



Heads of University Biosciences

HUBS Spring Meeting

4 - 5 May 2016 - University of
Leicester

**Academic Integrity, Designing out
Plagiarism, and Outreach**



#SpringHUBS16

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1. About the Heads of University Biosciences (HUBS)

The Heads of University Biosciences (HUBS) membership comprises over 80 higher education institutions in the UK, represented by biological and life science heads of departments and subject leads. HUBS provides a forum for discussing national issues on the provision of research and teaching in the biosciences, and as a source of informed comment on the consultations that affect HE institutions delivering in the biological and life sciences. HUBS is a Special Interest Group of the Royal Society of Biology. www.rsb.org.uk/HUBS

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Aberystwyth University
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University of Bath
University of Bedfordshire
Birkbeck, University of London
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University of Surrey
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Swansea University
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University of West England
University of the West of Scotland
University of Ulster
University of Warwick
University of Westminster
University of Wolverhampton
University of Worcester
University of York
York St John University

2. HUBS Executive Committee

Chair

Professor Hilary MacQueen FRSB

Secretary

Professor Janey Henderson CBIol FRSB

Treasurer

Dr Sandra Kirk FRSB

Members

Professor Julia Buckingham RFSB

Professor Peter Heathcote FRSB

Professor Jonathan Green MRSB

Professor Jane Lewis FRSB

Professor Paul Lynch

Professor Graeme Reid FRSB

Professor Jonathan Scott CBIol FRSB

Professor Judith Smith

Secretariat

Daniel Rowson AMRSB

Observers

Rachel Lambert-Forsyth MRSB

Sarah Cox MRSB

3. Delegates

Title	First name	Surname	Affiliation	RSB Membership
	Martha	Bailes	Oxford University Press	
Dr	Ian	Bailey	University of Surrey	
Dr	Celia	Bell	Middlesex University	Fellow
Dr	Laura	Bellingan	Royal Society of Biology	Fellow
Professor	Alexandra	Blakemore	Brunel University London	Fellow
Dr	Alan	Cann	University of Leicester	Member
Professor	Mark	Clements	University of Lincoln	Fellow
Dr	Adam	Collins	University of Surrey	
Dr	Richard	Cook	Kingston University	Fellow
Dr	Kevin	Coward	University of Oxford	Fellow
	Sarah	Cox	Royal Society of Biology	Member
Professor	Malcolm	Dando	Bradford University	Fellow
Dr	Nick	Freestone	Kingston University	Fellow
Professor	Maurice	Gallagher	University of Edinburgh	
	Irene	Glendinning	Coventry University	
Dr	Kate	Graeme-Cook	University of Hertfordshire	
Professor	Jonathan	Green	University of Birmingham	Fellow
Professor	Simon	Guild	University of Glasgow	
Dr	Neville	Hall	Middlesex University	
Dr	Adrian	Hall	Sheffield Hallam University	
Professor	Adam	Hart	University of Gloucestershire	Fellow
Professor	Peter	Heathcote	Queen Mary University of London	Fellow
Dr	Momna	Hejmadi	University of Bath	
Professor	Janey	Henderson	Teesside University	Fellow
Dr	Sally	Hicks	Cardiff Metropolitan University	Fellow
Dr	Katharine	Hubbard	University of Hull	
Dr	Sue	Jones	York St John University	
Dr	Louise	Jones	University of York	Fellow
Dr	Sandra	Kirk	Nottingham Trent University	
Dr	Peter	Klappa	University of Kent	
Dr	Philip	Langton	University of Bristol	Fellow
Professor	Andrew	Lawrence	University of Chester	
Professor	Paul	Lynch	University of Derby	Fellow
Professor	Hilary	MacQueen	The Open University	Fellow
Professor	Gerry	McKenna	HUCBMS	Member
Dr	Heather	McQueen	University of Edinburgh	Fellow
Dr	Darren	Mernagh	University of Portsmouth	
Professor	Andy	Miah	University of Salford	
Dr	Lesley	Morrell	University of Hull	

