

Monday, April 24, 2017
ORIGIN AND EVOLUTION OF LIFE: EVOLUTION/GENETICS:
MAJOR TRANSITIONS IN EVOLUTION
1:30 p.m. Arizona Ballroom E-G

Chairs: **Matthew Herron**
Eric Libby

- 1:30 p.m. Smith H. B. * Hordijk W. Otto S. Walker S. I.
[Computational Insights into the Emergence of Replication, Heredity, and Speciation in Abiotic Systems](#) [#3535]
 We gain insights into fundamental mechanisms of replication, heredity, and speciation by computationally simulating abiotic synthetic chemical systems.
- 1:45 p.m. Tupper A. S. * Higgs P. G.
[Error Thresholds for RNA Replication in the Presence of both Point Mutations and Premature Termination Errors](#) [#3060]
 In RNA replication models, selection occurs for shorter parasites that replicate faster. However, we show that the system remains stable.
- 2:00 p.m. Mizuuchi R. * Ichihashi N.
[Darwinian Evolution of Two Distinct Cooperative RNA Replicators](#) [#3030]
 We empirically proved the stability of cooperative (hypercyclic) replication of two distinct RNA replicators and have investigated the evolution of cooperation.
- 2:15 p.m. Ellington A. D. * Gollihar J. Ellefson J. W.
[Xenopolymerases and Nucleic Acid Evolution](#) [#3117]
 A new lineage of thermostable reverse transcriptases was evolved from a DNA polymerase. These findings suggest how DNA may have been acquired in an RNA world.
- 2:30 p.m. Sumner D. Y. * Wall K. Grettenberger C. L. Jungblut A. D. Hawes I. Eisen J. A.
[Photosynthetic Melainabacteria and the Emergence of Oxygenic Photosynthesis](#) [#3466]
 We report the identification of organisms classified as basal to the oxygenic Cyanobacteria with 16S rRNA genes, but they also contain phototrophic genes.
- 2:45 p.m. Walker S. I. * Kim H. Smith H. B. Raymond J.
[Constraints that Deconstrain: Characterizing the Biological Hierarchy Across Levels of Organization](#) [#3499]
 We report scale-invariant properties of biochemical networks across levels of organization and their role in explaining the life's universality.
- 3:00 p.m. Chen I.-C. K. * Rosenzweig R. F. Herron M. D.
[Genetic Basis Underlying De Novo Origins of Multicellularity in Response to Predation](#) [#3331]
 In this study, we aim to uncover the genetic mechanisms underlying the transitions from unicellular to multicellular life.
- 3:15 p.m. Davison D. R. * Michod R. E.
[Changes in Phenotypic Variability During an Evolutionary Transition](#) [#3306]
 Phenotypic variability decreases during the transition from undifferentiated colonial to differentiated multicellular volvocine algae.
- 3:30 p.m. McIntyre S. R. N. * Lineweaver C. H.
[Terrestrial Constraints on Extra-Terrestrial Intelligence](#) [#3498]
 Putting a terrestrial spin on Fermi's paradox: If human-like intelligence is convergent, why are we the only species with human-like intelligence on Earth?
- 3:45 p.m. *Coffee Break*