

**Thursday, July 20, 2017**  
**SELF-ORGANIZATION AND PREBIOTIC MOLECULAR SYSTEMS**  
**8:30 a.m. Price Center Theatre**

**Chair: Matthew Powner**

- 8:30 a.m. Otto S. \*  
[\*Can We Make Life in the Lab? Emergence and Evolution of Self-Replicating Molecules from Dynamic Molecular Networks\*](#) [#4089]  
Self-replicating molecules can emerge spontaneously from mixtures of interconverting molecules. Self-assembly of molecules drives their replication. In a replication-destruction regime Darwinian evolution of such systems is feasible.
- 9:10 a.m. Devaraj N. K. \*  
[\*In Situ Synthesis of Lipid Membranes\*](#) [#4030]  
We have a strong interest in applying covalent coupling reactions to the formation and modification of lipid membranes. We have utilized chemoselective reactions, such as copper-catalyzed triazole formation or the native chemical ligation.
- 9:30 a.m. Lozoya Colinas A. \* He C. Gállego I. Grover M. A. Hud N. V.  
[\*Viscosity-Mediated Replication of an RNA Duplex Containing a Ribozyme Motif\*](#) [#4180]  
An important goal in the origins of life field is the demonstration of an RNA system that can undergo sustained cycles of replication. Here we propose a replication system enabled by a viscous solvent of a gene-length RNA duplex containing a ribozyme sequence.
- 9:50 a.m. Ross D. S. \*  
[\*The Questionable Prospect of Deep Sea Alkaline Vents as Origin Sites\*](#) [#4032]  
It is argued that the faulty application of both kinetic and thermodynamic factors employed in its support invalidates the notion that deep sea alkaline vents were the sites of the life's origins.
- 10:10 a.m. Mayer C. \* Schreiber U. Dávila M. J. Bronja A. Schmitz O. J.  
[\*Evolution of Prebiotic Peptides in Amphiphilic Environments\*](#) [#4017]  
We present experimental evidence that vesicles, spontaneously forming in tectonic fault zones in the Earth's crust, are capable of selecting and accumulating hydrothermally generated peptide molecules which integrate into the vesicle membrane.
- 10:30 a.m. *Coffee Break*