

CHEMISTRY & BIOCHEMISTRY SEMINAR SERIES CO-HOSTED WITH CONDESA

Synthetic Biology Advances in Environmental Sciences: Biosensors for Soil Sciences

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Abstract:

Biosensors are living tools: microbes that have been programmed to report on either an aspect of their environmental conditions or to report on their own behaviors. These organisms can be thought of as living analogs to gas chromatographs or mass spectrometers, and in some cases they perform even better than their inanimate counterparts.

In this talk I will go through what it means to construct a biosensor that is optimized for the soil environment. I'll place biosensors in the larger context of geomicrobiology, discussing how biosensors can pair with -omics to generate a better understanding of soil biogeochemistry. Finally, I will give two examples of how the Rice environmental synthetic biology team has used microbial biosensors to answer previously unaddressable soil biogeochemical questions.

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