

Bioengineering news

January 2013
Volume 7 Issue 1

THE LEADING DEPARTMENT OF BIOENGINEERING IN THE UK

IN THIS ISSUE

Head of Department's message

by Professor Anthony Bull

Depth and Breadth

Bioengineering is a broad discipline that can be defined as consisting of three overlapping areas.

Biomedical Engineering: To engineer devices, constructs and interventions for human health.

Biological Engineering: To solve problems related to the life sciences and/or the application thereof.

Biomimetics: To find ways in which the structures and functions of living organisms can be used as models for the design and engineering of materials and machines.

Research, teaching, and leadership

Here at Imperial College London we are actively engaged in all of these through our research, teaching, and leadership activities.

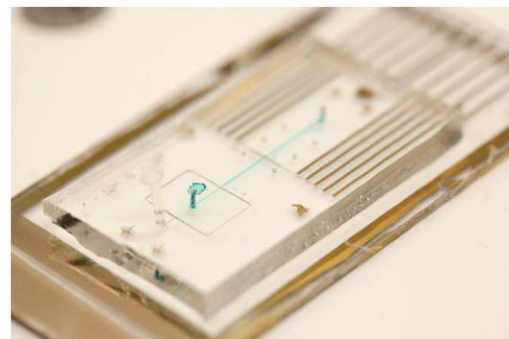
These areas overlap significantly at many levels, but none more so than at

the level of cellular and molecular bioengineering. This area is one that has received significant strategic investment externally through funding bodies and internally through our hiring strategy.

Of the eleven colleagues listed under that theme on our research website, eight have been appointed within the past five years and Dr Armando del Rio Hernandez is our most recent addition.

Cancer bioengineering

His research is in the area of mechanical forces at the cellular and molecular level and he brings significant experimental expertise to the department linking the understanding of biochemical signals with physical factors. Armando is working on important questions in the mechanobiology of physiological and pathological processes and is a key part of the Department's new initiative in cancer bioengineering.



Cover photograph

This month's cover photograph features **Dr Michelle Rogers** at work in the traumatic brain injury laboratory. This photograph was taken as part of a [larger shoot](#), the results of which will be used in the next postgraduate prospectus. A big thank you to the **Boutelle** group for being such fantastic subjects!



Publications

The Department's quarterly publications list features on page three of this month's newsletter.

