Labor Day		
Sept. 5	Linkage disequilibrium and estimating LD	Black	(H) Chap10
Sept. 7	Linkage disequilibrium and estimating LD	Black	(H) Chap10
Recitation:	Hand out problem set #2, Quiz 3 Hand out reading assignment #2 Reading assignment #1 due		
Sept. 10	Inbreeding and inbreeding coefficients	Black	(H) Chap5, (A) pp.475-491
Sept. 12	Genetic Drift (binomial distribution)	Black	(H) Chap6
Sept. 14	The Coalescent	Black	Hey and Machado 2003
Recitation:	Problem set #2 due, Quiz 4		
Sept. 17	Inbreeding and finite populations (drift)	Black	(H) Chap5,(CH)Chap2(52-57)
Sept. 19	Effective population size	Black	(H) Chap5,(CH)Chap2(62-66)
Sept. 21	Wright's F-statistics Wahlund's Effect	Black	(H) Chap9
Recitation:	Hand out reading assignment #3, Quiz 5 Hand out problem set #3 Reading assignment #2 due		

Sept. 24	Wright's F-statistics/Migration	Black	(H) Chap9,(CH)Chap2(57-61)
Sept. 26	Migration/Mutation	Black	(H) Chap7,(CH)Chap2(47-51)
Sept. 28	Introduction to Selection	Black	(H) Chap3,(CH)Chap2(66-77)
Recitation:	Problem set #3 due, Quiz 6		
Oct. 1	Models of selection	Black	(H) Chap3
Oct. 3	Models of selection	Black	(H) Chap4
Oct. 5	Models of selection	Black	(H) Chap4
Recitation:	Hand out reading assignment #4, Quiz 7 Hand out problem set #4 Reading assignment #3 due		
Oct. 8	Neutralism	Black	(H) Chap8
Oct. 10	Shifting Balance	Black	(H) Chap9,(CH)Chap2(77-95)
Oct. 12	Quasispecies	Black	(H) Chap9
Recitation:	Problem set #4 due, Quiz 8		
Oct. 15	Introduction to Quantitative Traits	Antolin	
Oct. 17	Introduction to Quantitative Traits	Antolin	(CH) Chap 1 (1-6); Chap 4
Oct. 19	Fundamental Theorem of N.S. and heritability	Antolin	(CH) Chap 4. (H) pp 133-134
Recitation:	Quiz 9 (discuss Experimental Design project) Hand out problem set #5		
Oct. 22	Covariances and resemblances among relatives	Antolin	(CH) Chap 4
Oct. 24	Experimental design and artificial selection	Antolin	(CH) Chap 4, Chap 5 (163-170)
Oct. 26	Plasticity, G x E, and genetic correlations	Antolin	(CH) Chap 5 (137-163)
Recitation:	Quiz 10; Problem set #5 Hand out reading assignment #4		
Oct. 29	Plasticity, G x E, and genetic correlations	Antolin	(CH) Chap 5 (137-163)
Oct. 31	QTL mapping	Antolin	(CH) Ch. 5 (171-180)
Nov. 2	More QTL mapping	Antolin	
Recitation:	Quiz 11; Reading assignment #4 due Hand out problem set #6		
Nov. 5	Natural selection in the wild: fitness components	Antolin	(CH) Chap 6 (21
Nov. 7	Evolvability	Antolin	
Nov. 9	Natural selection in the wild I	Antolin	(CH) Chap 6
Recitation:	Quiz 12; Problem set #6 due Hand out reading assignment #5		
Nov. 12	Natural selection in the wild II	Antolin	
Nov. 14	Multivariate selection	Antolin	
Nov. 16	Frequency-dependent natural selection: sex ratio	Antolin	(CH) Ch3 (76-77), (H) Ch4 (221-228) Chap 7 (235-245)
Recitation:	Quiz 13; Reading assignment #5 due Hand out problem set #7		

