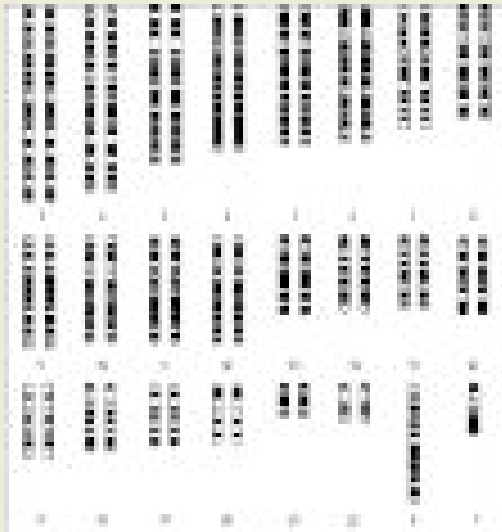




Genomics: the big picture



How do genes control phenotype?

- ◆ Find genes
 - Annotate them (e.g. function)
- ◆ Identify introns, exons, regulatory elements
- ◆ Determine genetic regulatory network
 - E.g. Transcription factors and their binding sites
- ◆ Relate to gene expression and phenotype
- ◆ How do genetic variations or drugs effect phenotype
 - Diagnostic tools
 - Look for new drug targets



In class so far

- ◆ **Sequence alignment**
 - Dynamic programming
 - Global, local, PAM, Blosom
 - Statistical significance (BLAST)
- ◆ **Motif finding**
 - PWM
 - EM/Gibbs
- ◆ **Promoter prediction**
 - TATA, BC, CAAT boxes, CpG islands
- ◆ **Comparative genomics**
 - rVista



Coming next

- ◆ **Gene finding**
 - Hidden Markov models
 - More dynamic programming
- ◆ **Gene expression**
 - Clustering
- ◆ **Gene regulatory networks**
- ◆ **Proteomics**

