

30.08.2019 // 10:00 - 12:00 Uhr // Scientific Colloquium
Lecture hall Louis Pasteur, HKI

Prof. Dr. Ben Shen (The Scripps Research Institute, Florida, USA)

Challenges and opportunities for natural products and drug discovery in the genomics era

Abstract: Natural products (NPs) are among the best sources of drugs and drug leads and serve as outstanding small molecule probes for dissecting fundamental biological processes. NP biosynthetic potential of microorganisms is significantly underestimated based on the NPs isolated to date. A bacterial or fungal genome on average could encode 30 biosynthetic gene clusters (BGCs). Most of these BGCs, however, are silent under the limited culturing conditions. A great challenge for NP discovery is to develop innovative methods to realize the full NP biosynthetic potential of a large strain collection and produce NPs in enough quantities for chemical, biological, and clinical investigations. Since the launch of the Natural Products Library Initiative (NPLI) at The Scripps Research Institute (TSRI) in 2011, we have now assembled one of the largest microbial strain collections. Unlocking the biosynthetic potential of this collection could afford millions of new NP scaffolds or new variants of privileged NP drug scaffolds. Selected studies from our current efforts will be presented to highlight the challenges and opportunities for NP and drug discovery in the genomic era.

Born and raised in China, Ben received B.Sc. from Hangzhou University (1982), M.S. from the Chinese Academy of Sciences (under the late Prof. Chutsin Liu, 1984), Ph.D. from Oregon State University (under Prof. Steven J. Gould, 1990), all in chemistry, and carried out postdoctoral research in Mol. Biology and Biochemistry at University of Wisconsin-Madison (under the late Prof. C. Richard Hutchinson, 1991-1995). Ben served on the faculty at the University of California, Davis (1995-2001) and University of Wisconsin-Madison (2001-2010) before joining The Scripps Research Institute (TSRI) in 2011. Currently, Ben is Professor of Chemistry and Molecular Medicine and serves as the Co-Chair of the bicoastal Department of Chemistry and Director of Natural Products Library Initiative at TSRI. Current research in the Shen Lab concerns chemistry, biochemistry, and genetics of natural product biosynthesis and engineering in actinomycetes and development of enabling technologies to mine actinomycetal genomes for natural products and anticancer and anti-infective drug discovery. The Shen lab has authored >270 publications and 11 published patents.

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