



# Imperial Bioengineer

May 2015

## Bioengineering Festival Fun

by Dr Jenna Stevens-Smith, Outreach Manager

15,000 people flocked to South Kensington for the fourth Imperial Festival on 9-10 May.

Bioengineering was well represented across the festival site, which has grown substantially since its inception in 2011. From visitors getting creative with their synthetic biology inspired bacteria to imaging carotid arteries and learning how arduinos and 3D printing work. There was a broad array of bioengineering activities on show.

Dr Eleni Bazigou and Professor Kim Parker, developed a new flow model for the Festival which demonstrated the difference between arterial, venous and exterior pressure.

Virginie Papadopoulou and fellow members of the Tang Group demonstrated how microbubbles enhance ultrasound images, including demonstration of ultrasound imaging.

Dr Claire Donoghue and Justas Medeisis utilised the large audience to user test the 3D musculoskeletal visualiser that Justas has developed for his final year undergraduate project.

Professor Richard Kitney gave a public lecture on 'How synthetic biology will change the world' and Dr Helen Findon inspired future synthetic biologists with the design your own super hero bacteria competition and some recent iGEM projects: Plasticity, Auxin and Aqualose.

The Centre for Blast Injury Studies had an array of demonstrations and props on show including the ever popular airzookas to demonstrate shock waves, an x-ray light box for the illumination of blast and healthy lungs and 3D printed bones.

The first cohort of the CDT for Neurotechnology for Life and Health worked together to deliver activities in the Brain Zone, including a brain controlled drone and a brain puzzle and introduction to neural communication.

The Robot Zone included activities from robotics groups across College. The Faisal, Krapp and Burdet groups in bioengineering demonstrated their eye-tracker technology, fly vision and assistive rehabilitation devices.

The SAF foyer was transformed into an engineering playground, with the Robot Zone and Cybathlon at the beginning and progressing to the hackspace and innovation areas, where visitors had the opportunity to learn how to program arduinos, and use computer modelling software to design 3D printable models. The innovation areas saw teams of students develop new crutch designs in a live 2-day hack and visitors using the materials provided to come up with their own innovations.

It was a huge pleasure to work with so many staff, researchers and students from across the Department on making the Imperial Festival the success that it was. Special thanks to all those who gave up their time over the weekend to make the experience so memorable for the visitors that came.

If you have an idea for an outreach activity you would like to develop please get in contact.



## WELCOME TO THE DEPARTMENT

The Department are delighted to welcome the following new staff and researchers:

- **Halima Begum**  
Student Office Administrator
- **Edina Forman**  
Research Technician for Simon Schultz
- **Sally Gowers**  
Research Assistant for Martyn Boutelle

## GRANT SUCCESS

**EPSRC awarded to Dr Tobias Reichenbach** for *Personalized fitting and evaluation of hearing aids with EEG responses* (£275,911)

**Wellcome Trust Seed Award awarded to Dr Andrei Koslov** for *Direct recording of mechano-electrical transduction currents and forces from individual stereocilia*

**EPSRC awarded to Dr Spyros Masouros** for *Material Properties of the Intervertebral Disc* (£123,049)



## PUBLICATION SPOTLIGHT

Be sure to check out the Department's recently published works below:

Bailey EL, Bazigou E, Sowinski PSJ, Weinberg PD (2015) *Mass Transport Properties of the Rabbit Aortic Wall* PLoS ONE 10(3): e0120363. doi: 10.1371/journal.pone.0120363

E. Hancock, G.-B. Stan, J. Arpino, A. Papachristodoulou *Simplified Mechanistic Models of Gene Regulation for Analysis and Design* To appear in Journal of the Royal Society Interface, 2015

Stefaan W. Verbruggen, Myles J. Mc Garrigle, Matthew G. Haugh, Muriel C. Voisin, Laoise M. McNamara *Altered Mechanical Environment of Bone Cells in an Animal Model of Short- and Long-Term Osteoporosis* Biophysical Journal, 108(7) 2015, 1587-1598 doi:10.1016/j.bpj.2015.02.031

