UNIVERSITY OF KENTUCKY
College of Arts and Sciences

Department of Chemistry
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POSITION: Postdoctoral Associate (Computational Scientist)

PRINCIPAL INVESTIGATOR: PM Kekenes-Huskey (pkekeneshuskey@uky.edu)

POSITION

We are seeking an interdisciplinary computational scientist for advancing state-of-the-art multi-scale calcium signaling models in support of the PI's NIH-funded research, with an emphasis on ion transport and systems biology. The ideal candidate's contributions will support our long-term goal of providing quantitative insight into cellular function stemming arising from molecular signaling. In the short term, **the candidate will explore the biophysics of molecular signaling through simulation, which will complement synergistic activities with UK's Muscle Biology Center and the Center of Obesity and Cardiovascular Disease**. Specifically, the primary objective of the postdoctoral associate will be to develop numerical models of signal transduction that integrate microscopy and molecular structure/function data. To support this objective, the associate will develop and implement these numerical models in close collaboration with experimental and computational colleagues. Candidates that additionally have expertise in molecular modeling including molecular dynamics simulation are especially encouraged to apply.

QUALIFICATIONS

Expected:

- Strong publication record **developing and applying systems biology models**, particularly in direct complement with experimental data.
- Proficiency with code development (Matlab, python or C/C++ preferred).
- Successful completion of coursework in ordinary differential equations.
- Ph.D. in Engineering, Chemistry, Physics, Biophysics or related disciplines.
- Excellent oral and written communication skills.

Strongly Desired:

- Experience with modeling partial differential equations.
- Molecular simulations, including molecular dynamics
- Coursework in numerical methods

To apply: Candidates must send a full CV, a listing of graduate courses, names of three references, and two representative publications. Applications are accepted via email at pkekeneshuskey@uky.edu. Start date is approximately January 2nd, 2018.

OUR LAB

The PKH lab (pkh.as.uky.edu) applies and develops multi-scale, 'data-aware' simulations of chemical reactions and biological signaling pathways, particularly those shaping cardiac function. Our tools include computer vision and numerical algorithms, molecular simulations, and applied mathematics to bridge molecular-scale physical chemistry into chemical phenomena that emerge at the macroscale. Our work is supported through grants from NIH and the American Chemical Society.

Among our interests, our approaches address general questions including

- How is computation best leveraged to predict and manipulate calcium handling proteins that control cellular function?
- How are 'local' chemical processes coupled to their environment?
- How can we translate simulations of multi-scale, subcellular biochemical phenomena into analogous processes in man-made materials and vice versa?

INSTITUTION

The University of Kentucky is a public, land grant university dedicated to improving people's lives through excellence in education, research and creative work, service, and health care (https://www.uky.edu). In support of this mission, the UK chemistry department (http://chem.as.uky.edu) provides a friendly, yet rigorous instructional environment in the forefront areas of chemistry at the undergraduate through doctoral levels. The faculty of the department has extensive research programs in analytical, biological, inorganic, organic, and physical chemistry, and hold research grants from funding organizations including the National Institutes of Health and the National Science Foundation. Our faculty is highly-collaborative, with several PIs participating in funded projects with the College of Medicine, especially in the areas of cardiac physiology, Alzheimer's disease and cancer.

ABOUT LEXINGTON

(from http://www.kentuckytourism.com)

From the rolling bluegrass-covered hills of legendary Horse Country and the grandstands of America's most storied thoroughbred racing tracks to the Kentucky Bourbon Trail and world-renowned outdoor adventure, visit Kentucky and experience the unbridled spirit that runs wild in the Bluegrass State.

Come inside and explore our cities, towns and regions in the state of Kentucky. Discover Kentucky tourism hotspots, such as our incredible one-of-a-kind attractions, learn about our unique traditions and culture, and absorb the unabated energy that can be seen, heard and felt in everything from metropolitan nightlife in Louisville and Lexington to our small town festivals and events. We welcome you to the state of Kentucky!

Lexington is a mid-sized city (300,000) in close proximity to Chicago (6 hours), Indianapolis (3 hours), Cincinnati (90 minutes), Nashville (3 hours) and a day's drive from the ocean.