Neglected tropical diseases (NTDs) are infectious diseases that primarily affect one-sixth of the world’s population. Current treatments for NTDs have significant shortcomings and are often highly toxic. Since the majority of patients suffering from NTDs are extremely poor, improved drugs are slow to be developed as there is no financial incentive to do so. In response to this, a pragmatic method for discovering new leads for NTD treatments called “target repurposing” can be used wherein established inhibitors of enzymes and pathways in humans are utilized as starting points for inhibitor discovery for the pathogens that cause NTDs.

Using properties-based library design strategies and established knowledge of each known compound class, parallel synthesis approaches are applied that enable rapid structure-activity relationship development. Recent efforts to repurpose knowledge in human kinase medicinal chemistry has allowed rapid discovery and optimization of multiple potent and non-toxic lead chemotypes for Chagas disease, human African trypanosomiasis, leishmaniasis, and malaria.