



# Chemical Biology Seminar

## “Synthetic biology approaches to study and exploit RNA regulation”

**Abstract:** RNA transcribed from the genome in the nucleus bears little resemblance to the RNA polymer it will ultimately become in the cytoplasm where it is translated into protein. Well-known processes such as capping, splicing and polyadenylation, as well as the recently discovered and ever-expanding list of diverse chemical modifications and editing, significantly alter the properties and fates of a given RNA during the course of its lifetime. These alterations regulate critical aspects of RNA function such as stability, transport, protein binding, and translation. Especially in mammalian systems, these post-transcriptional gene expression regulatory processes are often a key determinant of genetic information flow. Moreover, from an engineering and therapeutic perspective these RNA regulatory processes represent new ways to control or retune gene expression at the RNA level, if they can be harnessed. I will present several technologies our group has developed to measure the chemical composition and localization of RNAs, and to measure and control protein-RNA interactions with an eye toward therapeutic development.

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Tuesday, May 11, 2021  
4:00 PM | ZOOM

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