

## SYSTEMS PHARMACOGENOMICS–BRIDGING THE GAP

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Biological systems are quintessentially complex. Normal function requires the constant orchestration of numerous pathways on widely varying spatial and temporal scales. To understand such a complex system, data has been collected on the molecular, cellular, organ, and population scales and across various -omes such as the genome, proteome, and metabolome. Unfortunately, it is often the case that each data set is analyzed *in vacuo*, without regard to information on other scales or -omes. Multi-scale integration of data types to answer fundamental and practical questions in biomedicine is a significant challenge to the experimental and computational biology communities. This is a topic that is being tackled in a significant way in Systems Pharmacogenomics – which is exploring systems biology approaches for drug treatment response.

Systems researchers in the academic sector are more biology driven. The focus tends to be on developing models and solutions to various questions that lead to new hypotheses to test and explore back at the bench. Whereas the pharma sector tend to be more data driven, where the goal is to find predictive models that can be used for drug treatment development or prediction, but may not be intuitive in terms of the underlying biology. It seems as though approaches and techniques developed by each sector would be enhanced by coming together to discuss the strengths and weakness of their respective approaches.

We will host the second Systems Pharmacogenomics – Birds of a Feather workshop at PSB 2012 with invited speakers from both academic and industry sectors. This event will be sponsored by the PGRN Systems Biology Working Group, PharmGKB, and P-STAR (the PGRN Statistical Analysis Resource). We will have a series of talks following by a panel discussion aimed at bridging the gap between academic and pharma systems pharmacogenomics.

Our invited speakers include: Pankaj Agarwal, Director, Computational Biology, Molecular Discovery & Development, GlaxoSmithKline; Stephane Bourgeois, Geneticist, Wellcome Trust Sanger Institute; Trey Ideker, Division Chief of Medical Genetics at UCSD School of Medicine; and Nicholas J. Schork, Ph.D., Director of Biostatistics and Bioinformatics, The Scripps Translational Science Institute, Professor, Molecular and Experimental Medicine The Scripps Research Institute.

This event will introduce a variety of current approaches for systems pharmacogenomics and potential avenues for future research. Special thanks to the PGRN for their sponsorship and to the speakers for participating in this very exciting event.