

1:00 pm, Monday, 16 October

Room BIG13, Ground Floor

Biochemistry Building

710 Cumberland St

**Prof. Dr. Chase L. Beisel**

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**CRISPR: a bottomless well of discovery and innovation**

CRISPR has become synonymous with genome surgery and a plethora of molecular tools, yet its origins lie in RNA-based adaptive immune systems in bacteria and archaea called CRISPR-Cas systems. These systems have offered a seemingly bottomless well of RNA-guided Cas endonucleases, with diverse properties such as programmable DNA cleavage, collateral RNA degradation, and production of diffusible signaling molecules, as well as compact proteins and ranging temperature optima. In turn, each discovery brings new and improved capabilities to the ever-expanding CRISPR toolbox. In this talk, I will describe my group’s efforts to characterize and harness novel CRISPR nucleases. In particular, I will highlight our efforts to develop rapid and high-throughput techniques to accelerate CRISPR characterization, uncover the functional diversity of CRISPR nucleases, and translate the discovery of guide RNAs derived from cellular transcripts into a plethora of molecular tools for RNA detection in vitro and in vivo. Finally, I will argue that many more discoveries and ensuing technologies await with further work on these fascinating and versatile prokaryotic immune systems.