

The Lander-Green Algorithm in Practice

Biostatistics 666
Lecture 21

Last Lecture: Lander-Green Algorithm

$$L = \sum_{I_1} \dots \sum_{I_m} P(I_1) \prod_{i=2}^m P(I_i | I_{i-1}) \prod_{i=1}^m P(X_i | I_i)$$

- Similar multipoint sib-pair analysis, but with:
 - More general definition for I , the "IBD vector"
 - Probability of genotypes given "IBD vector"
 - Transition probabilities for the "IBD vectors"

Lander-Green Recipe

- 1. List all meiosis in the pedigree
 - There should be $2n$ meioses for n non-founders
- 2. List all possible IBD patterns
 - Total of 2^{2n} possible patterns defined by setting each meiosis to one of two possible outcomes
- 3. At each marker location, score $P(X|I)$
 - Evaluate using each possible founder allele graph I