***Posters will be on Display for the Entire Week.***
***Presenters are Requested to be Present at Their Poster the Last Half-Hour Break of the Evening.***

**POSTER SESSION: EARLY METABOLISMS AND DEVELOPMENT OF COMPARTMENTATION**
**Price Center Ballroom East**

Wei C. Pohorille A.
*Coupling Between Metabolism and Compartmentalization: Vesicle Growth in the Presence of Dipeptides* **[#4135]**
Extensive molecular dynamics simulations demonstrate low energy pathway for fast fusion of vesicle mediated by membrane-bound hydrophobic dipeptides and facilitated flip-flop transport of fatty acid molecule for transmembrane proton transfer.

Maltais T. R. VanderVelde D. LaRowe D. Goldman A. D. Barge L. M.
*Which Came First, Proteins or Cofactors? Recreating Metabolic Reactions of the Early Earth* **[#4158]**
We test whether cofactors can promote parts of core metabolic pathways by examining Coenzyeme A (CoA), the cofactor central to citrate synthesis in the citric acid cycle, as a target for examining cofactor activity without its protein enzyme.

Piedrafita G. Monnard P.-A. Mavelli F. Ruiz-Mirazo K.
*Permeability-Driven Selection in a Semi-Empirical Protocell Model: The Roots of Prebiotic 'Systems' Evolution* **[#4212]**
A semi-empirical model of self-reproducing protocells is built. Based on in vitro permeability assays we show how differential permeability linked to changes in membrane composition could have enabled a mechanism of selection between protocells.

Heili J. Gaut N. Han Q. Gomez-Garcia J. Szostak J. W. Adamala K. P. Engelhart A. E.
*Functional Interactions Between Early Biopolymers and Primitive Cells* **[#4207]**
Recently, we have demonstrated that compartmentalized biomolecules exhibit functional behaviors not observed in bulk solution. We suggest that numerous synthetic and regulatory processes might have been enabled by membrane-biomolecule interactions.