

## SMS Spring 2022 Seminar Series

Friday Feb 11 | 2:30pm | Biodesign Auditorium

### A Chemical Biology Toolbox for Probing A-to-I RNA Editing

RNA undergoes extensive modification through enzymatic post-transcriptional editing events. Adenosine-to-inosine (A-to-I) editing is one of the most widespread and impactful of these modifications and is catalyzed by adenosine deaminases acting on RNA (ADARs). Resulting inosines base pair with cytosine, essentially re-coding adenosine sites to guanine. Editing is essential for a number of processes including embryogenesis, neurological function, and innate cellular immunity. Dysfunctional editing is also linked to auto-immune diseases, neurological disorders, and several types of cancer. Despite this importance, numerous challenges remain for studying A-to-I editing, and our overall understanding of the locations and frequency of inosine sites remains limited. To address this challenge, we have repurposed EndoV from an RNA-cleaving enzyme into an RNA-binding protein and demonstrated its use for mapping of A-to-I editing sites and global profiling of RNA inosine content in cells and tissue samples. We are also harnessing single-cell sequencing methods to quantify the cell-to-cell variability in A-to-I editing at key sites linked to cancer progression.

### Jen Heemstra, PhD

*Professor, Emory University*

Jen Heemstra received her B.S. in Chemistry from the University of California, Irvine, in 2000. At Irvine, she performed undergraduate research with Prof. James Nowick investigating the folding of synthetic beta-sheet mimics, which instilled in her a love of supramolecular chemistry. Jen then moved to the University of Illinois, Urbana-Champaign, where she completed her Ph.D. with Prof. Jeffrey Moore in 2005 studying the reactivity of pyridine-functionalized phenylene ethynylene cavitands. After a brief stint in industry as a medicinal chemist, she moved to Harvard University to pursue postdoctoral research with Prof. David Liu exploring mechanisms for templated nucleic acid synthesis. In 2010, Jen began her independent career in the Department of Chemistry at the University of Utah, and was promoted to Associate Professor with tenure in 2016. In 2017, Jen and her research group moved to the Department of Chemistry at Emory University where she was promoted to Full Professor in 2021. Research in the Heemstra lab is focused on harnessing the molecular recognition and self-assembly properties of nucleic acids for applications in biosensing and bioimaging.



Outside of work, Jen enjoys spending time with her husband and two sons, as well as rock climbing, cycling, and running.

\*ZOOM option available: <https://asu.zoom.us/j/87081218152>