10/17/05

Genes & Genomes

(formerly Gene Prediction - 1)

Gene Prediction & Regulation

- Gene structure & regulation
- Eukaryotes vs prokaryotes
- Methods for predicting genes
- Predicting regulatory regions
- Predicting miRNAs & targets

Reading Assignment (for Mon)

Mount Bioinformatics
- Chp 9 Gene Prediction & Regulation
  - pp 361-385 Eukaryotic vs Prokaryotic Gene Structure
  - Chk Errata: http://www.bioinformaticsonline.org/help/errata2.html

Brown Genomes 2 (NCBI textbooks online)
- Sect 7 Understanding a Genome Sequence - Overview
- Sect 7.1 Locating Genes in a Genome Sequence

Reading Assignment (for Wed)

Mount Bioinformatics
- Chp 9 Gene Prediction & Regulation
  - pp 361-385 Predicting Promoters
  - Chk Errata: http://www.bioinformaticsonline.org/help/errata2.html

Brown Genomes 2 (NCBI textbooks online)
- Sect 9 Overview: Assembly of Transcription Initiation Complex
- Sect 9.1-9.3 DNA binding proteins, Transcription initiation

Eukaryotes vs Prokaryotes

"Typical" human & bacterial cells drawn to scale.

Eukaryotic cells are characterized by membrane-bound compartments, which are absent in prokaryotes.

Central Dogma - "old"
Central Dogma - “new"

Comparison of Gene Structures

A very simple eukaryotic gene

Comparison of Gene Structures
Comparison of Gene Structures

DNA Interactive: "Genomes"

A tutorial on genomic sequencing, gene structure, genes prediction

Howard Hughes Medical Institute (HHMI)
Cold Spring Harbor Laboratory (CSHL)

http://www.dni.org/c/index.html