University of Birmingham

Dr Kenton Arkill

Science City Research Alliance Fellow

School of Physics and Astronomy

Contact details

Telephone +44 (0)121 414 4675 (tel:+44 121 414 4675)

Email k.p.arkill@bham.ac.uk (mailto:k.p.arkill@bham.ac.uk)

Physics and Astronomy
Physics East
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK

About

Kenton Arkill is a Science City Research Alliance Fellow.

Kenton is an enthusiastic microscopist. He has publications using both electron microscopy, including tomography, and light microscopy, including non-linear techniques. It is unsurprising therefore that he has an avid interest in correlating the methodologies.

Qualifications

- PhD in Biophysics from the University of Exeter 2005
- PGCE in Secondary Science from Bangor University 2000
- BSc (Hons) in Physics with Theoretical Physics from Imperial College, 1999

Biography

Kenton Arkill qualified with a BSc (Hons) from Imperial College in 1999. After a PGCE and a brief stint teaching, “in the real world”, he studied for a biophysics PhD at the University of Exeter. After his PhD he has had several postdoctoral positions in the field of vascular physiology.

He arrived at the Nanoscale Physics Research Laboratories in Birmingham in 2012 on an Electron Microscopy Project funded by NERC/EPSRC in collaboration with the School of Geography, Earth and Environmental Sciences. However he won his fellowship after devising a solution to measure the forces on blood vessel walls (with Prof. Timothy Dafforn, Biosciences).

Research

Research themes

Characterisation Of Phage Virus (M13) as a Wall Shear Stress Marker For Microfluidics.

Research activity

Kenton Arkill’s main interest is in the permeability of blood vessels. Unfortunately there is a problem. The flow of blood exerts a force on the wall of blood vessels (Wall Shear Stress) changing how the cells react and therefore which molecules can get through the wall. Measuring this force directly is practically impossible, and calculations and indirect methods do not have the accuracy in such a complex system as the blood.

Dr Arkill is therefore trying to characterise a new method of measuring this Wall Shear Stress directly. Collaborating with Prof. Timothy Dafforn, Kenton uses an adapted filamentous virus tethered to a surface. The virus can be imaged by a microscope, and it is from this imaging that we can determine the forces directly.

Other activities

- CFIM Doctoral Electron Microscopy Training course at the University of Copenhagen

Publications

2010-2008

KP Arkill, CR Neal, JM Mantel, CC Michel, K Qvortrup, J Rostgaard, DO Bates, C Knupp, JM Squire (2012)3D Reconstruction Of The Glycocalyx Structure In Mammalian Capillaries Using Electron Tomography **Microcirculation** 19(4):343-351

KP Arkill, C Knupp, CC Michel, CR Neal, K Qvortrup, J Rostgaard, JM Squire (2011) Similar Endothelial Glycocalyx Structures In A Range Of Mammalian Tissues: Evidence For A Common Filtering Mechanism? **Biophyical Journal** 101(5):1046-1056

KP Arkill, J Moger, CP Winlove The Structure and Mechanical Properties of Collecting Lymphatic Vessels: An Investigation using Multimodal Nonlinear Microscopy (2010) **Journal of Anatomy** 216(5):547-555

CJ Moger, KP Arkill, R Barrett, P Bleuet, RE Ellis, EM Green and CP Winlove Cartilage Collagen Matrix Reorientation and Displacement in Response to Surface Loading (2009) **Journal of Biomechanical Engineering-Transactions of the Asme 131** 131

AJ Macdonald, KP Arkill, G Tabor, N McHale and CP WinloveModelling flow in collecting lymphatic vessels: 1d flow through a series of contractile elements (2008) **American Journal of Physiology- Heart and Circulation** 295(1) H305-13

KP Arkill, CP Winlove (2008) Solute Transport In The Deep And Calcified Zones Of Articular Cartilage **Osteoarthritis and Cartilage 16 708-714** 16 708-714

Privacy | Legal | Cookies and cookie policy | Accessibility | Site map | Website feedback | Charitable information

© University of Birmingham 2014