Department of Chemistry Seminar Series
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Friday, March 24, 2023, 3:30 PM – **HPA1-O119 (Health Sciences)**

Cyclic dinucleotides, ancient molecules with critical roles in all life forms

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The ability of cells to sense and respond to environmental cues is critical for survival. Cells integrate environmental cues to regulate the synthesis and degradation of second messengers, which mediate many essential processes in archaea, eubacteria, and eukaryotes. Cyclic dinucleotides, such as c-di-GMP, c-di-AMP and cGAMP, are relatively newly discovered second messengers in all the three domains of life. In Gram-negative, Gram-positive bacteria and mycobacteria, cyclic dinucleotides orchestrate a dizzying array of processes that include biofilm formation, virulence factors production, cell wall remodeling and antibiotic resistance. Cyclic dinucleotides also affect mammalian cells, particularly immune cells, and play important roles related to inflammation, T-cell maturation and antigen presentation.

This talk will provide an overview of my group's ongoing efforts to develop detection paradigms, which could be used to detect these fascinating molecules in complex biological environments or for use in high throughput assays to identify small molecule modulators of cyclic dinucleotide signaling in bacteria and immune cells.