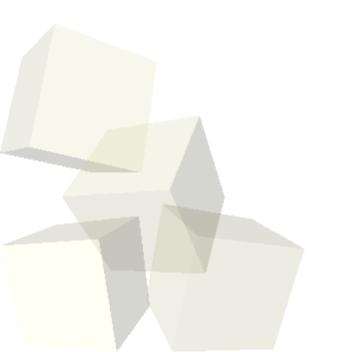


Basics of Bioinformatics

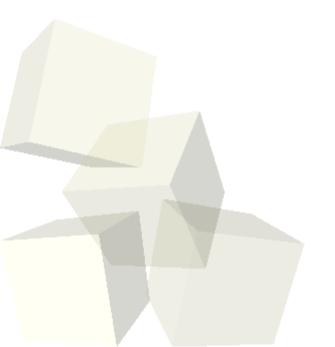
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Opening Discussion

- 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.

Genes

- 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 nonencoding. 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.

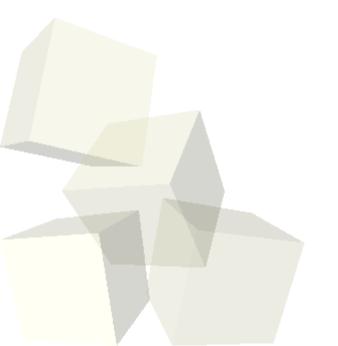


Bioinformatics

- 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.



Reminders

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

