Biased Library Design for Chemical Biology and Drug Discovery

Structurally similar molecules that show preferential binding to specific classes of biomolecules (biased libraries) are being used by us to help identify novel bioactives from phenotypic and/or target-based screening. Of particular interest, are non-lipid sphingolipid-mimetics (NLSMs) that bind to sphingolipid binding domains on enzymes and receptors involved sphingolipid metabolism and signalling, respectively. Using these NLSMs, we have identified novel leads against several targets with therapeutic potential in autoimmune, metabolic and cardiovascular diseases. Another area of interest is in the design of libraries biased towards DNA and RNA. We are utilising these in ongoing chemical biology studies to identify new modes of targeting disease.

Bernie Flynn’s Bio:
A/Prof Bernie Flynn is a synthetic organic and medicinal chemist based at the Monash Institute of Pharmaceutical Science (MIPS). He obtained his PhD from the University of Adelaide in 1993 and undertook postdoctoral training in Göttingen (Germany) and the Australian National University (ANU). He has > 20 yrs experience in drug discovery research and commercialisation working within both industry and academia. His group endeavours to link fundamental research in organic chemistry to novel approaches in bioactive discovery. A key area of focus is in alkyne-activation methodologies that enable direct entry into a diverse array heteroaryl and carbocyclic scaffolds. These and related methodologies form the basis of his groups Chemical Biology research and drug discovery efforts. Through his research he has been involved in the founding of three VC-backed start-up companies (all ongoing) and led the discovery of two clinical candidates and a number of preclinical programs.