2010 Statistical Genetics Short Course

Monday (August 16)	**Data and Software Issues**	
8:00am – 9:00am	*Registration*	
9:00am – 9:15am	1. Introduction to Statistical Genetics Workshop	[K. Lange]
9:15am – 10:45am	2. Data Types and Analysis Robustness to Data Error	[Sobel]
10:45am – 11:00am	*Break (tea, etc)*	
11:00am – Noon	3. Running Mendel and Mendel Enterprise	[Papp]
Noon – 1:30pm	*Lunch*	
1:30pm – 2:15pm	4. Sample Analyses and Recovering from Data Errors	[Papp]
2:15pm – 3:15pm	5. Statistics Review I — Conditional Probability, Expectations, P-values, Power, Maximum Likelihood Estimates, etc	[Zhou]
3:15pm – 3:30pm	*Break (tea, etc)*	
3:30pm – 4:15pm	6. Mistyping Analysis and Quality Control [Chapter 5]	[Papp]
4:15pm – 5:00pm	7. Consolidation of Alleles and Loci; Pedigree Trimming [Chapters 16, 18, and 21]	[Papp]

Tuesday (August 17)	**Linkage Analysis**	
9:00am – 9:30am	8. Linkage Background and Study Design Issues	[Sobel]
9:30am – 10:45am	9. IBD Probabilities, Parametric and Non-Parametric Linkage (NPL) [Chapters 2 and 4]	[Sobel]
10:45am – 11:00am	*Break (tea, etc)*	
11:00am – Noon	10. Penetrance Estimation, including Generalized Linear Models (GLM) [Chapter 14]	[K. Lange]
Noon – 1:30pm	*Lunch*	
1:30pm – 3:00pm	11. Analyzing Large Pedigrees using MCMC	[Sobel]
3:00pm – 3:15pm	*Break (tea, etc)*	
3:15pm – 4:00pm	12. Statistics Review II — Contingency Tables, Permutation Tests, Empirical P-values, Regression, etc	[Alexander]
4:00pm – 4:30pm	13. Hardy-Weinberg Analysis [Chapter 6]	[K. Lange]
4:30pm – 5:00pm	14. Copy Number Variation (CNV) Background, Discovery, and Analysis	[K. Lange]

Wednesday (August 18)	**Association Analysis**	
9:00am - 9:45am	15. Genetics and Linkage Equilibrium — Measures and Tests [Chapter 11]	[Alexander]
9:45am - 10:15am	16. SNP Data Handling [Chapter 0.6 and 25]	[Sobel]
10:15am – 10:30am	*Break (tea, etc)*	
10:30am – Noon	17. Ethnic Admixture and Structure [Chapter 15]	[Alexander]
Noon – 1:30pm	*Lunch*	
1:30pm - 2:15pm	18. Haplotypes — Frequency Estimation and Local Genotype Imputation [Chapters 3 and 23]	[K. Lange]
2:15pm – 3:15pm	19. Genome-wide Association Studies (GWAS) — Background, Study Design, and Lasso [Chapter 24]	[Zhou]
3:15pm – 3:30pm	*Break (tea, etc)*	
3:30pm – 4:00pm	20. Finding Cryptic Relationships	[Sobel]
4:00pm – 5:00pm	21. Public Databases and GWAS data	[Alexander]

Thursday (August 19)	**Association Analysis continued**	
9:00am - 10:45am	22. Association Tests using Family data, including TDT, Gamete Competition, MFG Tests, and in the presence of Linkage [Chapters 8, 13, and 22]	[Sinsheimer]
10:45am – 11:00am	*Break (tea, etc)*	
11:00am – Noon	22. *continued*	[Sinsheimer]
Noon – 1:30pm	*Lunch*	
1:30pm - 3:00pm	23. Global Genotype Imputation	[Li]
3:00pm – 3:15pm	*Break (tea, etc)*	
3:15pm – 5:00pm	24. Panel Discussion on Sequence Data — Collection and Analysis	[E. Lange]
6:00pm	***Course Dinner***	

Friday (August 20)	**Quantitative Trait Loci (QTL) Analysis**	
9:00am - 9:45am	25. Introduction to Quantitative Trait Analysis	[Sinsheimer]
9:45am - 10:45am	26. Linkage Analysis for Quantitative Traits — Variance Component Analysis [Chapter 19]	[Sinsheimer]
10:45am – 11:00am	*Break (tea, etc)*	
11:00am – Noon	27. Association Tests for Quantitative Traits [Chapter 13, 20, and 22]	[K. Lange]
Noon – 1:30pm	*Lunch*	
1:30pm - 3:00pm	28. Analysis of Rare Variants	[Zhou]
3:00pm – 3:15pm	*Break (tea, etc)*	
3:15pm - 4:15pm	29. Demonstration of Mendel Enterprise Clinical Components	[Papp]
4:15pm - 5:00pm	30. Audience Questions, Future Directions, and Final Overview	[K. Lange]