

Tuesday, April 25, 2017  
ORIGIN AND EVOLUTION OF LIFE: PREBIOTIC CHEMISTRY:  
FUNCTIONAL BIOPOLYMERS III  
4:15 p.m. Arizona Ballroom A-C

**Chairs:** Nicholas Hud  
Raghav Poudyal

- 4:15 p.m. Higgs P. G. \* Tupper A. S. Shi K.  
[The Emergence of Biological RNA from the Prebiotic Mixture](#) [#3059]  
RNA shows ordered properties: Chirality, only four bases, regular use of 3'5' bonds. We propose that these properties all emerge by the same mechanism.
- 4:30 p.m. Jayathilaka T. S. \* Lehman N.  
[Self-Assembly of Multiple Small RNA Fragments into an Autocatalytic Prebiotic System](#) [#3136]  
This study describes a system that models prebiotic formation of a catalytically active ribozyme by the recombination of very short inactive RNA oligomers.
- 4:45 p.m. Blanco C. \* Chen I. A.  
[Biophysical Insights from In Vitro Evolution of RNA: Aptamer-Target Binding](#) [#3444]  
Protein-RNA complexes that arose by in vitro selection are ideal candidates to study protein-RNA interactions in the absence of any other evolutionary pressure.
- 5:00 p.m. Popovic M. \* Ditzler M. A.  
[Molecular Crowding and Evolution of Ligase Ribozymes](#) [#3734]  
To investigate the impact of molecular crowding on evolution of RNA catalysis, we evolved ligase ribozymes in dilute and crowded conditions.
- 5:15 p.m. Hecht M. H. \*  
[Sustaining Life with Genes and Proteins Designed De Novo](#) [#3183]  
As a step toward constructing artificial proteomes, we designed novel proteins that fold, function in vitro, and provide life-sustaining activities in vivo.
- 5:30 p.m. Newton M. S. Morrone D. J. Seelig B. \*  
[Exploring the History of the Genetic Code — Making Proteins from Ancient Alphabets](#) [#3382]  
We are experimentally investigating the structural and functional capabilities of polypeptides with limited amino acid compositions.