NON-METAL CATION CATALYZED ADDITIONS TO UNACTIVATED ALKYNES: NON-RACEMIC AZAPROLINE DERIVATIVES VIA KINETIC-RESOLUTION Pradip Maity and Salvatore D. Lepore*

In the presence of neutral amine or phase transfer catalysts, allenyl esters and β-alkynyl esters underwent amination with dinitrogen electrophiles such as azidodicarboxylates exclusively at the α-position. The use of mild bases in this transformation was only possible with γ-organosilyl substitution. The resulting β-alkynyl hydrazines subsequently undergo unprecedented cyclization reactions in the presence of ammonium and phosphonium catalysts leading to dehydro-azaproline products. Our successful efforts in the development of an efficient synthesis of these heterocycles by both asymmetric hydrazination and cyclization using chiral ammonium phase transfer catalysts via a kinetic resolution pathway will be presented. Mechanistic features of this synthesis as well as catalyst design will be discussed. Importantly, these studies towards the asymmetric synthesis of azaprolines address a shortcoming in heterocyclic methodology as these compounds are virtually unexplored despite their potential as proline-type pharmacophores.