Dr	Erica	Morris	Anglia Ruskin University	
Professor	Phil	Newton	Swansea University	
Dr	Angela	Priestman	Staffordshire University	Fellow
Dr	Jeremy	Pritchard	Royal Society of Biology	
Dr	Ann	Pullen	University of Bristol	
	Gill	Rowell	Turnitin	Associate
	Dan	Rowson	Royal Society of Biology	
Professor	Sean	Ryan	Higher Education Academy	Fellow
Professor	Graham	Scott	University of Hull	Fellow
Professor	Jonathan	Scott	University of Leicester	
Professor	Judith	Smith	University of Salford	
Dr	Caroline	Smith	University of Westminster	Associate
	Alexandra	Spencer	Royal Society of Biology	Member
Dr	Rachel	Stubbington	Nottingham Trent University	
Dr	Lisa	Wallace	Swansea University	Member
Dr	Richard	Webb	Cardiff Metropolitan University	Fellow
Dr	Nicholas	Worsfold	University of Bedfordshire	
Dr	Anna	Zecharia	British Pharmacological Society	Member

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Thank you to those already supporting the work of the Royal Society of Biology through your continued membership.

4. Programme: Day One - 4 May

12:30-13:30 Arrival & lunch

13:30-13:35 Welcome

13:35-14:45 **HE Bioscience Teacher of the Year: Finalist Case Studies**

Sponsored by 

- Dr Kevin Coward (University of Oxford)
- Dr Lesley Morrell (University of Hull)
- Dr Katharine Hubbard (University of Hull)

14.45-15.10 Refreshments

15:10-15:30 **Dr Lisa Wallace (British Pharmacological Society)**

'The Pharmacological Curriculum'

Session One – Academic Integrity & Designing out Plagiarism I

15:30-15:50 **Professor Jon Scott (University of Leicester)**

Introduction & 'Institutional Strategies'

15:50-16:20 **Dr Phil Newton (Swansea University)**

'Essay Mills'

16:20-16:50 **Irene Glendinning (Coventry University)**

'European Perspectives'

16:50-17:10 Refreshments

17:10-18:00 AGM

18:00-19:00 Poster session with wine reception

19:00 Dinner

5. Programme: Day Two - 5 May

Session Two – Academic Integrity & Designing out Plagiarism II

9:15-9:45 **Dr Erica Morris (Anglia Ruskin University)**

'Re-examined: Designing out Plagiarism'

9:45-10:15 **Gill Rowell (Turnitin)**

'Plagiarism and beyond. The Turnitin journey: where are we now?'

10:15-10:45 **Dr Heather McQueen (University of Edinburgh)**

'Plagiarism: The Student View'

10:45-11:15 Refreshments and poster session

11:15-11:45 **Professor Malcolm Dando (University of Bradford)**

'Preventing Biological Threats'

Session Three – Teaching Excellence Framework (TEF)

11:45-12:15 **Professor Sean Ryan (Higher Education Academy - STEM)**

'Achieving and Demonstrating Teaching Excellence'

12:15-13:00 **Discussion Workshop**

'What does the TEF mean for us?'

13:00-14:00 Lunch

Session Four – Wider Outreach

14:00-14:30 **Professor Andy Miah (University of Salford)**

'Science Communication: A Pathway to Impact'

14:30-15:00 **Professor Adam Hart (University of Gloucestershire)**

'Citizen Science - Everyone's a Winner'

15:00-15:05 Round-up and close

15:05-15:30 Refreshments and depart

6. Higher Education Bioscience Teacher of the Year Award



About the Award

The Higher Education (HE) Bioscience Teacher of the Year Award seeks to identify the UK's leading bioscience HE teachers and recognises the invaluable role they play. The competition is open to all employed bioscience teachers in the UK HE system and individuals can be nominated either by self, peer or management nomination using a quick nomination form.

The scheme rewards lecturers who:

- Display individual excellence through the design and development of approaches to teaching that have proven successful in promoting bioscience student learning and achievement
- Undertake scholarly and professional developmental activities that actively influence and enhance the learning of their students
- Support colleagues and influence bioscience student learning beyond their own department and institution
- Exhibit innovation in relation to teaching that has proven to improve teaching practices and enhance student learning

Posters advertising the Award will be available to take back to your institution.