B. Schoenhense, L. Dickens, B. Caldas, G.B. Stan, A. Faisal *The Moveable Feast of Predictive Reward Discounting in Humans* To appear in Proceedings of the 2nd Multidisciplinary Conference on Reinforcement Learning and Decision Making (RDLM 2015), The University of Alberta, Edmonton, Alberta, Canada, 7-10 June, 2015

## OUT AND ABOUT

**Dr Claudia Clopath and Sara Zannone** spoke at The Atlas in Fulham for Pint of Science on 19 May about Remember me? Modelling memory and Remember me? Learning with rewards.

**Dr Claire Higgins and Dr Benjamin Almquist** spoke at The Bolton in Earsl Court for Pint of Science on 20 May about Re-engineering the Human Body.

**Dr Jenna Stevens-Smith** spoke to 150 year 9s from the Harris Academy about applications of bioengineering on 20 May

**Caroline Roney and Rheeda Ali** from the Siggers Group went to the Heart Rhythm Society Conference in Boston, USA on 13-16 May. Caroline presented three posters: *A Novel Automated Method for Detecting Near-instantaneous Reinitiations of Atrial Fibrillation*, *Testing a Novel Method for Rotor Tracking using Bipolar Electrogram Phase on Simulated, Cell Culture and Clinically Acquired Electrograms* and *Determining the Relationship Between Resolution Requirements and Wavefront Spatial Wavelength for Identifying Rotors, Foci and Multiple Wavelets*. Rheeda presented one poster on *Localised quantification of the relationship between Late-gadolinium Intensity and Conduction Velocity in the Left Atrium*.

## STAFF & STUDENT SUCCESS

**Gavin Metcalf** has been awarded a bursary to attend the MEIbioeng15 conference in Leeds this September.

**SACA success for Holloway and bioengineering colleagues.**

20 BME members of staff, all types, were nominated. **Martin Holloway** won the Best Tutoring award. **Dr Tom Ellis** was the first person to be short-listed in two categories (Best Tutoring and Best Support Staff). **Liam Madden** was short-listed in the biggest category with over 300 nominations (Best Teaching for Undergraduates).

**Squadron Leader Edward Spurrier** was awarded the Peter Templeton prize for best trainee paper at the Combined Services Orthopaedic Society annual conference. His study was entitled "Spinal injury patterns in UK victims of IED attacks on vehicles".

In the President's Awards for Excellence in Research 2015, **CBIS has been awarded The President's Award for Outstanding Research Team**. The panel, chaired by Professor Donal Bradley, said "the CBIS is a fantastic example of an inter-disciplinary team, addressing real world problems using a diverse range of scientific disciplines. Despite being a relatively recent group, it has resulted in a high profile initiative that benefits the profile of Imperial, as well as the patients that it supports". The award celebrates the achievements of research teams at Imperial, recognising outstanding research that delivers impact, a team's international standing and their beneficial contribution to Imperial.

## MEDIA MENTIONS

Handgrip Device Helps Stroke Patients Access Hand/Arm Rehab  
*News, Medscape Medical News, May 2015*

## GET INVOLVED

**Free IPEM membership for students**

Free student membership now available for undergraduates and full time postgraduate students.

**More info:** <http://www.ipem.ac.uk/AboutIPEM/JoinIPEM.aspx>

**Blackwood Design Awards 2015**

Following the success of MEng graduate Kirubin Pillay in the Blackwood Design Awards 2014. Students are encouraged to enter their projects to the 2015 competition. [http://www.bespoken.me/forum/topics/blackwood-design-awards-2015?xq\\_source=activity](http://www.bespoken.me/forum/topics/blackwood-design-awards-2015?xq_source=activity)

**Deadline is 20 June 2015**

## FEMALE PhD STUDENTS MEET 2015 BAGRIT LECTURER

by Anabela Areias, Anna Stejskalova, Sarah Johnson and Samira Jamalian

Mina Bissell, a leading scientist in breast cancer research, met with us prior to her Bagrit Lecture. In a session full of inspiring stories and a friendly atmosphere, Mina talked about how it felt to start a new research direction in a well established field. Sharing stories about her personal life, PhD and independent scientific career filled the room with passion for life and knowledge. The resounding message was: "Be passionate!" and "Always have a second plan!".

