

10/17/05

Genes & Genomes

(formerly *Gene Prediction - 1*)

10/17/05 D Dobbs ISU - BCB 444/544X: Genes & Genomes 1

Gene Prediction & Regulation

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

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Reading Assignment (for Mon)

Mount Bioinformatics

- Chp 9 Gene Prediction & Regulation
 - pp 361-385 Eukaryotic vs Prokaryotic Gene Structure
 - *Ck Errata:* <http://www.bioinformaticsonline.org/help/errata2.html>

Brown Genomes 2 (NCBI textbooks online)

- Sect 7 Understanding a Genome Sequence - Overview
 - <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=genomes.chapter.6601>
- Sect 7.1 Locating Genes in a Genome Sequence
 - <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=genomes.section.6613>

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Reading Assignment (for Wed)

Mount Bioinformatics

- Chp 9 Gene Prediction & Regulation
 - pp 361-385 Predicting Promoters
 - *Ck Errata:* <http://www.bioinformaticsonline.org/help/errata2.html>

Brown Genomes 2 (NCBI textbooks online)

- Sect 9 Overview: Assembly of Transcription Initiation Complex
 - <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=genomes.chapter.7002>
- Sect 9.1-9.3 DNA binding proteins, Transcription initiation
 - <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=genomes.section.7016>

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Eukaryotes vs Prokaryotes

"Typical" human & bacterial cells drawn to scale.

