



Biomedical and Health Informatics Series

Tuesday, November 27, 2007, Room RR-134, 12:00-12:50

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Co-founder, Chief Technology Officer and Vice President, Research, [Ingenuity Systems](#); previously Co-founder and Associate Director, [SUMMIT](#), the Stanford University Medical Media and Information Technologies lab

“Ingenuity Pathway Analysis: Research Applications of Systems Biology using Large Scale Biomedical Knowledge Models”

The "omics" revolution has generated reams of data increasingly isolated from the broader biological context in which it exists. Systems biology, through combined application of system sciences, life sciences and informatics, aims to create a more holistic understanding of biological systems to better enable discovery of biologically-driven diagnostics and therapeutics. Ingenuity Pathway Analysis (IPA) is a software platform designed to enable biologists and bioinformaticians to model such biological systems by identifying and exploring biological mechanisms, pathways and functions relevant to their experimental datasets and research questions. IPA's algorithmic analytics integrate functional and physical relationships such as gene regulations, protein-protein interactions, post-translational modifications, and drug-target interactions at the gene, protein, cellular and tissue levels. The results provide semantically consistent representations of biochemical pathways and biological functions implicated by empirical data sets, and help scientists to compile panels of biomarkers for follow-on screening assays. This technology has been successfully deployed to 10,000s of life sciences researchers worldwide, and applied to research problems throughout the drug discovery process, from early stage target ID and validation, to later stage activities such as toxicology, pharmacogenomics, biomarker identification, and alternative indications of approved drugs. We will describe the core capabilities of IPA and its research applications, and as well as provide a peek "under the hood" at the underlying Ingenuity Knowledge Platform (IKP), a technology platform for large-scale, high-fidelity acquisition, structured modeling, and computational management of scientific knowledge and biomedical ontologies. IPA is available for evaluation at <http://www.ingenuity.com/>.

Dr. Felciano co-founded Ingenuity in 1998 and leads the company's science and technology R&D efforts, holding the positions of Chief Technology Officer and Vice President, Research. Previous to founding Ingenuity, Dr. Felciano co-founded SUMMIT, the Stanford University Medical Media and Information Technologies lab, where he held the position of Associate Director. Dr. Ramon Felciano holds a Ph.D. and M.S. in Biomedical Informatics, a B.S. in Computer Science and a B.A. in English and French Literature from Stanford University. While at Stanford, Dr. Felciano performed research on interaction design, scientific information visualization, and distributed knowledge-based biomedical information systems. His doctoral research with Dr. Russ Altman focused on the automatic generation of knowledge-driven scientific information visualization. Dr. Felciano is a founding member of RiboWeb, one of the first to successful applications of semantic technologies to support to collaborative molecular biology over the Internet. Dr. Felciano's other research efforts include Lamprey, a patented user tracking technology for the World Wide Web; and the study of Human Error in Medicine and its impact on the design of medical information systems. Dr. Felciano has authored several patents, articles and papers in Nature, Gene, ISMB, Briefings in Bioinformatics, AMIA, CHI, and STQE.

The Biomedical and Health Informatics lecture series covers current topics and developments in Biomedical and Health Informatics. Presenters include faculty, students, researchers and developers from the University of Washington, other academic institutions, government, and industry (locally and nationally). The intended audience is the broader University of Washington and Seattle area community with an interest in BHI as well as BHI faculty and students.

Series Website: <http://courses.washington.edu/mebi590/>