

## **HE Bioscience Teacher of the Year 2019 Application Form**

### **Dr Dave Lewis - University of Leeds**

#### **1. Individual excellence in the development and implementation of teaching bioscience**

*In not more than 500 words please outline, with evidence (references are not included in the 500 word limit), how the candidate displays individual excellence in the development and implementation of approaches to teaching that have proven successful in promoting bioscience student learning and achievement*

70% of graduate recruiters view possession of employability skills as the most important attribute a graduate should possess [1]. I have developed both curricular and extracurricular opportunities for my students to develop these key skills, thereby enhancing both their learning experience and their employability.

Science and Society projects:

Recognising that the majority of bioscience graduates don't go onto careers in research I developed Science and Society final year projects as an alternative to wet laboratory-based projects. More closely match the majority of our graduate's career destination and enables them to develop key employability skills. Students undertaking these projects create and deliver interactive, curriculum-enhancing teaching sessions in local schools or during National Science Week. Excellent feedback from students (26% choose these as 1st choice of project), schools "Excellent, preparation students put in impressive" and external examiners "Truly exceptional project, a delight to read". Invited speaker (Physiological Society [2], UK Centre for Biosciences), published case studies (UK Centre for Bioscience [3], Leeds University Casebook), delivered conference presentations (e.g. Engage\_2011, US Society for Neuroscience [4]) concept and materials adopted by colleagues elsewhere (Bath, Napier, Sheffield)

In-vivo sciences

Global shortage of in-vivo scientists. Less than 150/8000 UK life sciences graduates receive training in in-vivo sciences. Developed innovative final year module which provides education and hands-on experience of in-vivo techniques [5], one of only six such undergraduate modules in the country. Industry sponsored (BPS/Integrative Pharmacology Fund, 2005-2011, £25,000). Excellent feedback from students "Tremendous insight into in-vivo work", external examiners "important component of their training as neuroscientists" and sponsors "novel, innovative, provides excellent learning" Graduates extremely employable (2010-11, 10/15 started PhD studentships or careers in Industry). Two students subsequently undertook in-vivo final-year projects in my lab, winning national awards/recognition (McGoldrick, British Neuroscience Association Undergraduate of the Year 2008; Darbyshire, shortlisted Science, Engineering and Technology (SET) student Awards 2009). Another

module graduate (Cooper) winning the 2011 SET Pharmacology student of the Year Award [6]

### Ethics

Ethical awareness and ability of graduates to be able to think through ethical issues which may arise in the workplace a key requirement for graduate recruiters [7]. Provision of ethics training a University of Leeds learning and teaching strategic objective, with ethical awareness viewed as a key attribute of a Leeds graduate. Faculty's ethics champion, personally developing and delivering ethics training across all the Faculty's undergraduate and postgraduate programmes. As Chair, University Research Ethics Training Steering Group, have a substantial input to the development of ethics education/training for staff and students across the University.

### Educational internships

2011 CBI skills report recommended that Universities provide extracurricular opportunities for students to develop employability skills [1]. In response, obtained funding from Leeds for Life Foundation (£4800), University Academic Development Fund (£6000) and Faculty (£10,000) to develop 2 programmes of educational research internships, one to assist in educational research activities of members of University of Leeds Biosciences Education Research Group, the second, for interns to work in partnership with staff to develop educational resources/curriculum. Both activities producing resources/outcomes which enhance the learning experience of students across the Faculty. These internships are extremely popular, the latest round attracting 65 applications from across the Faculty.

1. CBI Education & Skills survey (2011)  
[http://www.cbi.org.uk/media/1051530/cbi\\_edu\\_education\\_skills\\_survey\\_2011.pdf](http://www.cbi.org.uk/media/1051530/cbi_edu_education_skills_survey_2011.pdf)
2. Lewis D.I. (2011) <http://www.physiology2011.org/programme/symposia/teaching.html>
3. Lewis D.I. (2009) <http://www.bioscience.heacademy.ac.uk/ftp/casestudies/lewis.pdf>
4. Deuchars, S.A., Bielby-Clarke K.E., Haigh C. & Lewis, D.I., (2010) Soc Neurosci Abs 40: 25.12
5. Lewis, D.I., et al. (2007) A new, low-cost approach to teaching integrative techniques to undergraduate students. Proc Life Sci PC68
6. SET Awards winners (2011) <http://www.setawards.org/set/newstpl.php?pid=228>
7. Cade A (2008)  
<http://www.heacademy.ac.uk/assets/documents/sustainability/EmployableGraduates2008.pdf>