For full information, please visit www.rsb.org.uk/BTOY

2016 Finalist case study presentations: 4 May, 13:35-14:45

Congratulations to the three finalists of this year's Award. Each will give a case study presentation that they delivered during the second round of judging. Following each case study presentation there will be a short time for discussion and questions. The overall winner of the award will be announced for the first time at the dinner.

The 2016 Finalists are as follows:

Dr Kevin Coward (University of Oxford)

Dr Lesley Morrell (University of Hull)

Dr Katharine Hubbard (University of Hull)

7. Speaker biographies and talk abstracts

We would like to take the opportunity to say a huge thank you to all our speakers for their valuable contribution to the conference.

Dr Kevin Coward, HE BTOY Finalist – University of Oxford



Dr Kevin Coward graduated from the University of Stirling with a Bachelors degree in Biological Science and a PhD in Reproductive Physiology and Endocrinology. Since then, he has held post-doctoral positions at Brunel University, Queen Mary University of London, Imperial College London and University College London. In 2002, he moved to the Department of Pharmacology at the University of Oxford, and in 2008, transferred to the Nuffield Department of Obstetrics and Gynaecology as a Research Group Leader and Director of the MSc in Clinical Embryology, a one-year residential course designed to inspire and train new leaders in the diagnosis and treatment of human infertility. His teaching is informed by the work of his own research team, who collectively aim to enhance various aspects of assisted reproductive technology. His case study describes a new problem-based learning technique to assist and motivate his students to acquire teaching skills in 'wet' laboratory scenarios.

Talk: 'Problem-based learning in the development of laboratory teaching skills'

The Oxford MSc in Clinical Embryology is a one-year residential postgraduate course designed to motivate and inspire future clinical and scientific leaders in the diagnosis and treatment of human infertility, a medical condition affecting one in six couples. The acquisition of practical laboratory skills is a critical aspect of the course, which was specifically designed to generate an appreciation of how laboratory skills represent the core of human infertility treatment, not only in terms of diagnosis and treatment, but also in regard to the on-going scientific research which fuels the refinement or replacement of existing clinical technology. Over 80% of our graduates, who originate from either scientific or clinical backgrounds, have moved into vocations in which there is an expectation to eventually teach laboratory or other practical skills to junior peers. However, opportunities to learn such skills are surprisingly rare. Laboratory teaching requires a very different approach than in a standard classroom, and laboratory tutors need to be prepared for unpredictable scenarios. Our new model, funded by the Higher Education Academy, was designed to bridge this gap and provide students with a safe learning environment in which to develop their own laboratory teaching skills. Using a problem-based learning approach, two groups of students were asked to design and deliver a typical laboratory practical session to their peer group, which was purposefully linked to an experimental scenario from the core curriculum. In other words, each group took turns to act as 'tutors' while the other group acted as 'students'. While acting in the tutor role, groups delivered an introductory briefing, coached the students during a hands-on experimental session, and then delivered a final debriefing. Qualitative and quantitative feedback from four different cohorts of students (n = 69) indicated that

students very much enjoyed the overall experience and fully appreciated the difficulty of setting up and delivering laboratory sessions. Importantly, several key problem areas became highly apparent, such as students working at different paces, safety considerations, and confidence issues. Furthermore, the model linked our curriculum to the 'real world' and helped to consolidate theoretical knowledge. In future, we aim to remap the model for the specialist vocations favoured by our graduates (academia, embryology, clinical medicine), and disseminate the potential use of the model to other scientific disciplines.

Dr Lesley Morell, HE BTOY Finalist - University of Hull



My discipline research focuses on how animals respond to their environments, particularly in the context of anti-predator aggregation and environmental change. Projects include the behavioural responses of small fish to increasing environmental turbidity, the effect of resource density on attack rates by foraging insects, and understanding how predators target prey, using principles taken from human psychology. I am also interested in how students learn, and evaluating the effectiveness of learning and teaching strategies. I played a key role in two recent curriculum reviews, and am currently deputy director of learning and teaching in the school.

