

Syllabus

- 01/10 – Introduction to computational and molecular biology
 - 01/12 – Statistical modeling of biopolymer sequences (Eric)
 - 01/19 – Hidden Markov models for gene finding:
the forward-backward algorithm (Eric)
HW1 out
 - 01/24 – Comparative gene finding: paired HMM (Eric)
 - 01/26 – Molecular evolution: phylogenetic HMM (Eric)
 - 01/31 – Motif detection, the EM algorithm (Eric)
 - 02/02 – Bayesian motif models, Monte Carlo algorithms (Eric)
HW1 due, HW2 out
- } Sequence analysis
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- 02/09 – 2-point linkage analysis (Eric)
 - 02/14 – SNPs and haplotype inference (Eric)
 - 02/16 – QTL mapping (Eric)
 - 02/21 – Pedigree inference (Eric)
 - 02/23 – Introduction to array CGH data (Eric)
- } Genetics
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- 02/28 – Gene expression and microarrays (Ziv)
 - 03/02 – Normalization and differentially expressed genes (Ziv)
HW2 due, HW3 out
 - 03/14 – Clustering (Ziv)
 - 03/16 – Clustering (Ziv) **HW3 due, HW4 out**
 - 03/21 – Classification (Ziv)
 - 03/23 – Classification (Ziv)
 - 03/28 – Gene expression dynamics (Ziv)
 - 03/30 – Invited talk **HW4 due**
- } Gene expression
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- 04/04 – Bayesian networks (Ziv) **Project proposals due**
 - 04/06 – PRMs and module networks (Ziv)
 - 04/11 – CRFs and probabilistic graphical models (Eric)
 - 04/13 – Overview of approximate probabilistic inference:
Variational and sampling (Eric)
 - 04/18 – Network motifs (Ziv)
 - 04/20 – Protein interaction (Ziv)
 - 04/25 – Project presentations
 - 04/27 – Project presentations
- } Systems biology