## **2. Involvement in scholarly and professional development activities**

*In not more than 500 words please describe all scholarly or professional development activities that the candidate has undertaken, which have influenced and enhanced the learning of bioscience students*

### Professional Development

Regularly reflect on teaching practices and review feedback from students, colleagues, external examiners and from my scholarly outputs (2011: £91,000 in Educational/public engagement grants, invited speaker 4 conferences, tutor 3 CPD workshops, external lecturer, textbook chapter, 2 full publications and 2 in press, 2 case studies/briefings, 9 conference presentations)

to inform and improve my teaching materials and my students learning experience. Undertake personal professional development through attendance on internal training workshops (e.g. Blackboard, Articulate presenter, PGCLTHE mentor) and educational conferences /workshops (2011: Effective Learning in the Biosciences, Physiological Society).

#### In-vivo sciences:

International reputation for providing an innovative education in in-vivo sciences. Surveyed training in animal welfare/ethics within UK UG/PG programmes (£1450, NC3Rs/LASA) culminating in national/international conference presentations (US Society for Neuroscience [8], BPS, LASA) and publication of OER of training materials "Animal Welfare, ethics and 3Rs". Excellent feedback "congratulations on excellent resource- both format and content". Resource adopted by professional bodies (Physiological Society, BPS, LASA [9]). Invited speaker international/national conferences on use of animals in education (8th World Congress on Alternatives [10]; LASA), to run training workshops in research animal ethics (World Fisheries Congress, Animal Welfare, Law & Ethics Conference, British Pharmacological Society & British Association of Psychopharmacology CPD workshops, Universities Training Group), published chapter in textbook "Effective Learning in Biosciences"[11], contributed to Centre for Biosciences ethics resource and full paper in press. Currently developing wiki of OERs in in-vivo sciences with Physiological Society & IUPHAR (£10,000, University Teaching Fellowship).

#### Outreach and public engagement:

Delivery of high quality public engagement activities critical in attracting best students into the Biosciences, particularly from WP backgrounds, fulfilling University Access agreements and also promoting Faculty/University teaching/research. Undertake substantial schools outreach activities (2010-11: 25 sessions, 30-130 pupils per session), principally on ethics of animal research. Gather young people's opinions on animal studies which have published as full paper (in press), invited speaker national/international conferences (Animal Welfare, Law & Ethics; 8th World Congress on Alternatives [12]) and presented at conferences (Physiological Society [13]). Awarded Wellcome Trust Peoples Award (£29,905) for 3 events (schools workshop, debate and public exhibition) on physiology and pharmacology of performance enhancement.

#### Open Educational Resources:

Increasing realisation amongst HEIs of value and benefits of sharing OERs in order to enhance student learning experience. Actively involved in the development and dissemination of OERs. Discipline Consultant UK Centre for Bioscience OeRBITAL project [14](discovery, evaluation, dissemination of OERs in Biosciences via project wiki). Disseminated outcomes via 3 conference presentations (Physiological Society, Effective Learning in the Biosciences, UK Centre for Biosciences). Awarded short-term SCORE (Support Centre for Open Resources in Education) Fellowship and JISC/HEA grant (£20K) to embed OERs into student education across the University of Leeds. Published OER of educational resources in animal welfare, ethics and 3Rs, currently developing wiki of OERs in in-vivo sciences. In partnership with colleagues at Leeds and student educational interns, developing OERs in sport and exercise sciences for the benefit of both our own students and students elsewhere. Another intern evaluating Pharmacology OERs for International Union of Basic and Clinical Pharmacology

8. Lewis, D.I. & McAndrew T (2010). Soc Neurosci Abs 40: 26.06

9. Lewis D.I. (2009) <http://www.lasa.co.uk/3Rs%20resource%20e-version%20Dec09s.pdf>

10. Lewis DI (2011) [http://www.wc8.ccac.ca/files/Session\\_III-1\\_Info.pdf](http://www.wc8.ccac.ca/files/Session_III-1_Info.pdf)

