

1. Introduction to gene mapping
2. Crossover, recombination, chiasma interference, map functions
3. Linkage detection using direct counting for pedigree data
4. Linkage analysis using full data
5. Locus ordering and construction of linkage maps
6. Linkage analysis with sex-linked and imprinted genes
7. Linkage disequilibrium and association analysis
8. Transmission disequilibrium test and sib pair analysis
9. Centromere mapping using oocyte typing
10. Radiation hybrid mapping
11. Direct linkage information in random populations and issues in experimental designs
12. Genetic modeling of quantitative trait loci: single-locus model
13. Genetic modeling of quantitative trait loci: single-locus model
14. Statistical analysis for candidate gene testing
15. Comparison of marker genotypes for QTL mapping
16. Least squares analysis for QTL mapping
17. Regression on genotypic probabilities
18. Mixture model likelihood analysis
19. Linked QTLs, conditional and multi-marker analyses
20. Experimental designs for QTL mapping
21. Basics of microarray analysis
22. Parentage testing

Appendix: Statistical preparations

REFERENCE BOOKS

- Ott, J. 1999, Analysis of Human Genetic Linkage, The Johns Hopkins University Press
- Lynch, m. and B. Walsh, 1998 Genetics and analysis of quantitative traits.
- Weir, B. 1996 DNA data analysis II.
- Balding, D.J., M. Bishop, C. Cannings (Editors), 2001. Handbook of Statistical Genetics.
- Wit, E. and J. McClure, 2004. Statistics for microarrays.