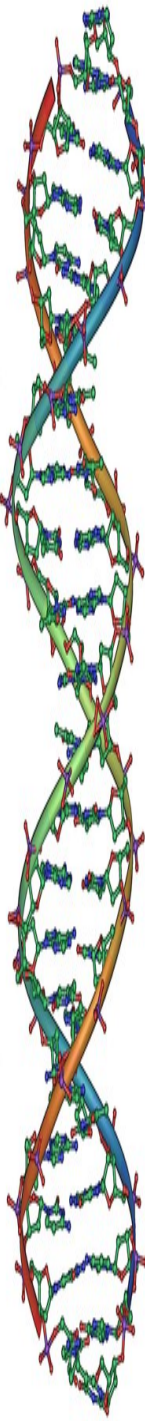
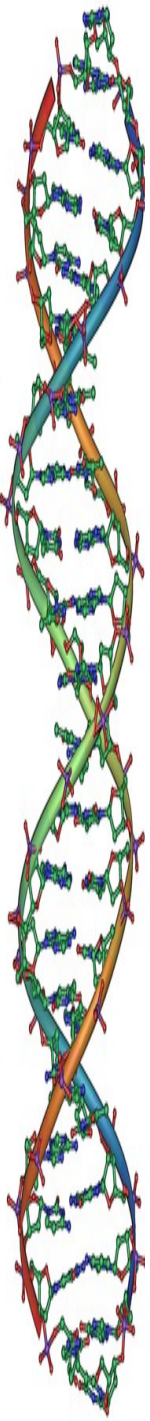


CMSC423: Bioinformatic Algorithms, Databases and Tools

Fall 2008

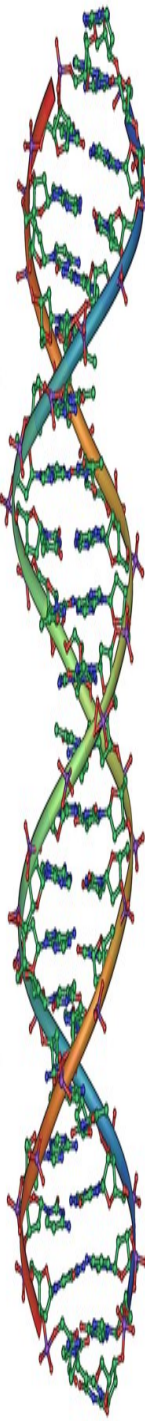
Instructor: Mihai Pop

TuTh: 11-12:15, CSIC 1122



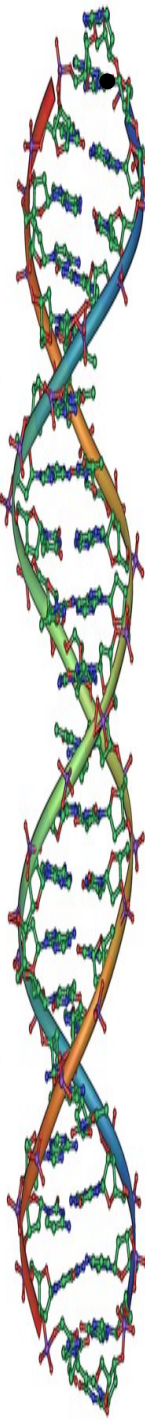
What is bioinformatics?

- Biology can be viewed as an information science (e.g. DNA is just a string of letters)
- Computers are essential in generating, managing, and analyzing biological data
- “Bioinformatics” or “Computational Biology” encompasses all applications of computers to the analysis of biological data



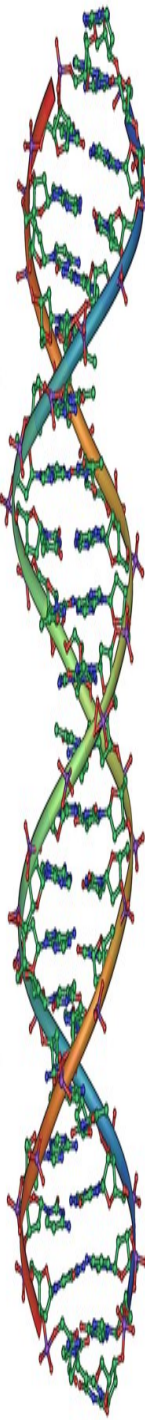
Why study bioinformatics?

- Exciting field! Help biologists figure out what life is all about.
- Work with people different from you – bio-geeks
- Many programmer/software engineer jobs in biotech industry currently filled by biologists – great need for people with CS backgrounds



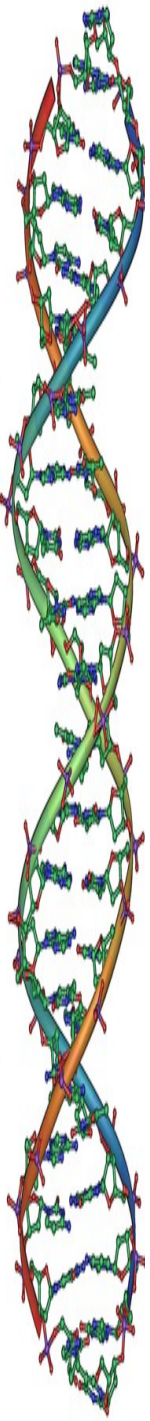
- Maryland's I-270 corridor, leapfrogging on federal agencies, is perhaps North America's fastest-growing source of industrial biotechnology (Science Magazine)

and many more...



Overview of course

- No knowledge of biology required
- Will cover areas of interest in CURRENT bioinformatics research
- Overall flow: data management (databases), data generation (sequencing), data analysis (extracting meaning)
- Examples based on real data (note: instructor spent 5 years in a biotech research institute)



Grading & workload

- Homework (10%)

Goal: 4-5 assignments, each involving a couple hours of work at most

  - exercises from textbook
  - small programming assignments
  - “discovery” exercises (find something in public databases or using public software)
- Programming projects (15% + 15%)
  - Project 1 – assigned by instructor
  - Project 2 – chosen by student
- In-class midterms (25%) & final (35%)