Master project in bioinformatics:
interactive website to explore protein networks

at Stockholm Bioinformatics Centre, Albanova

Background: Proteins are the central functional components of our body. They are involved in almost every process of life, and co-operate in networks to perform complex tasks. Many proteins are functionally coupled, and revealing these functional relationships is essential for curing diseases and understanding the complex processes of life. Several experimental techniques exist to identify related proteins by testing a huge number of proteins at a time. Unfortunately these techniques are not very accurate. However, integrating results from multiple experiments and transferring information between different species improves the accuracy and enables us to create a global picture of protein interaction in the form of an interaction network.

Goals: We are developing a framework for data integration and prediction of protein functional coupling networks. Visualization and exploration of this kind of networks is a difficult problem because of the network complexity and the huge amount of different information that is summarized. We are looking for a skilled programmer and web developer who can help us developing an interactive website to make our predictions accessible to the scientific community. The website should allow to retrieve regions of interest in our networks starting with different query options. These regions, the underling experimental data, and the biological annotations should be visualized in an accessible and intuitive way. Furthermore, it should be possible to filter and expand those regions dynamically.

Requirements: The applicant should be able to work independently or in loose collaboration. Our prediction framework is written in Java with database access using Hibernate and has a configuration front-end build with Struts 2. The website should integrate into our system, knowledge about those technologies is therefore desirable.

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