Talk: *'Increasing feedback, reducing marking'*

I describe a research-led module that combines reduced academic marking loads with increased feedback to students. The module is based around eight seminar-style presentations, on which the students write 500-word 'news & views' style articles (one per seminar). Students receive individual feedback on their first submission, but for subsequent reports, only a subset is marked, such that each student receives feedback on two further submissions. Simultaneously, they have access to feedback on their peers' reports (two reports per student enrolled on the module for each assignment). Students read and apply the feedback to their own subsequent work (using it as feed-forward). At the end of the module, students self-assess their eight submissions and select their two best for summative assessment. Analysis of student marks revealed that attainment increased throughout the module, with higher marks for the two chosen reports than for the two marked reports and first report. Students selecting previously unmarked work showed a greater increase in their mark for the module than students selecting reports that had previously received a mark. The ability to choose work for summative assessment is particularly beneficial for students achieving poorer marks for their first assignments.

Dr Kathrine Hubbard, HE BTOY Finalist - University of Hull



Dr Katharine Hubbard has recently been appointed as a Lecturer in Biological Sciences at the University of Hull, where she teaches Plant and Microbial Sciences. She is also involved in the Scholarship of Teaching and Learning, with current projects looking at student engagement with research dissemination, and the transition to university level practical work. Prior to this she was a Teaching Associate in the Department of Plant Sciences at the University of Cambridge, and a Teaching-By Fellow at Churchill College. In these roles she introduced blended learning into practical classes, and pioneered the use of student partnership to evaluate and improve teaching. She was awarded the 'Outstanding Lecturer' prize at the 2015 Cambridge University Student-led Teaching Awards.

Talk: 'With a little help from my friends: The power of building partnerships with students'

It is increasingly being recognised that students have a valuable role to play in shaping and enhancing their education, and that building partnerships between students and academics can have benefits to both parties. I describe a partnership project I ran at the University of Cambridge to enhance first year biology practical class teaching, while I was a Teaching Associate. Undergraduate summer interns identified areas of weakness in our current practicals and designed quiz and video resources to support practical teaching, representing the first 'students as producer' project at the University. I discuss the design of the project, and its impact on both the project students and the wider student cohort. I also explore potential for projects such as this to raise the status and visibility of teaching-focussed staff in research-orientated universities.

Dr Lisa Wallace - British Pharmacological Society



Dr Lisa Wallace is Deputy Chair of the Education and Training Committee for the British Pharmacological Society and Associate Professor of Applied Medical Sciences at Swansea University. Prior to this, she was a Senior Lecturer at Cardiff University. Lisa completed a BSc in Biology and PhD in Pharmacology and Toxicology from Virginia Commonwealth University and a post-doctoral fellowship at University California, San Francisco. She was a member of the QAA Benchmarking Review Groups for Biosciences and Biomedical Sciences and currently sits on the Royal Society of Biology Degree Accreditation Committee. She is interested in curriculum development and quality assurance.

Talk: 'The Pharmacological Curriculum'

The British Pharmacological Society is developing a core, undergraduate pharmacology curriculum to support courses where pharmacology is a 'named, substantive component'. In September 2015, we invited members of the pharmacology education community to a workshop and asked them to discuss the knowledge, skills and attitudes they expect of graduates. We developed these discussions into statements and refined them through a Delphi process which involved 42 pharmacology experts from across academia, industry, and related professions. We will present our findings and discuss the outlook for curriculum implementation at a reconvened workshop in June 2016.

Following on from the inclusion of pharmacology in the QAA Subject Benchmarks for Biomedical Sciences, in addition to developing the curriculum for pharmacology programmes, we would like to explore the use of our curriculum as a tool for courses where pharmacology isn't named in the degree title, but is seen as core content. We would like to use our session of the HUBS meeting to start a conversation with the broader biosciences community and highlight potential opportunities for collaboration. In doing so, we aim to develop relevant resources for programmes that deliver, or wish to deliver, pharmacology content, but would benefit from Society support.

