

DEVELOPMENT OF NOVEL ANTIMICROBIAL PEPTIDOMIMETICS MIMICKING AMPS. Jianfeng Cai, Youhong Niu, Haifan Wu, Shruti Padhee. Department of Chemistry, University of South Florida, 4202 E. Fowler Ave, Tampa, FL 33620

There is increasing demand to develop antimicrobial peptides (AMPs) as next generation antibiotic agents as they have the potential to circumvent emerging drug-resistance against conventional antibiotic treatments. Non-natural antimicrobial peptidomimetics are an ideal example of this as they have tunable potency and *in vivo* stability. In the effort of identifying novel antibiotics, we developed a new class of peptidomimetics - γ -AApeptide based antimicrobial agent. These γ -AApeptides (including linear, lipidated, and cyclized forms) show potent and broad-spectrum activities against fungi, and a series of Gram-positive and Gram-negative bacteria, including clinically-relevant pathogens that are resistant to most antibiotics. Furthermore, representative γ -AApeptides did not induce drug-resistance in *S. aureus*, even after 17 rounds of passaging. These results suggest that the AApeptides have bactericidal mechanisms analogous to that of AMPs, and have strong potential as a new class of novel antibiotic therapeutics.