

THE GIS SPEAKER SERIES



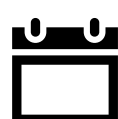
Leveraging Scale to Accelerate Natural Products Discovery

Dr. Nigel J. Mouncey

Director

DOE Joint Genome Institute, Lawrence Berkeley National Lab

Host: Niranjan NAGARAJAN



Monday 24 June 2024
10.00am – 11.00am



GIS Seminar Room (Level 2)
60 Biopolis Street, Genome, Singapore 138672

About The Speaker

Dr. Mouncey joined the DOE Joint Genome Institute in March 2017 as the fourth Director in its 20-year history. Dr. Mouncey has a wealth of research and managerial experience from almost 20 years in the Industrial Biotechnology private sector, as well as research expertise in secondary metabolites and synthetic biology. Dr. Mouncey has a long-standing interest in microbial genetics that started with his education and carried forward into his roles as a senior research scientist at Roche Vitamins, Inc. in New Jersey and DSM Nutritional Products in Switzerland, and as Bioengineering and Bioprocessing R&D Director and Leader at Dow AgroSciences in Indianapolis. During his time in industry, Dr. Mouncey directed R&D teams that focused on the discovery, development and commercialization of novel production organisms and fermentation processes for vitamins, insecticides, fungicides, platform chemicals, cosmetics and new crop traits. In addition to serving as JGI Director, Dr. Mouncey leads the Secondary Metabolite Science Program at the JGI, and he is also on the leadership team of the National Microbiome Data Collaborative. Dr. Mouncey also served as President of the Society for Industrial Microbiology and Biotechnology 2022-2023.

About The Seminar

The galaxy of natural products comprises a large family of diverse and complex chemical entities that have roles in both primary and secondary metabolism, and today >23,000 natural products have been characterized. We are seeing a resurgence of activity in exploring secondary metabolites for a wide range of applications, due to not only increasing antibiotic resistance, but the advent of next-generation genome sequencing and new technologies to investigate natural product biosynthesis. There remains a treasure trove of natural products that remains to be unlocked. At the JGI, we are developing new tools and processes for identification of novel biosynthetic gene clusters from isolate genomes and metagenomes and complementing these with a suite of new experimental platforms to access the products of these clusters. We have built a new secondary metabolite biosynthetic cluster prediction pipeline and a data portal, the Secondary Metabolism Collaboratory, as a new community-centric resource. Furthermore, we have developed capabilities to understand how secondary metabolite biosynthesis is regulated, expression systems in native and heterologous hosts and cell-free systems to access unexplored chemistry and used these to explore secondary metabolites from a range of organisms. I will share our recent developments in unlocking the Earth's Secondary Metabolome.