

JOB DESCRIPTION

Post-doctoral Research Associate in Nonlinear and Biomedical Physics
Conduction and selectivity between monovalent ions within the potassium channel
Vacancy Ref: A2647

Job Title: Senior Research Associate in Ion Channel Physics (numerics)	Present Grade: 7
Department/College: Physics	
Directly responsible to: Peter McClintock, PI of the Leverhulme project	
Supervisory responsibility for: Possibly some help with supervision of PG & UG students	
<p>Other contacts</p> <p>Internal: Members of the Nonlinear and Biomedical Physics Group, including Co-Investigators Dmitri Luchinsky and Aneta Stefanovska, PDRAs, and PhD students; and our collaborators in Biology and Life Sciences including Stephen Roberts.</p> <p>External: Our external collaborators, e.g. Igor Khovanov and his research group in Warwick.</p>	
<p>Major Duties:</p> <p>To develop a detailed understanding of conduction and selectivity in narrow biological ion channels, based on numerical methods including molecular dynamics.</p> <p>In particular, the post holder will be expected to:-</p> <ol style="list-style-type: none"> 1. Take responsibility for day to day project management. 2. Build an experimental database of the potassium channel results, including their mutations and 3D structure. 3. Undertake extended kinetic and Brownian dynamics modelling of the permeation process potential of the mean force for the optimal pathway obtained using molecular dynamics. 4. Solve the differential Chapman-Kolmogorov equations numerically. 5. Compare theory and modelling with experimental results, in close liaison with the other PDRA on the project; advise on the amendment of models and codes based on comparison with data in the database. 6. Draft scientific papers arising from the project. 7. Participate in national and international conferences, presenting the results of the project and learning about current advances in the field. 8. Generally help with the running of the research group, including: supervision of new/junior members of the group, UG/PG students, and visiting students; and participation in outreach for schools, visitors and the public; and such other activities as may be directed by the PI. 	