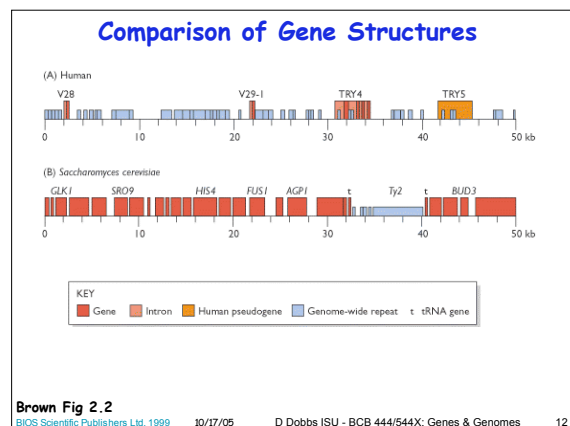
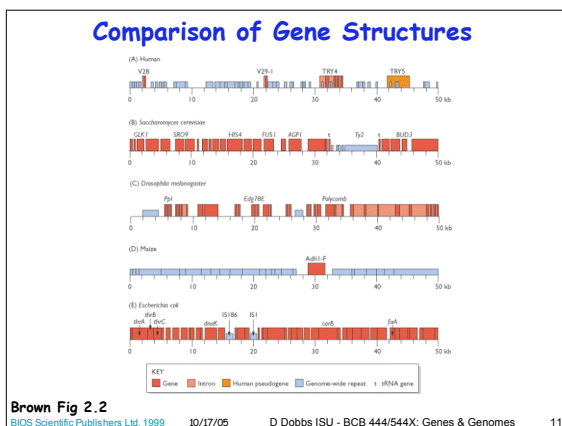
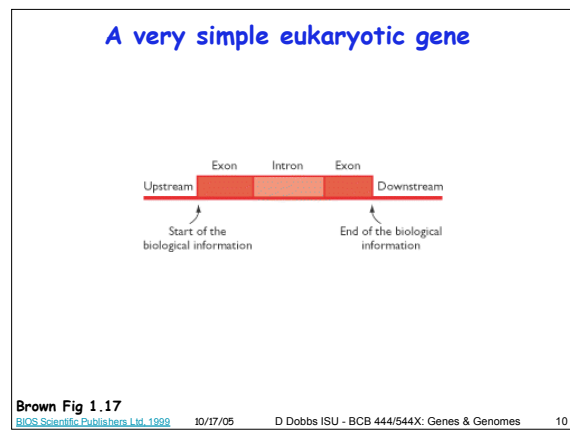
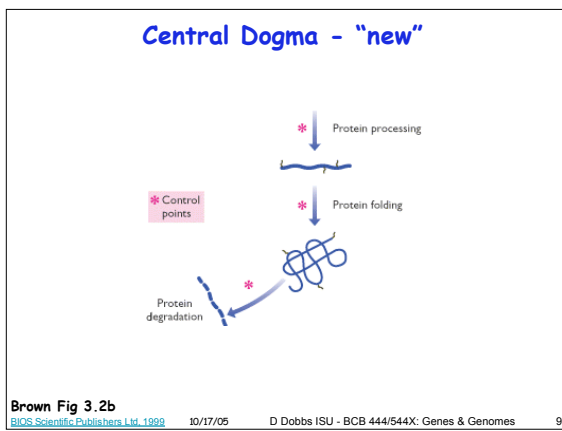
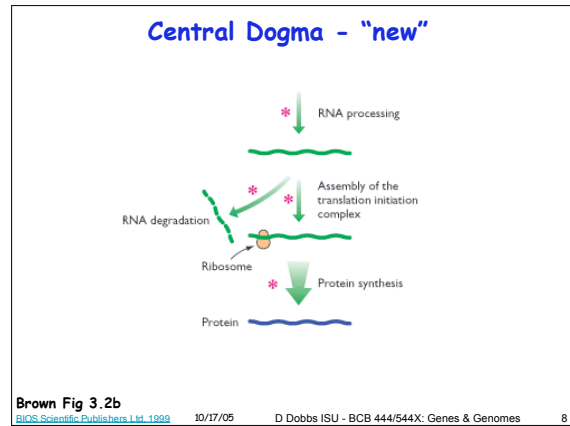
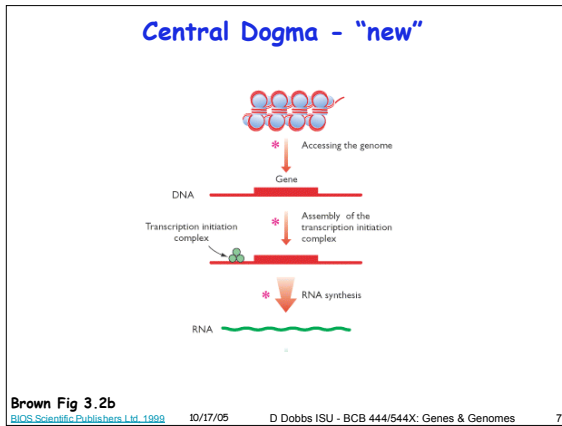
Eukaryotic cells are characterized by membrane-bound compartments, which are absent in prokaryotes.

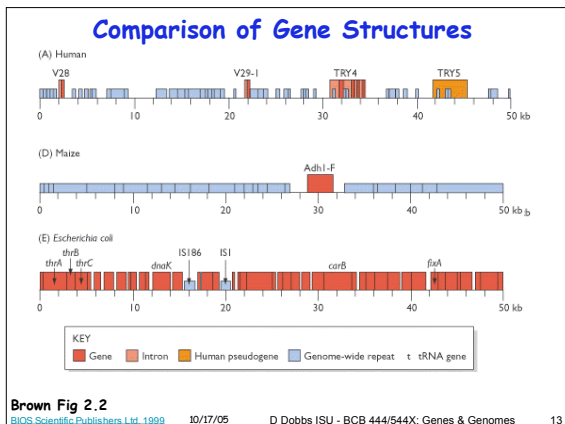
Brown Fig 2.1
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Central Dogma - "old"

(A) DNA → Transcription → RNA → Translation → Protein

Brown Fig 3.2a
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DNA Interactive: "Genomes"

A tutorial on genomic sequencing, gene structure, genes prediction

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

<http://www.dnai.org/c/index.html>

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