[Poster presentation; students/postdocs]

Diversity of Ribosomally Derived Peptide Natural Products

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Ribosomally synthesized and post-translationally modified peptides (RiPPs) are a class of peptide natural products with distinct biosynthetic pathways. Unlike non-ribosomal peptides (NRPs), the precursor peptides are synthesized by ribosomes and undergo enzymatic post-translational modification (PTM) to generate RiPPs. This unique biosynthetic feature drives both the evolution of high structural diversity of RiPPs in nature and their synthetic biology application for drug discovery. By using genome mining and biochemical characterization, I here present that distinct PTM enzymes have evolved to create diverse macrocyclic RiPPs. In particular, we have shown that ATP-grasp macrocyclases generate diverse multicyclic architectures in graspetides and cytochrome P450 enzymes produce various biaryl macrocyclic linkages in cyptides. The novel chemical space shown in these studies will be the basis for engineering new peptide-based functional molecules and therapeutics.

References

[1] Nam^{+}, H.; An^{+}, J. S.; Lee, J.; Yun, Y.; Lee, H.; Park, H.; Jung, Y.; Oh. K.; Oh*, D.; Kim*, S. “Exploring the Diverse Landscape of Biaryl-Containing Peptides Generated by Cytochrome P450 Macrocyclases”, *J. Am. Chem. Soc.* **2023**, 145, 22047-22057.

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[Oral presentation; PI]

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