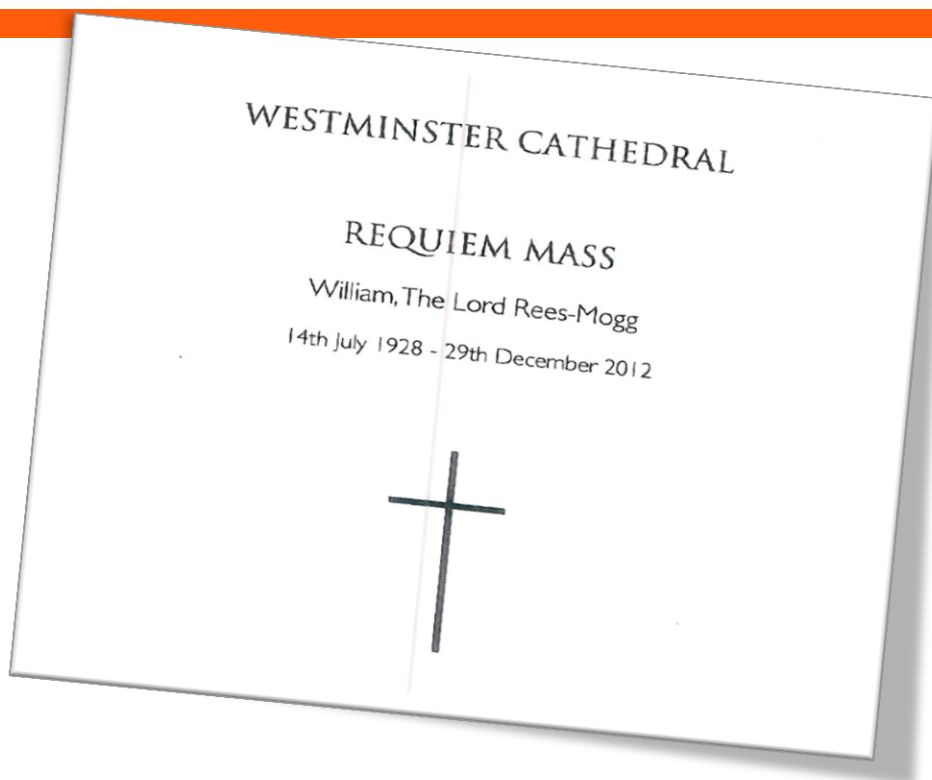
Lord Rees-Mogg

July 14 1928 - December 29 2012

Lord Rees-Mogg, who has died at the age of 84, was a trustee of the Sir Leon Bagrit Memorial Trust (Lady Rees-Mogg and Jacob Rees-Mogg are both still trustees), which has provided support for the Department of Bioengineering for over 20 years.

In 1991, Imperial established the Bagrit Centre, which was the forerunner to the Department of Bioengineering, with support from the Sir Leon Bagrit Memorial Trust. This Trust was founded by the late Lady Stella Bagrit in honour of her late husband, who was a leading UK engineer, and it still provides support to Imperial bioengineers through undergraduate scholarship schemes, student achievement awards and assistance for academic research.

In 2011, the Department established an annual Bagrit Lecture to commemorate 20 years of support from the Trust. The Trust and its trustees are therefore very important for the Department.



A memorial to Lord Rees-Mogg was held at Westminster Cathedral on Wednesday 9 January. The order of service can be found [here](#). Professor Colin Caro wrote a '[lives remembered](#)' note about Lord Rees-Mogg which was published in The Times on Wednesday 16 January.

The Department was saddened to learn of the death of Lord Rees-Mogg. Our thoughts are with his family.

Student successes



Conferences

PhD student **Major James Singleton** gave a podium presentation at the Society of Military Orthopaedic Surgeons (SOMOS) annual research meeting in Naples, Florida on December 13 2012. His talk was entitled 'Case suitability for definitive through knee amputation following lower extremity blast trauma: Analysis of 146 combat casualties 2008 – 2010'.

Viva congratulations

Congratulations to **Dr Naveed Ejaz** who successfully completed his viva recently. Dr Ejaz was supervised by **Dr Holger Krapp**.

Congratulations too to **Dr Joe Prinold** who passed his PhD viva just before Christmas

and is now working as a post-doctoral research associate in the Department. Dr Prinold was supervised by **Professor Anthony Bull**.

ANY NEWS ITEMS?

If you have any items for the next newsletter please contact...

HELEN FINDON
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Welcome to the Department!

Professor Jimmy Moore

The Department extends a very warm welcome **Professor Jimmy Moore** who started in the Department earlier in January. Professor Moore joins us from the Department of Biomedical Engineering at Texas A&M University and now holds the Bagrit Chair in Medical Device Design.

In addition to welcoming him to the Department, we also extend our

congratulations to Professor Moore on his recent appointment to the editorial board of Cardiovascular Engineering and Technology.

Dr Armando del Rio Hernandez

Dr Armando del Rio Hernandez has joined the Department as a Senior Lecturer. He joins us from the Barts Cancer Institute at QMUL and his research is in mechanical forces at the molecular and cellular levels, mechanosensing and mechanotransduction,

extracellular matrix rigidity, mechanical pathways in cells, and mechanobiology of physiological and pathological processes.

Welcome to the world

The Department sends its congratulations to **Maximilien Vanleene** and **Guy-Bart Stan** who have both recently become fathers !

Congratulations to Maximilien and Guy-Bart and both their families on this wonderful news !

Publications

Departmental publications are reported in the newsletter every quarter. This information is drawn from Symplectic, information on which can be found [here](#).

