Postdoctoral scholar in multi-scale modeling of gas transport through channels in living cells

The Department of Physiology & Biophysics at Case Western Reserve University School of Medicine seeks a highly motivated postdoctoral scholar to conduct research in the laboratory of Dr. Walter F. Boron (https://physiology.case.edu/people/faculty/walter-f-boron/).

The Boron lab focuses on two major and closely related research areas: acid-base homeostasis and the transport of gases across biological membranes. Because virtually every biological process is pH sensitive, understanding acid-base physiology is of vital importance. The Boron lab uses a combination of cell biological, biophysical, and electrophysiological approaches to study (1) how cells regulate intracellular pH; (2) how proximal tubule cells sense extracellular carbon dioxide and bicarbonate; and (3) how gases move through membrane proteins, such as the aquaporins and the Rh complex. Also, the Boron lab uses mathematical modeling to complement wet-lab experiments with the goal of helping in data interpretation and in guiding the experiments.

The successful applicant will participate in an NIH-funded project focused on developing multi-scale computational models of acid-base physiology to study the mechanisms by which gases move through gas channels. The ideal candidate will have (1) demonstrated experience in developing reaction-diffusion mathematical models of biological systems; (2) strong background in numerical analysis, in particular in Finite Difference and Finite Element Methods; (3) advanced proficiency with MATLAB; (4) strong interest in learning acid-base and transport physiology; (5) excellent oral and written communication skills and interpersonal skills; (6) ability to effectively and professionally communicate and work in a multidisciplinary environment; (7) excellent organization skills and willingness to collaborate. Experience on mesoscopic modeling and knowledge of Python will be a plus.

Key responsibilities will include: (1) conduct independent research—including generating hypotheses, designing and executing research plans, data analysis—under the supervision of the PI and/or senior members of the lab; (2) interact/collaborate with technicians, students, postdoctoral fellows and instructors in the laboratory; (3) interact with collaborators within and outside the university; (4) present results in lab meetings and other scientific meetings; (5) write manuscripts and (6) assist in grant writing.

The applicant must have a Ph.D. in Applied Mathematics, Biomedical Engineering or related disciplines. Interested individuals should send a cover letter, CV, and the names/phone numbers of three people who could provide letters of reference by email to mxs86@case.edu. Review of applications will begin immediately and continue until the position is filled.

In employment, as in education, Case Western Reserve University is committed to Equal Opportunity and Diversity. Women, veterans, members of underrepresented minority groups, and individuals with disabilities are encouraged to apply.

Case Western Reserve University provides reasonable accommodations to applicants with disabilities. Applicants requiring a reasonable accommodation for any part of the application and hiring process should contact the Office of Inclusion, Diversity and Equal Opportunity at 216-368-8877 to request a reasonable accommodation. Determinations as to granting reasonable accommodations for any applicant will be made on a case-by-case basis.