



Basics of Bioinformatics

11-9-2005





Opening Discussion

- What did we talk about last class?
- What do you know about cellular biology?





DNA, RNA, and Sequences

- The information that makes all life on Earth work is written in the base pairs that we talked about earlier when we did our transcribing program.
- In the nucleus of a cell that information is kept in DNA molecules. The DNA is transcribed to RNA which does does the real work in the body.
- Most importantly, RNA segments are read off to produce the amino acids that are used to build everything in every cell of your body.





- Groups of base pairs that perform certain types of functionality in the body are called genes. These are the regions that actually encode the protein information.
- A large fraction of the DNA and RNA is non-encoding. Even that region can be important as change temperatures of chemical concentrations can change the shapes of the molecules which impacts what parts of the RNA changes are expressed.





- This is basically the investigation of information dealing with cell mechanics and genetics on a computer. This field literally didn't exist until biologists became capable of sequencing large sections of the DNA of various life forms.
- In this class we will focus mostly on the sequence analysis. That is where we compare the DNA sequences of different species to try to find regions that are similar.
- This is more complex than it sounds because similar for biological purposes doesn't mean identical.



Tools of Bioinformatics

- The foundation of bioinformatics is the information stored in various databases.
- We will take a few minutes to look at GenBank. Much of what we play with over the next few weeks will be found at www.ncbi.nlm.nih.gov.





- There is no class on Friday, but your next assignment is due that day.