Journal articles

Abdul-Wahab,M.F., Homma,T., Wright,M., Olerenshaw,D., Dafforn,T.R., Nagata,K., and Miller,A.D. (2012) The pH sensitivity of murine heat shock protein 47 (HSP47) binding to collagen is affected by mutations in the breach histidine cluster. *J Biol Chem*.

Alam,M., Bull,A.M., Thomas,R.D., and Amis,A.A. (2013) A clinical device for measuring internal-external rotational laxity of the knee. *Am J Sports Med* **41**: 87-94.

Balasubramanian,S., Colombo,R., Sterpi,I., Sanguineti,V., and Burdet,E. (2012) Robotic assessment of upper limb motor function after stroke. *Am J Phys Med Rehabil* **91**: S255-S269.

Ball,A.T., and Patel,B.A. (2012) Rapid voltammetric monitoring of melatonin in the presence of tablet excipients. *Electrochimica Acta* **83**: 196-201.

Bazigou,E., Bailey,E.L., Sowinski,P., and Weinberg,P.D. Effects of ageing and glyocalyx disruption on aortic transendothelial permeability. *Atherosclerosis* **225**(2), e2-e3. 1-12-2012.

Cleather,D.J., Goodwin,J.E., and Bull,A.M. (2012) Hip and knee joint loading during vertical jumping and push jerking. *Clin Biomech (Bristol, Avon)*.

Cleather,D.J., Goodwin,J.E., and Bull,A.M. (2013) Intersegmental moment analysis characterizes the partial correspondence of jumping and jerking. *J Strength Cond Res* **27**: 89-100.

Debbaut,C., Vierendeels,J., Siggers,J.H., Repetto,R., Monbaliu,D., and Segers,P. (2012) A 3D porous media liver lobule model: the importance of vascular septa and anisotropic permeability for homogeneous perfusion. *Comput Methods Biomech Biomed Engin*.

den Hartog,A.G., Bovens,S.M., Koning,W., Hendrikse,J., Luijten,P.R., Moll,F.L. *et al*. (2012) Current Status of Clinical Magnetic Resonance Imaging for Plaque Characterisation in Patients with Carotid Artery Stenosis. *Eur J Vasc Endovasc Surg*.

Fraser,K.H., and Weinberg,P.D. A numerical study of sphingosine-1-phosphate receptor activation in an arterial branch. *Atherosclerosis* **225**(2), e3. 1-12-2012.

Grossman,N., Simiaki,V., Martinet,C., Toumazou,C., Schultz,S.R., and Nikolic,K. (2012) The spatial pattern of light determines the kinetics and modulates

backpropagation of optogenetic action potentials. *J Comput Neurosci*.

Marenzana,M., Hagen,C.K., Borges,P.D., Endrizzi,M., Szafraniec,M.B., Ignatyev,K., and Olivo,A. (2012) Visualization of small lesions in rat cartilage by means of laboratory-based x-ray phase contrast imaging. *Phys Med Biol* **57**: 8173-8184.

Shaheen,A.F., Villa,C., Lee,Y.N., Bull,A.M., and Alexander,C.M. (2012) Scapular taping alters kinematics in asymptomatic subjects. *J Electromyogr Kinesiol*.

Conference Proceedings

Tang,M.-X., and Eckersley,R.J. Beam Hardening in Ultrasound Contrast Agent Imaging. Proceedings of the International Congress on Ultrasonics . 2012.

Events

Departmental Seminars

All seminars will be on Thursday 1-2pm in room RSM 3.03 unless otherwise stated. A full list of seminars can be found on the [events page](#).

For further details please contact [Chiu Fan Lee](#). If you know of someone who would like to be on the email distribution list for these seminars please guide them to [sign up list](#).

31 January 2013

Dr Giovanni Sena, Imperial College London. Plant root regeneration as a model system for self-organization in development?

14 February 2013

Prof Alex Seifalian, University College London. Title to be confirmed.

28 February 2013

Professor Jimmy Moore, Imperial College London. Title to be confirmed.

14 March 2013

Professor Terry Matsunaga, University of Arizona. Title to be confirmed.

Bioengineering news

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