11. Lewis DI (2011) In-vivo sciences in Effective Learning in the Biosciences. Ed: Adams, DJ. Wiley
12. Lewis DI (2011) [http://www.wc8.ccac.ca/files/Session\\_II-1\\_Info.pdf](http://www.wc8.ccac.ca/files/Session_II-1_Info.pdf)
13. Lewis DI (2001) Proc Physiol Soc 23, PC3  
<http://www.physoc.org/proceedings/abstract/Proc%20Physiol%20Soc%2023PC3>
14. OeRBITAL [http://heabiowiki.leeds.ac.uk/oerbital/index.php/Main\\_Page](http://heabiowiki.leeds.ac.uk/oerbital/index.php/Main_Page)

### 3. Supporting colleagues and influencing learning

*In not more than 500 words please provide evidence of how the candidate supports colleagues and influences bioscience student learning beyond their department and institution*

Mentoring and supporting colleagues:

Within University of Leeds, mentor colleagues on Postgraduate Certificate in Learning and Teaching programme and for their University Teaching Fellowship applications, Deputy Leader University of Leeds Biosciences Education Research Group [15]. Nationally, founded "Bioscience Mentors" [16], an e-mentoring group for colleagues on Teaching and Scholarship focused career paths, mentor colleagues in public engagement for Understanding Animal Research, organised and delivered teaching and scholarship career development workshops for HEA UK Centre for Biosciences (2010) and Physiological Society (2011) [17]. Responsible for Physiological Society's annual teaching development workshop and co-convenor of its Education and Teaching Theme [18]. Invited speaker Learned Society continued professional development courses in in-vivo sciences (British Association of Psychopharmacology's Pre-clinical Certificate, British Pharmacological Society Advanced Diploma in Pharmacology). Actively disseminate my learning and teaching practices and make my teaching materials freely available to colleagues. (details see 4 above)

Developments in learning and teaching nationally and internationally.

Substantial engagement with learning and teaching developments in physiology and pharmacology, both nationally and internationally, through my involvement with Learned Societies/Professional Bodies e.g. in-vivo sciences (see below); Co-convenor, Physiological Society Education and Teaching Theme [18] (administration and development of the Theme including organisation of the Teaching Symposium at Society's annual meeting), Member, Physiological Society Education and Outreach Committee; Member, Local Organising Committee International Union of Physiological Sciences Teaching Satellite Meeting (Bristol, 2013); Member, British Pharmacological Society's Education and Training Committee; Faculty representative, HEA UK Centre for Biosciences; Panel Member QA Periodic Review (2011) Department of Biological Sciences, University of Hull.

National/international developments in education in in-vivo sciences.

Chair, International Union of Basic & Clinical Pharmacology's Integrative & Organ Systems Pharmacology Initiative (IUPHAR IOSP, provides short courses in in-vivo sciences in home country/region for colleagues in developing countries. currently co-organising courses in Cuba & Nigeria); Member, Association of the British Pharmaceutical Industry /Office of Life Sciences in-vivo task forces 2008 & 2009 (developing national UG/PGT core curricula in in-vivo sciences); Chair, British Pharmacological Society's In-vivo Training Committee (provides funding and support for undergraduate modules in in-vivo sciences), Member, Integrative Pharmacology Fund Steering Group (£M Industry fund to support in-vivo education/research in UK HEIs); Represented Physiological Society and British Pharmacological Society on Society of Biology's Academic Framework working party, principal author in-vivo sciences accreditation criteria; Member Society of Biology in-vivo sciences degree accreditation panel. External Lecturer animal welfare/ethics, University of Chester; Member, University's Training Group Quality Assurance

and Accreditation Committee (one of the 3 Bodies nationally which accredits mandatory training under the Animals (Scientific Procedures) Act for the UK Government). Further influenced bioscience student learning outside of Leeds through my development and dissemination of open educational resources to support education and training in in-vivo sciences (see 4 above).

15. ULBERG <http://www.fbs.leeds.ac.uk/research/ulberg/index.php>
16. Bioscience Mentors  
<http://www.bioscience.heacademy.ac.uk/funding/recognition/mentors.aspx>
17. Lewis D.I. & Roe S (2011) <http://www.physoc.org/higheredworkshops>
18. Physiological Society Education and Teaching Theme. <http://www.physoc.org/education-teaching>