Professor Jon Scott - University of Leicester



Jon read biological sciences at Durham University, staying there to study for his PhD, on sensory feedback from muscle. He then moved to Paris as a research fellow at the College de France before returning to Durham as a lecturer in zoology. From Durham, Jon moved to a lectureship in physiology at Leicester, working on the control of hand movement. Jon became increasingly involved in developments in learning and teaching and in 1999 became Director of Biological Studies before being appointed Academic Director of the College of Medicine, Biological Sciences & Psychology in 2009. In 2012 he was elected to a personal chair as

Professor of Bioscience Education, taking up the roles of Academic Registrar in 2014 and Pro-Vice-Chancellor (Student Experience) in 2015.

Jon has led a number of projects in the areas of assessment & feedback, academic integrity, retention and the student experience. He has engaged actively with the QAA, the HEA and the Royal Society of Biology and is a member of the Executive Committee of the Heads of University Biological Sciences. Jon was recognised as UK Bioscience Teacher of the Year in 2011. He was subsequently awarded a National Teaching Fellowship by the Higher Education Academy in 2012 and Principal Fellowship in 2013.

When not at his desk, Jon is a choral conductor and singer and also a keen cyclist, having clocked up over 50,000 miles for his work commute.

Talk: 'Academic Integrity: Institutional Strategies'

Whilst levels of concern regarding plagiarism have remained high in higher education, over recent years there has been an evolution in institutional thinking and strategic approach to academic integrity in higher education. This has involved a transition from dealing with plagiarism *per se*, to developing more holistic approaches to academic integrity which engage with students and staff. As such the emphasis has moved from deterrence to education and curriculum design. In this discussion we will reflect on the landscape within UK higher education, how these approaches have been developed and are being incorporated into institutional strategies.

Dr Phil Newton - Swansea University



Professor Phil Newton is the Director of Learning and Teaching for the Swansea University Medical School, where he also teaches neuroscience. His current research interest is in the application of evidence-based policy and practise across all areas of Higher Education, in particular academic integrity and the use of 'ghostwriters' by students.

Talk: 'Essay Mills'

Almost any assessment can now be 'purchased' - students can pay someone else to do it for them. This includes essays, exams and even PhD theses. These services are cheap, widely available and appear to be widely used. A variety of approaches are required to tackle this issue, which has the potential to undermine quality and standards across the sector. Professor Newton will describe recent research in this area and invite participants to share their experiences and views

Irene Glendinning - Coventry University



Irene Glendinning is a semi-retired computer scientist who has spent the last 25 years of her career working as an academic at Coventry University. During this time, through successive roles as manager and coordinator for undergraduate, international and then postgraduate taught programmes, she developed a strong interest in quality assurance and academic integrity. In 2007 she was appointed to her current role on student experience and also became actively involved in partnership work with a large network of European partner institutions. In 2010 she became Principal Investigator and project leader for the EU-funded (Erasmus

Lifelong Learning Programme) IPPHEAE project, the main focus of this presentation. More recently she has been developing a toolset to support the evaluation and development of institutional policies and systems for academic integrity. She is planning to submit her PhD thesis (on Academic Integrity policies) in May 2016.

Talk: ‘European Perspectives’

Results from an EU funded study conducted between 2010 and 2013 threw light on policies and systems in 27 EU member states to address plagiarism and academic misconduct in higher education (HE). Findings from the IPPHEAE Project (Impact of Policies for Plagiarism in Higher Education Across Europe) revealed that, despite the progress made through the Bologna Process, academic quality and integrity in HE vary greatly in different parts of Europe.

Findings were based on about 5000 responses from on-line questionnaires, available in 14 different languages, plus semi-structured interviews and student focus groups. Comparing the results using a purpose-built tool called the Academic integrity Maturity Model (AIMM), the UK scored highest of the 27 countries in the study. However, as this presentation will demonstrate, this apparently positive outcome provides no reason for complacency by UK HE institutions.