"Being given the opportunity to meet Mina was very motivating as she had a very refreshing perspective on careers in science, encouraging us all to take risks but also to look after ourselves and do what we really want to do! So often it is easy to become despondent when thinking of the challenges we face as women in science therefore it is great to meet successful and highly respected women such as Mina who are still full of enthusiasm and passion."

"Mina was very friendly and sincere. It was instructive to learn that she faced similar challenges/fears during certain stages of her career. Her suggestion was to always think of alternative career options just in case. Because having a second plan can take away a lot of the anxiety and fear we face in our career choices."

Mina Bissell is a Distinguished Scientist, Lawrence Berkeley National Laboratory, University of California, Berkeley her Bagrit Lecture was on *Why Don't We Get More Cancer? The critical role of extracellular matrix and the microenvironment in modelling metastasis and dormancy*.

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## UPCOMING EVENTS

### Departmental Seminars

Thursdays 12.00-13.00

**4 June 2015** 12:00-13:00 RSM2.28

**Professor Mustafa Djamgoz from Life Sciences, Imperial College**  
*Bioelectricity of cancer: from novel mechanisms to clinical potential*

**11 June 2015** 12:00-13:00 RSM2.28

**Professor Lihong Wang from Washington University in St Louis**  
*The World's Fastest Camera Captures Light Propagation*

**18 June 2015** 12:00-13:00 RSM2.28

**Professor Guy Richardson from University of Sussex**  
*Development and Degradation of a Matrix*

**23 June 2015** 12:00-13:00 RSM2.28

**Professor Tatjana Tchumatchenko from The Max Planck Institute for Brain Research**  
*Mathematical Modelling of Neuronal Networks*

**For more information, visit:**

<http://www3.imperial.ac.uk/bioengineering/events/departmentalseminars>

### Science Friday Seminar Series

Fridays from 16:20

### Imperial Events

**2 June** Bioeng Postdoc Coffee Morning (Contact Dr Emma Bailey for details)

**4-5 June** BME-IDEA/BioDesign EU Symposium

*The BME-IDEA symposium focuses on programmes in the EU that deliver medical device entrepreneurship training, many based on the BioDesign process. It is the first time that Imperial has hosted the meeting and attendees are travelling from across the world to attend including Professor Youseph Yazdi, Executive Director of the Center for Bioengineering Innovation & Design at Johns Hopkins University.*

**8 June** Imperial@Crick briefing session 14:00 - 17:00 in G34, SAF

**19 June** Centre for Neurotechnology Colloquium series Atsushi Yokoi, UCL *The mechanism of flexible bimanual coordination* 13:00, RSM 2.28.

**24 June** Centre for Neurotechnology Colloquium series Richard Wade-Martins, University of Oxford at 16:00, RSM 2.28.

**20-25 July** Engineering Summer School for 11-14 year old girls

### External Events & Conferences

**9th annual PGBiomed conference**

14-16 July

University of Liverpool, Liverpool

Abstract submission deadline is 15 May

<http://ewh.ieee.org/sb/ukri/embs/pgbiomed15/>

**3rd International Conference on Integrative Biology**

4-6 August

Valencia, Spain

<http://integrativebiology.conferenceseries.com/>

Contact: Dr Armando Del Rio Hernandez for further information.

**CMBBE conference**

1-5 September

Montreal, Canada

Abstract submission deadline is 22 May

<http://cmbbe2015.com/>

**MEIbioeng15**

7-8 September

Leeds, UK

<http://meibioeng.org/>

**BMES Annual Conference**

7-10 October

Tampa, Florida

<http://bmes.org/annualmeeting>



## CONTACT

**Send news for the next issue to:**

**Dr Jenna Stevens-Smith**

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