



2020-2021 POCC Lecture Series

March 18, 2021, 7:30 PM

Virtual reception to follow the seminar

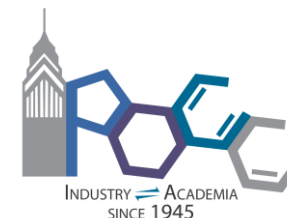
Dr. Erika M. Milczek

Curie Co.

Engineering enzymes for microbial control: deconvoluting expression and activity to enhance antimicrobial efficacy through directed evolution

Virtual Seminar by Zoom ([LINK](#))

The Philadelphia Organic
Chemist's Club



POCClub.org

The Women in Chemistry Lecture

Regulatory authorities and retailers are aggressively banning chemicals found in consumer and industrial products. These petrochemicals persist in the environment having a negative impact on aquatic life and global human health. Regulations enacted over the last several years have directly targeted antimicrobials, biocides, and preservatives. Curie Co has evolved enzymes to replace these banned petrochemicals. Using genetic controls to modulate intra- and extra-cellular microbial toxicity, we are able to rapidly evolve biocidal enzymes selecting for high levels of antimicrobial efficacy. This strategy required deconvolution of expression levels and enzymatic activity to enhance antimicrobial activity. By selecting for enhanced initial rates of catalysis, excipient tolerance, and thermal stability, a suite of enzymes have been evolved to provide a cost effective, environmentally benign replacement for chemical biocides.

Abstract: After completing her doctoral work at Emory University under the direction of joint advisors, Prof. Simon Blakey and Prof. Dale Edmondson, and a postdoctoral fellowship at Princeton University with Prof. John Groves, Dr. Milczek joined Merck & Co as a Senior Process Chemist in the Biocatalysis Group. While at Merck, she replaced chemical manufacturing processes with enzymatic routes for commercial drug synthesis. Erika is the founder and Chief Executive Officer of Curie Co, a synthetic biology company that engineers enzymes to replace petrochemicals in consumer products and industrial processes.

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