OMICS Group Conferences
Accelerating Scientific Discovery

International Expo and Conference on
Analytrix & HPLC

October 22-24, 2012 DoubleTree by Hilton Chicago-North Shore, USA

Engineering alkaloid biosynthesis discovery in microbes

Rajesh Viswanathan
Case Western Reserve University, USA

Our laboratory's scientific goals are directed along two complementary directions: a. creation of new chemical space. In layman's terms, this means creating new molecules; and b. discover new biocatalysts, in other words enzymes. Our approach toward accomplishing these goals is by turning to nature. Looking into biosynthesis to gain clues for molecular construction and enzyme discovery is a well-known scientific approach. Our unique contribution to this field of natural product chemical biology stems from the combined use of techniques like organic synthesis and genomic analysis in order to engineer microbial biosyntheses.

Recent research has shown that exploration and understanding of our world's biodiversity stands at a mere 1%. The science that defines us is centered on biological questions such as "How does nature construct molecules like penicillin, for example, that has benefited humanity tremendously over the past decades?" and "Can we identify new pathways hosted in prokaryotic cells that can lead to toxins, biofuels and other useful molecules for therapeutic evaluation?". Microorganisms are our choice of biological systems in which we address such questions. We develop chemical and biotechnology tools to address these significant issues. This presentation will highlight recent research from our lab at the interface of chemistry and biology, with a specific focus on natural products that are genetically encoded. We will illustrate interfacial concepts such as genome-guided total synthesis, gene-function IDing and profiling enzymes through microarrays.

rxv69@case.edu