Postdoctoral Research Associate / Research Scientist

NIH-Funded Position in Biophysics, Castañeda Lab, Syracuse University (Syracuse, NY)

We are eager to recruit motivated and creative Postdoctoral Research Associates or Research Scientists for NIH-funded positions in our lab to study the role of liquid-liquid phase separation in protein quality control mechanisms on both molecular and cellular levels. We are a small lab led by newly awarded NSF CAREER and NIH R01 grants with awesome projects featured in *Molecular Cell* and *Structure.* We are looking for postdocs ready to push them to the next level!

Our lab uses a variety of biochemical and biophysical methods and techniques to uncover fundamental aspects of how proteins undergo liquid-liquid phase separation. We aim to determine how protein quality control mechanisms interface with membraneless organelle assembly and disassembly, particularly in how cells respond to stress. We currently seek a researcher with background in biophysics and/or biochemistry to examine the physicochemical properties that determine physiological phase separation using molecular approaches such as NMR spectroscopy, small angle scattering, and single molecule FRET. Our lab has multiple projects that focus on the role of liquid-liquid phase separation as it relates to the structure and function of ubiquitin-binding shuttle proteins (see our recent publications below). We are looking for driven and excited scientists to join our growing research group. The candidate will enter an openly collaborative environment with excellent colleagues/mentors and biophysical resources. Our lab works with many other research labs at Syracuse University in the Departments of Biology and Chemistry as well as throughout the country, including the University of Michigan and St. Jude Children's Research Hospital.

The position is for a Postdoctoral Researcher / Research Scientist who will be funded by our recent NIH R01 grant. The aims of the project are to examine how protein quality control components (including the proteasome, polyubiquitin chains, etc.) regulate the assembly and disassembly of biomolecular condensates, and to elucidate the underlying mechanisms of how disease-linked mutations and domain-domain interactions alter and modulate phase separation. The researcher will join an interdisciplinary environment with opportunities to learn new techniques and develop new research directions and ideas. Specific research goals will be discussed and agreed with the principal investigator. Please apply by sending a cover letter, CV, and job references to Prof. Carlos Castañeda, cacastan@syr.edu.

Who you are

1. Have a PhD or nearing completion of a PhD in biophysics or related area (e.g. biochemistry)
2. Possess skills in molecular cloning, protein expression, and protein purification.
3. Excited to lead new experiments to quantify phase transitions (e.g. UV/Vis spectrophotometric assays, light scattering, microscopy).
4. Willing to learn or have experience with biomolecular NMR spectroscopy of folded proteins or intrinsically disordered proteins.
5. Skilled or interested in using and developing other biophysical methods such as light scattering, small angle scattering, single molecule FRET.
6. Have excellent oral and written communication skills, pays attention to detail, is eager to present ideas and results at group meetings and conferences, and is highly organized with data management.

Our recent publications

1. Dao TP, Kolaitis R-M, Kim HJ, O'Donovan K, Martyniak B, Colicino E, Hehnly H, Taylor JP, Castañeda CA*. "Ubiquitin Modulates Liquid-Liquid Phase Separation of UBQLN2 via Disruption of Multivalent Interactions." *Molecular Cell* 69 (2018): 965-978.e6. https://doi.org/10.1016/j.molcel.2018.02.004.
2. Dao TP, Martyniak B, Canning AJ, Lei Y, Colicino EG, Cosgrove MS, Hehnly H, Castañeda CA*. "ALS-Linked Mutations Affect UBQLN2 Oligomerization and Phase Separation in a Position- and Amino Acid-Dependent Manner." *Structure* 27 (2019): 937–51. https://doi.org/10.1016/j.str.2019.03.012.
3. Yiran Y, Jones HB, Dao TP, Castañeda CA*. "Single Amino Acid Substitutions in Stickers, but Not Spacers, Substantially Alter UBQLN2 Phase Transitions and Dense Phase Material Properties." *The Journal of Physical Chemistry B* 123 (2019): 3618–29. https://doi.org/10.1021/acs.jpcb.9b01024.