Dr Erica Morris - Anglia Ruskin University



I am a Principal Fellow of the Higher Education Academy (HEA), and a Section Editor and author for the *Handbook of Academic Integrity* (2016). I recently was the Deputy Head of Anglia Learning and Teaching, and am currently working freelance as a Lead Consultant for Anglia Ruskin University and an HEA Academic Associate. At the HEA, I was the Academic Lead for Assessment and Feedback (2011-14) and a Senior Adviser, leading the Academy JISC Academic Integrity Service (2009-11). I have an interdisciplinary background in educational technology, statistics education and developmental psychology.

Talk: ‘Re-examined: Designing out Plagiarism’

The focus of this presentation is the concept of ‘designing out’ plagiarism and other forms of unacceptable academic practice through assessment design. Over the last 15 years, research and educational perspectives in the field of academic integrity have pointed to how assessment strategies can be used to minimise opportunities for student plagiarism (Bloxham and Boyd 2007; Carroll 2007; Morris et al. 2010). Good practice guidance for assessment design has, for example, stressed the value of using original assessment tasks and formative activities that can lead to assessing the process of learning. Through considering a teaching and learning approach for academic integrity (Bertram Gallant 2008; Morris 2016), the concept of ‘designing out’ plagiarism will be re-examined, and questions

will be explored relating to the enhancement of assessment practice in higher educational contexts.

Gill Rowell – Turnitin



As Education Manager for Turnitin based in our International office in Newcastle I am responsible for building relationships with academic colleagues worldwide in order to promote and initiate conversations about academic integrity through using Turnitin. I was part of the initial national approach to promoting academic integrity in the UK Higher Education sector, and now share my experiences and good practice with colleagues in other regions. As a former librarian I am particularly interested in information literacy and helping students to make informed and ethical choices about the resources they use in their studies.

Talk: ‘Plagiarism and beyond. The Turnitin journey: where are we now?’

More and more in the UK Higher Education sector we see how the academic discourse has moved on from one of negativity which focuses on student misconduct to one of positivity where academic integrity is rightly rewarded and encouraged. This transformative process has in part been supported by the widespread implementation of Turnitin which has arguably equipped institutions with the tools to allow their teachers to focus on teaching and learning rather than policing. For this reason the UK is held up as an example of good practice in this area and is at the forefront of developing a global community of practice in academic integrity. Accordingly Turnitin itself as a global company has also undertaken quite a journey since its origins in the US in the late 90s as this discourse on academic integrity has informed development of both the product and the company strategy. Recent weeks have seen the launch of Turnitin Feedback Studio which reinforces this positive emphasis on developing students’ academic writing skills. This session will place the UK approach to academic integrity in an international context and will explore these latest product developments.

Dr Heather McQueen - University of Edinburgh



Heather McQueen is Senior Lecturer and Associate DoT in the School of Biological Sciences, University of Edinburgh, and has been the CAMO (main point of contact for academic misconduct issues within the College of Science and Engineering) since 2011. Heather’s pedagogical and public engagement projects include the “Gene Jury” project for school pupils, investigating online collaborative learning using “Peerwise” and the “Plagiarism meets Facebook” project discussed here. She was a finalist for the HE UK Bioscience teacher of the year 2014. Currently Heather is on

secondment to the Institute for Academic Development, conducting a two-year project on flipped learning.

Talk: ‘Plagiarism: The Student View’

Plagiarism happens. Students that are investigated for plagiarism commonly explain that they did not realise that they were plagiarising at the time, and sometimes seem unaware, even during interview, that this was the case. Of course these represent the extreme transgressors, far from the path, but do the rest of the students all have clear conceptions that are guiding them to avoid poor scholarship, or have they just been lucky? And what about the increased use of social media, such as Facebook, in the learning environment? Does this provide new breeding ground for academic misconduct or are students savvy to this potential risk? Most Universities expect students to have read Institute guidelines, but have they? The guidelines are often far from riveting. If we want to know what students really think, the best way seems to be to ask them. Here I describe a series of focus groups followed by an online survey that aimed to understand our students’ attitude towards plagiarism, including identifying common student concerns and misconceptions. The results will be discussed and I will explain how the co-creation of a student-friendly plagiarism-intervention-tool for Facebook was integrated throughout the project by design.

