



# Imperial Bioengineer

September 2016

## BRONZE FOR BIOENGINEER

Adapted from article by [Andrew Czyzewski](#)

**Bioengineering PhD student and Army Captain Dave Henson MBE won a bronze medal in the T42 200m at the Paralympic Games in Rio this month.**

PhD student Dave, who previously completed an MSc at the College, contributed to team GB's record medal rush at the games with a strong finish in the 200m final to join compatriot and gold medallist Richard Whitehead on the podium.

Dave dug deep to dip under the 25 second barrier for the first time, achieving a personal best time of 24.74 seconds.

Dave Henson MBE Speaking to British Athletics, Dave said: *"It was tight for the medal – I wasn't convinced I'd got it but I carried that belief all the way with me during the race. I wasn't going to leave here without a medal and I get to take a 'Tom' [soft toy mascot] back to my daughter as well."*

*"It has definitely been a journey – there have been a hell of a lot of cold and wet mornings going training working with my coach (Roger Keller) with the sole purpose of getting here. Rio 2016 was always the aim but some people thought Tokyo was more realistic. With hard work and determination you can prove people wrong. I am here with a bronze medal around my neck, I mean they don't give these out, you have to work hard for them."*

Since beginning his PhD in 2015 Dave has balanced his athletics and his research which led to him qualifying for the Rio games earlier this year.



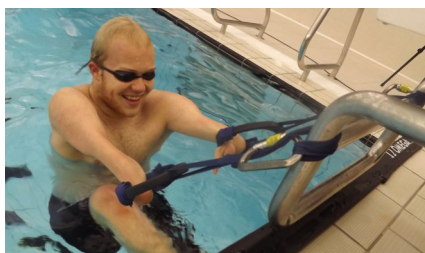
*Dave Henson after receiving his bronze on the podium at the 2016 Rio Paralympics*

Professor Anthony Bull, Head of the Department of Bioengineering, is Dave's supervisor at Imperial, and paid tribute to his achievement.

*"Dave is not only an inspiration to his research group colleagues, but also to the whole Department of Bioengineering. He epitomises what Channel 4's coverage of the Paralympics calls 'the superhumans' and I am not referring only to his speed on the track. Anyone who heard Dave's post-race interview will know that he is someone who thinks about the bigger picture and I know that he is not only a successful athlete, PhD student and father, but also contributes far more widely in advocacy and support for others who have been severely injured in conflict."*

*"We are proud to be associated with Dave Henson and look forward to him returning (with his medal) and spending a little more of his precious time on his research!"*

## SWIMMING SUCCESS



Paralympic swimmer Andrew Mullen also secured bronze medals in the Men's 100m and 200m Freestyle S5 and a silver in the Men's S5 50m Backstroke. Andrew has been working with Imperial students over the past few years to develop a number of innovative devices to help him in competition, training, and generally getting around as part of the Sports Innovation Challenge project coordinated by Dr Ian Radcliffe.

### Sports Innovation Challenge

Developed in 2011, the [Sports Innovation Challenge \(SIC\)](#) tasks students to design, build and implement solutions to real world engineering problems with a Adaptive Sports or Paralympic theme. The aim of the SIC is to make a tangible contribution to Paralympic sport and healthy lifestyles for people with disabilities, whilst providing our students with a novel learning experience. Students working on SIC projects are granted access to athletes and coaches from all levels of Adaptive Sports, from grass roots up to Gold medal winning Paralympians. The interaction between the students and the end user is crucial to developing an understanding of the importance of user focused design. The Sports Innovation Challenge is coordinated by Dr Ian Radcliffe.

## WELCOME TO THE DEPARTMENT

Welcome to new starters

- **Tracey Glenister**  
Student Administrator
- **Dr Christopher Phillips**  
Research Associate with Dr Angela Kedgley
- **Dr Thomas Ouldrige**  
Royal Society University Research Fellow

This month sadly one colleague is leaving, we wish her all the best in her new role:

- **Francesca Ceroni**

## GRANTS

**Professor Martyn Boutelle** has been granted an extension of an existing award in collaboration with the University of Pittsburgh on Enhanced Microdialysis for CSD Monitoring

**Dr Thomas Ouldrige** awarded a Royal Society University Research Fellowship for his project on Persistent information: Thermodynamics of Active Biochemical Systems (£463,545)

**Dr Hari Arora** awarded a Royal Society equipment grant for Ultra-high resolution multi-scale modelling of multi-phase biological tissues under impact (£15,000)

## PUBLICATION SPOTLIGHT

Be sure to check out the Department's recent publications:

Paul Rinne, Michael Mace, Tagore Nakornchai, Karl Zimmerman, Susannah Fayer, Pankaj Sharma, Jean-Luc Liardon, Etienne Burdet, Paul Bentley [Democratizing Neurorehabilitation: How Accessible are Low-Cost Mobile-Gaming Technologies for Self-Rehabilitation of Arm Disability in Stroke?](#) Plos One 2016, 11(10): e0163413 [doi: 10.1371/journal.pone.0163413](#)

Simon J. Attwood, Ernesto Cortes, Alexander William M. Haining, Benjamin Robinson, Danyang Li, Julien Gautrot & Armando del Rio Hernández [Adhesive ligand tether length affects the size and length of focal adhesions and influences cell spreading and attachment](#) Scientific Reports 2016, 6: 34334 [doi: 10.1038/srep34334](#)

Daniel Nolte, Chui Kit Tsang, Kai Yu Zhang, Ziyun Ding, Angela E. Kedgley, Anthony M.J. Bull [Non-linear scaling of a musculoskeletal model of the lower limb using statistical shape models](#) J Biomech 2016, 49 (14): pp 3576–3581 [doi: 10.1016/j.jbiomech.2016.09.005](#)

Thomas McGrath, Nick S. Jones, Pieter Rein ten Wolde, and Thomas E. Ouldrige [A biochemical machine for the interconversion of mutual information and work](#) 2016, arXiv:1604.05474 [cond-mat.stat-mech]

## OUT AND ABOUT

**Dr Paul Rinne** pitched rehabilitation start-up gripAble at [Health 2.0](#) in San Francisco, USA.

**Dr Michael Mace** presented gripAble at the [Universal Biotech's Innovations Day conference](#) where gripAble were finalists (last 7 from 259 start-ups/SMEs).

**Dr Jenna Stevens-Smith** spoke about the *UK Landscape of Bioengineering* at IPEM annual meeting MPEC in Manchester.

**Dr Ian Radcliffe** and bioengineering students working on projects for Cybathlon presented at Nesta's FutureFest at the Tobacco Docks alongside pilots and their industry partners on 17-18 September.

**Professor Etienne Burdet, Professor Holger Krapp** groups and the Imperial iGEM team engaged visitors with their research at the inaugural New Scientist LIVE held at the Excel 22-25 September.

## STAFF & STUDENT SUCCESS



PhD student **Christian Klemt** presented with his best poster prize at MEIBioeng16 by conference chair Professor Alison Noble



**Dave Henson** at an internal celebration of his Paralympic Bronze medal with PhD supervisor Professor Anthony Bull and Provost Professor James Stirling.

PhD student **Christian Klemt** (Bull group) won the best poster prize at MEIBioeng16 that was held in Oxford on September 5/6 at Keble College. There were more than 80 posters displayed.

**Dr Niamh Nowlan** was awarded the Early Career Researcher award from the Bioengineering Society at MEIBioeng16.

PhD student **Dave Henson** won a bronze medal in the T42 200m at the Paralympic games in Rio.

## IN THE NEWS

Marta Garnelo, **Kai Arulkumaran** and Prof. Murray Shanahan have had work from their recent paper, Towards Deep Symbolic Reinforcement Learning, featured in New Scientist, The Guardian, and The Verge. Prof. Shanahan presented his new paradigm for AI research at the RE.WORK Deep Learning Summit in London at the end of September.

Research Associates and co-founders of gripAble **Michael Mace** and **Paul Rinne** have been hitting the headlines following their recent paper in PlosOne including coverage in [The Sun](#).

## DESIGN THE NEXT QE PRIZE TROPHY!

The QEPrize has launched their 2017 **Create the Trophy competition**, complete with a brand new app. Students from around the world aged 14-24 are invited to design the trophy which is to be awarded to the winner of the 2017 Queen Elizabeth Prize for Engineering. The 2015 prize was awarded to bioengineer Professor Robert Langer from MIT.

The app is available to download from [Google Play](#) and the [App Store](#), and you can see a short animation of the app in action on our [YouTube channel](#).

As well as seeing their winning design brought to life by 3D printing, the competition winner will be invited to the presentation of the 2017 QEPrize in London and will take home a top of the range MacBook Pro as a prize.

## ALUMNI SUCCESS

Further start-up success for Department alumni with MSc 2015 graduates **Guillem Singla** and **Dimitris Athanasiou**. Guillem and Dimitris are developing an affordable, easy-to-use device linked to a software platform that allows stroke patients to play their favourite games.

