Title: Elementary: From elements to traits and ecosystems

Abstract:
Chemical elements are the fundamental building blocks of life, yet their proportions vary widely across organisms and environments. This variation in elemental composition reflects the combined influence of evolutionary history, physiological constraints, and ecological context, and provides a powerful lens for understanding ecological processes across scales. In this talk, I will show how ecological stoichiometry links organismal physiology to species interactions, food webs, and ecosystem functioning. Focusing on elemental traits reveals key functional axes underlying ecological strategies and niche differentiation. I introduce a functional-stoichiometry perspective in which elements constrain the allocation of resources among competing functions such as growth, defense, and reproduction, generating trade-offs that shape ecological strategies. Using examples across taxa and systems, I examine how temperature and nutrient availability shape organismal carbon (C), nitrogen (N), and phosphorus (P), and in turn, influence growth, metabolism, and trophic interactions. Drawing on global syntheses, large-scale patterns, and experimental studies in natural microecosystems, including bromeliads and pitcher plants, I show how environmental gradients structure elemental composition and stoichiometric niches.

Biography:
Angélica L. González is an Associate Professor of Biology at Rutgers University–Camden, USA. Originally from Chile, she earned her Ph.D. in Ecology from the Pontificia Universidad Católica de Chile and conducted postdoctoral research at the University of British Columbia, Canada. Her research integrates ecological stoichiometry, trait-based ecology, community ecology, and macroecology to understand how organismal traits and species interactions shape biodiversity and ecosystem functioning across spatial and temporal scales. Combining experiments, field studies, paleoecological approaches, and global data synthesis, her work examines how environmental change influences the elemental composition of organisms, food-web dynamics, and nutrient cycling. Her research involves extensive international collaborations spanning North and South America, Europe, and Asia. She has led international synthesis working groups at the German Centre for Integrative Biodiversity Research (iDiv), bringing together scientists to investigate global patterns in organismal stoichiometry and the roles of animals in biogeochemical cycling. These collaborations have contributed to the development of global datasets, including *StoichLife*, and comparative approaches to understanding elemental diversity across taxa and ecosystems. Her research is supported by the U.S. National Science Foundation, including an NSF CAREER Award.