

Thursday, July 20, 2017

## GENETIC INFORMATION AND FUNCTION IN THE EARLY STAGES OF LIFE

4:10 p.m. Price Center Theatre

Chair: Luke Leman

- 4:10 p.m. Akoopie A. \* Müller U. F.  
[Identification of the NTP Binding Site in the Polymerase Ribozyme](#) [#4079]  
To test how an RNA world organism could have functioned, an RNA polymerase ribozyme was previously developed. Using *in vitro* evolution we confirm that the NTP binding site of this ribozyme is within the purine-rich loop of its accessory domain.
- 4:30 p.m. Tagami S. \* Attwater J. Holliger P.  
[Simple Non-Coded Peptides Enhance RNA Polymerase Ribozyme Function](#) [#4136]  
Simple positively charged peptides could stimulate activity and evolution of an RNA polymerase ribozyme. This work shows how simple peptides could have supported ribozymes in the RNA world even before the emergence of the genetic code.
- 4:50 p.m. Horning D. P. Samantha B. Tjhung K. F. Joyce G. F. \*  
[RNA-Catalyzed Polymerization and Replication of RNA](#) [#4067]  
In an effort to reconstruct RNA-based life, *in vitro* evolution was used to obtain an RNA polymerase ribozyme that can synthesize a variety of complex functional RNAs and can catalyze the exponential amplification of short RNAs.
- 5:10 p.m. Meringer M. Butch C. Burger P. Goodwin J. Cleaves H. J. II \*  
[Computational Exploration of the Chemical Space of Nucleic Acid-Like Compounds](#) [#4078]  
Using graph theory-based structure generation, we have exhaustively computed the chemical isomer space of the natural ribosides (compounds of formula  $C_5H_9O_4B$ , where B is a nucleobase) as well as a much wider range of formulas from C3 to C8.
- 5:30 p.m. *Session Adjourns*