They have recently pitched their idea at Facebook HQ in London, with the top 350 investors in the UK and internationally. You can watch the 3-min video here. They were also mentioned in one of the most well-known technology news, i.e. TechCrunch and have secured £70,000 of investment to develop our prototype further and have partnered with successful business advisors in the stroke rehabilitation field.

**Co-founders Guillem Singla and Dimitris Athanasiou will be speaking alongside fellow Department alumni Riham Satti (MEng 2011) and Sorin Popa (MRes 2014) in the Bioengineering Business Start-up panel at 1-2pm RSM2.28 on 4 November.**

## UPCOMING EVENTS

### Departmental Seminars

Thursdays 12.00-13.00

**23 Sept 2016** 12:00 - 13:00 RSM3.03

*Robots helping to care for older people* **Prof. Bruce MacDonald, University of Auckland, New Zealand**

**29 Sept 2016** 12:00 - 13:00 RSM2.28

*Applications of Gold Nanoparticles in Infrared Neural Stimulation* **Prof. Paul Stoddart, Swinburne University of Technology, Australia**

**13 Oct 2016** 12:00 - 13:00 RSM1.31

*Managing Your Time* **Dr Ali Arat, Global Recruiting Manager & Advanced Analytics at McKinsey & Company, Germany**

**21 Oct 2016** 12:00 - 13:00 RSM2.28

*Red Blood Cells: Simple Cells with Complex Behaviour* **Dr Kars Kaestner, Coordinator, Research Centre for Molecular Imaging & Screening, Institute for Molecular Cell Biology, Saarland University**

### Imperial Events

**17 September 2016**

**UG Open Day**

Imperial College London

Website: <http://www.imperial.ac.uk/study/ug/visit/open-days/>

**17-18 September 2016**

**Future Fest**

Tobacco Dock, London

Website: <http://www.futurefest.org/>

**22-25 September 2016**

**New Scientist Live**

Excel London, Royal Victoria Dock, London

Website: <https://live.newscientist.com/>

### Conferences

**12-14 September 2016**

**Medical Physics and Engineering Conference 2016 (MPEC)**

*Science for patient benefit*

Manchester

Website: [www.ipem.ac.uk/ConferencesEvents/MPEC.aspx](http://www.ipem.ac.uk/ConferencesEvents/MPEC.aspx)

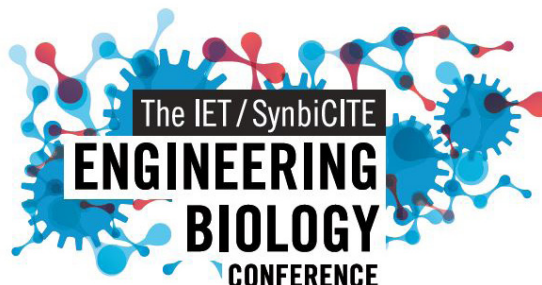
**5-8 October 2016**

**2016 BMES Annual Meeting**

*Innovation at the Interface*

Minneapolis Convention Center/ Minneapolis, Minnesota, USA

Website: [bmes.org/annualmeeting](http://bmes.org/annualmeeting)



**13-15 December 2016**

**IET/SynBICITE Engineering Biology Conference**

IET, Savoy Place, London

The programme includes major international speakers in the field, including keynote addresses from Professor Jay Keasling from UC Berkeley, and Professor Chris Voigt from MIT.

Students, researchers and academics are encouraged to submit abstracts and/or register to attend.

Website: <http://conferences.theiet.org/synthetic-conference/about/index.cfm>

### PRESENT YOUR RESEARCH IN PARLIAMENT

**STEM for**



**BRITAIN**

*Interested in presenting your research to MPs and Peers in the Houses of Parliament?*

Then submit an abstract for **STEM for Britain** by **5 December 2016** to be in with a chance to do just that in March 2017. The Department has a strong track record in the poster competition with PhD students and postdocs presenting and winning prizes. If you're interested have a look at the [STEM for Britain website](#).

If you would like to discuss how best to present your research to this audience please contact Jenna for further information/guidance as she has experience of working with MPs and Peers from previous roles.

## CONTACT

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

**Dr Jenna Stevens-Smith**

**Outreach & Public Engagement Manager**

Department of Bioengineering, Imperial College London, South Kensington Campus, London SW7 2AZ

[www.imperial.ac.uk/bioengineering](http://www.imperial.ac.uk/bioengineering)

[@ImperialBioeng](https://twitter.com/ImperialBioeng)

[facebook/imperialbioeng](https://facebook.com/imperialbioeng)