CENTER FOR RNA BIOMEDICINE

RNA Innovation Seminar
Co-sponsored with the Department of Cellular and Developmental Biology
Monday, April 8th at 3:00pm
Kahn Auditorium, Biomedical Research Science Building (BSRB), 109 Zina Pitcher

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"Are Stress Granules up to PAR?"

Abstract: Stress granules are a class of cytoplasmic non-membranous RNA granules formed in response to stress, such as viral infection, or induced by pathological mutations, such as those implicated in Amyotrophic lateral sclerosis (ALS). We previously found that the structural integrity of stress granules is dependent on poly(ADP-ribose) (PAR)—the polymeric form of the protein modification ADP-ribosylation. Recently, we identified a select group of RNA viruses possessing a protein domain called macrodomain that removes ADP-ribosylation, in which the enzymatic activity is required for virus replication and virulence. In this talk, I will discuss how the enzymatic activity is important for suppressing the formation of virus- and ALS mutation-induced stress granules. Though therapeutically important, this protein modification is understudied due to a woeful lack of tools. I will describe our lab's efforts in developing novel biochemical, informatics and proteomics tools to address some fundamental questions of ADP-ribosylation. Finally, I will share an unexpected discovery for the role of an essential stress granule component in coding and noncoding RNA regulation.