

**C**omputation and **I**nformatics in **B**iology and **M**edicine  
Training Program

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***Algorithms to Extract Haplotypes  
from Optical Mapping Data***

**Abstract**

Optical Mapping is a single molecule technology being developed at UW by David Schwartz, and is used to construct genomewide restriction maps. We describe algorithms to construct haplotyped restriction maps from Optical Mapping data. Such haplotype maps are needed to perform successful disease-gene association studies. The basic intuition is that Optical Mapping is based on large single DNA molecules, which allows the phasing of 2 or more polymorphisms to be observed directly. Data Error complicates the problem, and requires the use of highly redundant data. We describe a Bayesian/Maximum likelihood approach to simultaneously recover from data error and deduce the location and phasing of all heterozygous polymorphisms in the genome.

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**Tuesday, November 26<sup>th</sup>  
4:00 p.m.**

Room 1111  
Biotechnology Center/Genetics  
425 Henry Mall