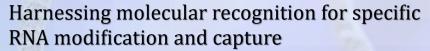# Institute Colloquium

# Dr. Jennifer M. Heemstra

Associate Professor, Department of Chemistry, Emory University
Scialog Fellow, Chemical Machinery of the Cell (2018)
W.W. Epstein Outstanding Educator Award (2016)
NSF CAREER Award (2016)
Cottrell Scholar Award (2015)
Myriad Award of Research Excellence (2015)
NSF MRSEC Young Investigator Lectureship (2013)
Army Research Office Young Investigator Award (2011)

## Harnessing molecular recognition for specific RNA modification and capture

Nucleic acids are exquisitely adept at molecular recognition and self-assembly, enabling them to direct nearly all of the processes that make life possible. These capabilities have been fine-tuned by billions of years of evolution, and more recently, have been harnessed in the laboratory to enable the use of DNA and RNA for applications that are completely unrelated to their canonical biological roles. In our lab, we seek to use DNA and RNA for applications in biosensing and biomolecular imaging. In one project, we have developed RNA sequences that are capable of recognizing specific small molecule fluorophores and promoting covalent self-labeling with these fluorophores. We anticipate use of these self-labeling ribozymes for imaging of RNA in living cells. We have also demonstrated selective enrichment of inosine-containing RNAs using EndoV for non-covalent capture, and we anticipate this method will enable the identification of new sites of A-to-I editing in cells.

## About the Speaker

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. 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.

## Venue

**Seminar Hall, Chemical Sciences Block**

Indian Institute of Science Education and Research Thiruvananthapuram (IISER-TVM)

Maruthamala PO, Vithura,Thiruvananthapuram, Kerala, India.

## Schedule

**Friday 15th February, 2019 at 4:00 PM**

## Key contribution

The Heemstra lab utilizes nucleic acid molecular recognition to develop new technologies to benefit biomedicine and biotechnology

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