

Planning Modularity in Natural Product Synthesis

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Modular designs underlie many of the modern technologies used by our society. They are recognized as powerful for building and optimizing complex systems. The concept is extendable to the assembly of complex organic molecules from functionalized building blocks (modules), as seen through recent landmark contributions. While clearly beneficial, incorporating modularity into synthetic routes is not necessarily trivial to realize. My laboratory has been trying to modulate the properties of complex natural products by changing their structure. Our approach has been fully synthetic. In this lecture, I will detail how modular designs incorporated into synthetic planning helped us target (1) novel analogs of the bactobolin class of ribosome-targeting natural antibiotics and (2) the physiologically relevant oxidation products of the yellow pigment bilirubin.