Genome Sciences Seminar

Wednesday, 1.30.19 | 3:30 | Foege Auditorium

Dr. Steven Gygi

Professor of Cell Biology
Harvard Medical School

"BioPlex: Towards a Genome-scale, Protein-protein Interaction Network"

TheGygi Lab:

We are interested in developing and applying new technologies in the fields of mass spectrometry and proteomics. The impressive amount of data generated by the genomics revolution is being organized and made accessible in a variety of databases and libraries. These include genomic and expressed sequence tag databases, transcriptome maps, and protein databases that describe the identity of some of the proteins expressed by a tissue or cell, as well as other relevant properties including their structure, function and macromolecular interactions. Many of these databases describe the situation encountered at the time of the measurements in a static manner. However, many biological processes are dynamic responses to extraneous perturbations, be they environmental, pharmacological, pathological, genetic or otherwise. The ability to detect accurately and to quantify all of the changes included by a specific perturbation is therefore an essential part of the study of dynamic biological processes. At the heart of all aspects of our lab is protein sequencing by mass spectrometry. Simplified greatly, a tandem mass spectrometer can "sequence" a peptide ion by first measuring the mass of the peptide and then selectively isolating and gently fragmenting that peptide at peptide bonds followed by mass measurement of the fragment ions. The resulting tandem mass spectrum contains the sequence information for a single peptide. The astounding power of the technique can be understood when one compares traditional peptide sequencing by Edman degradation with peptide sequencing by mass spectrometry. A decapeptide can be sequenced by Edman degradation in about 12 hours. That same peptide can be sequenced by a tandem mass spectrometer in less than 1 second at 10 to 100 times the sensitivity.

https://gygi.med.harvard.edu/

Refreshments served outside the Auditorium at 3:20pm
Questions? Contact Brian Giebel at bgiebel@uw.edu or visit the Seminar website at http://www.gs.washington.edu/news/seminars.htm