



College of Science and Mathematics

Department of Chemistry and Biochemistry

Chemistry and Biochemistry Departmental Seminars Spring 2018

Seminars are held on Tuesdays in Clendenin Building, room 1009 (CL 1009) on the Kennesaw Campus (PDF), 12:30 - 1:30pm, unless otherwise noted with special day/time/location information. All are invited to attend.

Tuesday, February 6, 2018

Dr. Nadine Kabengi, Assistant Professor in the Department of Chemistry at Georgia State University (<http://shared.cas.gsu.edu/profile/nadine-kabengi-2>)

"Using Microcalorimetry and Reactions Energetics to Probe the Reactivity of Metal Oxides Surfaces and Interfaces"

View event on Facebook » <https://www.facebook.com/events/588877134781094/>

Tuesday, February 20, 2018

David Fialho, Georgia Tech (<https://ww2.chemistry.gatech.edu/hud/david-fialho>)

"The Origin of Proto-RNA"

The popular RNA world hypothesis of the origin of life states that the first living systems on Earth relied solely on RNA to carry out their hereditary and metabolic functions. However, simulating the spontaneous prebiotic emergence of RNA is profoundly challenging, as the many precise structural features of RNA are difficult to produce in the absence of highly evolved enzymes. In light of this, we hypothesize that RNA itself is the product of an evolutionary process, and was preceded by informational molecules which were more readily accessed by prebiotic chemistry. In particular, we have investigated alternative nucleobases, which react much more readily with sugars than the canonical nucleobases to form nucleosides, and alternative sugars, which would have been produced alongside ribose and can also react with bases to form glycosides. The productive reactions demonstrated from these prebiotically plausible, noncanonical compounds demonstrates that the assumption of the direct prebiotic emergence of RNA is ill-founded, and that the formation of informational molecules on the early Earth may

have been a robust process if potentially ancestral alternatives to RNA are considered.

Tuesday, March 6, 2018

Thomas Campbell, St. Louis University (<http://www.bracherlab.org/people/campbell.html>)

"Potassium and the Prebiotic Formation of Polypeptides"

The intracellular enrichment of K⁺ (relative to Na⁺) by modern life is nearly as universal as the central dogma of biochemistry, suggesting that these ions could have played an important role in the development of early life. We have studied the impact of K⁺ and Na⁺ on simple organic reactions relevant to the origin of life — specifically, the hydrolysis and condensation of peptides. We found that K⁺ and Na⁺ affect the rate of peptide hydrolysis in an unexpected, substrate-dependent pattern. We also found that these ions differentially impact the yield for the condensation of amino acids via wet–dry cycling. These results raise the possibility that the ubiquitous selection for intracellular potassium over sodium observed in modern life developed early in evolution to optimize the kinetics of reactions of peptides.

View event on Facebook » <https://www.facebook.com/events/263740497496637/>

Thursday, March 22, 2018* - *SPECIAL DAY/TIME/LOCATION*

Jon Perry, Stated Clearly (<http://statedclearly.com/about/artist/>)

"The Art of Talking Science"

As science continues to progress, the gap of understanding between experts and the general public increases as well. Jon Perry will share with us the tricks he's developed over the course of his career teaching genetics to the public on YouTube. By following a few simple guidelines, you can take virtually any topic, no matter how technical, and deliver it either to a lay audience, or to experts in outside fields.