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**Abstract:** *"Synthesis at the Interface of Chemistry and Biology"*

The complementary role that academics can play in the ever increasing complex arena of drug discovery is beginning to emerge as a viable and sustainable area of research. At the heart of this role will be the undeniable synergy that exist between synthetic chemists and biologists and the ability of these two disciplines to develop new molecular probes useful to perturb biological systems. For synthetic chemists, their role will be defined by the ability to develop practical and efficient methods to construct new compounds that will be applicable to both medicinal chemistry efforts and drug development efforts towards clinical evaluation. Towards this goal, we have two distinct yet complementary programs ongoing in our lab that cross the interface of chemistry and biology. Our efforts to discover new reaction manifolds that rapidly create structure complexity towards scaffolds of validated biological activity (library synthesis) and how these new analogs fit into a medicinal chemistry program aimed at identifying small molecules capable of inducing stem cell differentiation will be presented.