Professor Malcolm Dando - University of Bradford



I trained originally in Zoology (BSc., Ph.D at St Andrews) then after post-doctoral work in the USA I held Fellowships at the University of Sussex that were funded by the MoD. I moved to the University of Bradford in 1979 and worked on Nuclear arms control in the 1980s. Since the early 1990s I have worked on strengthening the Biological and Toxin Weapons Convention, and latterly also on the Chemical Weapons Convention. My presentation at the HUBS Meeting is concerned with two books I helped to edit over the last 18 months. These books are intended to help life scientists who want to better understand the problem of dual-use/biosecurity and to incorporate some aspects of that issue into their teaching. My current work is concerned with the dangers that advances in neuroscience will be subject to hostile misuse (*Neuroscience and the Future of Chemical-Biological Weapons*, Palgrave, 2015).

Talk: ‘Preventing Biological Threats’

Biological threats can arise from natural, accidental and deliberate sources. Considerable attention has been paid to laboratory biosafety and increasingly to laboratory biosecurity, but much less attention has been paid, despite the on-going debate about dual-use research, to the possible deliberate malign misuse of the results of benignly intended research in the life and associated sciences. It is generally considered necessary to build and maintain an integrated ‘Web of Prevention’ including, for example international arms control agreements effectively implemented nationally, export control systems and measures to promote a biosecurity culture in order to minimise the possibility of such misuse. Dealing with such

deliberate misuse has been a major topic in recent discussions by States Parties to the Biological and Toxin Weapons Convention (BTWC) and awareness raising and education of life scientists about biosecurity and dual-use has frequently been seen as an essential component of the web of preventive policies. Indeed, the UK has argued that a States in compliance with the BTWC would have in place policies including:

- Sustained measures to promote awareness of the Convention and its requirements in the scientific community and to promote a culture of responsibility;
- Effective oversight processes for relevant dual-use research and development programmes; and
- Regular engagement with academia and civil society on issues related to the Convention.

This presentation briefly reviews the contents of two books produced over the last 18 months with a grant from the UK and Canada under the Global Partnership Programme. The books, *Preventing Biological Threats: What You Can Do* and *Biological Security Education: The Power of Team Based Learning* are freely available online and are intended to assist in the development of a widespread culture of responsibility about dual-use and biosecurity, including through the teaching of these subjects at University levels. The presentation also discusses pilot implementation studies of the Team Based Learning approach recommended for the efficient and effective use of the material.

Professor Sean Ryan – Higher Education Academy (HEA)



Sean is currently Professor of Astrophysics at the University of Hertfordshire, where he led the School of Physics, Astronomy and Mathematics from 2006-2015. In December 2015, he took up a two year secondment to the Higher Education Academy as Head of STEM.

Sean has an international career spanning four continents. His first decade was in research and infrastructure roles including a Hubble Fellowship (Austin, Texas) and staff roles at the Anglo-Australian Observatory (Sydney, NSW) and Royal Greenwich Observatory (Cambridge, England). He moved into higher education in 1999, taking up a lectureship with the Open University, and joined the University of Hertfordshire in 2005. He has now acquired a decade and a half of HE experience as an academic, researcher and academic leader, including Associate Dean and Head of Department roles at the Open University, and Head of School and Dean of Schools roles at the University of Hertfordshire. Teaching responsibilities have included laboratory and theoretical physics and astrophysics, professional skills, and financial and actuarial mathematics. He has supervised eight MSc and PhD students in astrophysics, and has published 100 refereed papers in the field, with a Hirsch index of 46.

Sean has also supported other educational and professional bodies including being a Higher Education Expert Panel member for AQA (2012-1014), chairing the Quality and Standards Committee of the Hertford Regional College (2011-2013) and he currently undertakes a

number of roles with the Institute of Physics. He has held, or still holds, a number of academic advisory roles in UK and overseas universities.

