

Special Seminar

Dr. Emily Balskus

Harvard Medical School

Thursday, Nov. 18th 3:30 in 1315

“Shedding Light on the Biosynthesis of Cyanobacterial Sunscreens”

Photosynthetic cyanobacteria have evolved multiple strategies for dealing with exposure to harmful UV radiation, including the biosynthesis of small molecule sunscreens. This talk will explore the assembly of two types of cyanobacterial sunscreens, scytonemin and the mycosporine-like amino acids (MAAs), with a particular focus on understanding the enzymatic chemistry employed in each biosynthetic pathway. Scytonemin biosynthesis involves new enzymatic strategies for C-C bond formation, while MAA construction utilizes homologs of ATP-dependent amide bond forming enzymes to construct unusual C-N linkages. The chemical structures accessed by both pathways are capable of efficient UV absorbance and may have been important for the survival of cyanobacteria on early Earth.