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"Biosynthesis and Mechanistic Investigation of Unusual Synthons in Natural Products"

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3:30 PM
Wu and Chen Auditorium
Levine Hall

ABSTRACT

Natural products, often referred to as specialized metabolites, are small molecules known for their potent bioactivities relevant to treating human health conditions. Unique functional groups like the isonitrile and *N*-hydroxytriazene often drive bioactivity and may serve as indicators of novel chemical logic and enzymatic machinery. Yet, the biosynthetic underpinnings of these groups remain only partially understood, constraining the opportunity to rationally engineer biomolecules with these functionalities for applications in pharmaceuticals, bioorthogonal chemistry, and other value-added chemical processes. By exploiting biosynthetic machinery associated with unique synthons, it is possible to enhance, vary or diminish the biological activities of parent compounds and apply the biosynthetic machinery to new systems for functional group installation. Here, we focus on our recent efforts in functional characterization and mechanistic interrogation of enzymes responsible for generating isonitrile and *N*-hydroxytriazene pharmacophores.

BIO

Antonio Del Rio Flores was born in a small town in Mexico named Sahuayo that is famous for their artisan crafts and regional cuisine. Antonio subsequently moved to the United States at a young age and grew up in the Bay Area. He attended the University of California, Davis and received a double major in Chemical and Biochemical Engineering. His research spanned in the fields of bioprocess engineering, process control simulations, plant biology, and metabolomics. After his undergraduate studies, Antonio attended the University, Berkeley and is currently a fifth-year PhD candidate in Chemical and Biomolecular Engineering. His research deals with studying the biosynthesis and enzymology associated with natural products from environmental bacteria and human pathogens. His efforts led to advances in understanding the biogenesis of functional groups that are widely utilized for bio-orthogonal transformations in chemical biology. Antonio is also the lead graduate student instructor for the biochemical engineering laboratory class, a course that Antonio developed during his doctoral studies to prepare undergraduate/master's students for careers as bioprocess engineers.