Talk: ‘The TEF: Achieving and demonstrating teaching excellence’

The evolution of the Teaching Excellence Framework (TEF) can be traced through government policy on HE from the Dearing Report (1997), through the Clarke white paper on HE (2003), and on to recent Conservative government policy (2015-2016). Its introduction in 2016, and expected staged expansion in 2017 and 2018, seeks to recognise and reward excellent teaching in universities, and to drive up quality by market forces, i.e. student choice. Published responses to the Green Paper in early 2016 indicate broad support for these principles, but concern over some of the possible metrics. The technical consultation (spring/summer 2016) is awaited. As a non-regulatory body, the HEA will continue to support universities and individual academics in transforming teaching and inspiring learning, with a stronger discipline focus than in recent years.

Professor Andy Miah - University of Salford



Professor Andy Miah, PhD (@andymiah), is Chair in Science Communication & Future Media, in the School of Environment & Life Sciences, at the University of Salford. Professor Miah has provided advice for various government inquiries and currently sits on the Scottish Government’s Ministerial Advisory Group for Digital Participation. Previously, he advised the British Government’s Science and Technology Select Committee on Human Enhancement in Sport, and the European Parliament on matters of

human enhancement. He is also a Board member of the Museum of Science and Industry in Manchester, the European City of Science 2016, and a steering group member and contributor of various art science festivals. He is renowned for his work in digital science communication, and a thought leader in technology-led communication in science. In 2015, he was presented with the UK’s national award for science communication by the BIG STEM network.

Professor Miah is also Global Director for the Centre for Policy and Emerging Technologies, Fellow of the Institute for Ethics and Emerging Technologies, USA and Fellow at FACT, the Foundation for Art and Creative Technology, UK. His research discusses the intersections of art, ethics, technology and culture and he has published broadly in areas of emerging technologies, particularly related to human enhancement. He has published over 100 academic articles in refereed journals and books, along with writing op eds for magazines and newspapers, such as the Washington Post and the Independent and has given over 200 major conference presentations. Professor Miah regularly interviews for a range of major media companies and in 2016, he publishes the long-awaited book ‘e-Sport’ with The MIT Press, the first book to approach the growing mixed-reality future of sports.

Talk: ‘Science Communication: A Pathway to Impact’

In 2016, the British Government's Science and Technology Select Committee launched an inquiry into science communication, identifying a lack of public trust in science journalism, but a high interest from the public in science discoveries. The inquiry comes 30 years after the influential Bodmer Report, which set out the terms by which scientists should be more publicly engaged. Thirty years since Bodmer, the methodology of science communication has become more sophisticated, the range of investments more varied and substantive, and the opportunities to develop science communication as a device for making research discoveries has grown. Yet, science communication is still under theorised philosophically, under exploited as a tool for research development and learning opportunities, and under evaluated in terms of public understanding. With the UK's Research Excellence Framework's focus on impact, the importance of radically re-thinking the role and purpose of science communication is more urgent. This paper outlines a manifesto for science communication, in an era where the science industries own the channels of communication, and where the event economy that underpins political priorities in cities can re-shape the potential of science communication to transform lives and promote a greater, critical understanding of what science does and what it should do.

Professor Adam Hart - University of Gloucestershire



Adam Hart is a scientist, author and broadcaster. He is Professor of Science Communication at the University of Gloucestershire and a regular presenter of science documentaries for BBC Radio 4 and BBC Television. An entomologist and ecologist, he is involved with three citizen science projects in partnership with the Royal Society of Biology including the Flying Ant Survey and the Starling Murmuration Survey. Professor Hart is a Fellow of the Royal Entomological Society, a Fellow of the Royal Society of Biology and in 2010 was made a National Teaching Fellow by the HEA.

Talk: *'Citizen Science - Everyone's a Winner'*

Citizen Science describes projects that foster and make use of research partnerships between professional scientists and members of the public. The last five years have seen an explosion of CS projects in many biological (and non-biological) disciplines including studies of the timing of events (phenology) and the distribution of organisms. The CS approach is a potentially powerful way to compile scientifically useful data. It also allows the enhancement of personal and institution profile as well as the raising of awareness for specific types of science, habitat, issue or species. Importantly, members of the public appear to benefit through participation. However, there are potential risks and costs to CS projects and their proliferation and these must be considered carefully if a CS approach is to be used effectively and responsibly.