Presenter: Nancy Baker
Date: January 25, 2005
Paper: Wren JD, et al. (2004). Knowledge discovery by automated identification and ranking of implicit relationships. Bioinformatics, 20(3):389-398.

Summary of paper:

This paper discusses the development and testing of a software system which is modeled on Swanson's ABC paradigm. It starts out with the usual discussion of information overload and how many relationships between entities such as diseases and drugs may lie implicit but unseen in the literature because of the volume and disjointedness of the literature.

They postulate that a potential relationship may exist between two objects if they co-occur in the same MEDLINE record (title and abstract). They also employ a knowledge base of terms such as diseases and compounds so that they may be extracted more easily. They use fuzzy logic to give relationships scores between 0 and 1. The relationships are ranked. The system relies on medical experts to pick out interesting relationships among the high occurring ones. They identified a drug with potential use against cardiac hypertrophy.

Discussion:

This paper was chosen because Skip Garner had recently been a speaker at a UNC genetics colloquium. He spoke about his system and the potential discovery they made from it. He plans to use this system to build a drug company, bypassing the early, expensive steps of traditional drug discovery by using this system for in silico discovery.

Several discussion points came up. How did he validate the system? Can they tell if they missed things? What about weak relationships? Might they be valuable? Will this paradigm of drug discovery only work in a setup like Garner's? If information scientists develop such a thing can they get people to use it?

The paper brought up many questions we have been discussing all semester.