

GTR Seminar



Phage-Displayed Noncanonical Amino Acids for Drug Discovery



Wenshe Ray Liu, Ph.D.

Regents Professor and Harry E. Bovay, Jr. Endowed Chair
Texas A&M University

July 7th (7月7日) 16:30 – 18:00

Nagoya University, Faculty of Engineering, Building No. 1, 131 Classroom.

名古屋大学工学部1号館131教室 (3rd floor)

Abstract: The conventional phage display technique, while a powerful tool for drug discovery, is limited by its reliance on the 20 genetically encoded amino acids. To expand the chemical diversity and enable unique chemistries for phage-displayed peptides targeting drug interactions, we have developed an innovative phage display system integrated with noncanonical amino acids (ncAAs) encoded by the amber stop codon. Utilizing genetically encoded ncAAs, we demonstrated that phage-displayed peptides can undergo simultaneous cyclization. This approach enabled us to construct phage-displayed macrocyclic peptide libraries, facilitating the identification of potent ligands for selected drug targets. Additionally, we developed a novel technique called phage-assisted, active site-directed ligand evolution (PADLE). In PADLE, a genetically encoded ncAA acts as a ligand to bind the active site of an epigenetic protein, guiding phage-displayed peptides towards enhanced binding. Using PADLE, we successfully identified ultra-high potency ligands for SIRT2, HDAC8, ENL, and BRD9. Some of these ligands have also shown strong cellular potency in inhibiting these targets. (講演言語：英語)

問い合わせ：村上 裕 (murah@chembio.nagoya-u.ac.jp)