

Exploiting Systems Chemistry in the Rhizosphere to Build Alternative Chemistries for Life

We begin by positing that complex metabolic pathways, regulation of cellular development, and elemental biogeochemical cycles are foundational chemistry for a sustainable biosphere, and that adaptive resilience of these interconnected chemical networks are now threatened by climate change. So, we have sought to understand the specific molecular information necessary for successful chemical network coordination and will begin our discussion with the molecular spatiotemporal information learned from parasitic plants may be critical for ordering a plant's microbiome -- the most diverse multi-genomic organ on Earth. We will show how simple reaction-diffusion networks can organize complex cellular behavior in these probes for the rhizosphere and then how biopolymer condensates can be templated into alternative supramolecular functional assemblies for new emergent functions.

<http://www.biology.emory.edu/index.cfm?faculty=37>