

**BIOCHEMICAL  
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# Evolving molecular bioscience education

25-26 May 2023 • The Hive • Manchester, UK

Report by Daniel R. Dries, Chair, Fellowships Committee (USA)

The Biochemical Society, jointly with FEBS and in association with IUBMB, held a two-day conference in Manchester, England, at the end of May titled “[Evolving molecular bioscience education](#).” Sessions focused on building more inclusive and more engaging learning environments, student assessment, and building communities of practice that help sustain instructors, staff, and students. Each session concluded with small-table discussions where attendees could extend conversations with each of the session’s speakers. Moreover, the Biochemical Society, FEBS, and IUBMB

– along with LearnSci, who sponsored the event – also had time throughout the meeting to share with attendees the wonderful opportunities each of their organizations brought to the biosciences classroom and instructional laboratories.



## Scientific Program: Day One

The conference kicked off with a keynote by Dr. Barry Ryan (Technological University Dublin, Ireland), who used his own professional development as a case study in the adoption of evidence-based practices, from the classroom to whole programs and back into the classroom. Dr. Ryan’s talk brilliantly transitioned into the first session, titled “Practical solutions for improving inclusivity and accessibility of bioscience education.” Dr. Helen Watson (University of Plymouth, UK) kicked off the session by discussing the new Subject Benchmark Statement for Biosciences by the Quality Assurance Agency for Higher Education (QAA), paying particular attention to benchmarks that identify the need for inclusive learning environments. Dr. Carl Larsen (University of Liverpool, UK) next spoke about student-faculty partnerships in co-curricular activities to build more equitable learning spaces. Dr. Jacqueline Nairn (University of St. Andrews, UK) closed out the session using directed evolution as a metaphor for the exclusionary structural barriers institutions impose and which result in – by design – selection for a particular type of student. Dr. Nairn also shared with the audience a staff guide assembled by the University of St. Andrews on decolonizing teaching in biology.



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Following a lunch, Dr. Dan Dries (Juniata College, USA) kicked off the afternoon session titled “Evaluating, understanding, and promoting student engagement.” Dan shared how authentic inquiry instructional laboratories can facilitate students’ adoption of a science identity through the framework of the Self-Determination Theory of motivation. Dr. Elliott Stollar (University of Liverpool) next shared a program to develop the cognitive, psychomotor, and affective skills of teaching laboratory demonstrators/teaching assistants. Dr. Janet Horrocks (Abertay University Dundee, UK) closed the session by

discussing a micro-credentialing program to facilitate students’ transition to college and their sense of belonging. Focusing on academic and career outcomes, the program features two foundational modules, with students free to select additional modules most relevant to him/her/them.

Day One of the conference closed with flash talks selected from poster abstracts, followed by a poster session and a buffet dinner. Flash talks for Day One included Dr. Nigel Page (Kingston University London, UK), who discussed intentionally building in a peer support network for the development of students’ professional development in psychosocial skills; Dr. Kate Hammond (University of Liverpool, UK), who brought to the audience an awareness of the challenges that students with autism face in practical laboratories; and Dr. Renee Vancaenenbroeck (University College London, UK), who shared a third-year immersive research project in which students develop a hypothesis, propose and complete an experimental approach, and present their work, all within a growth mindset to encourage belonging, autonomy, and authentic inquiry and exploration.

## Scientific Program: Day Two

Day Two began with a session titled, “Novel approaches to student assessment,” led off by a talk from Dr. Stephen Rutherford (University of Cardiff, UK). Dr. Rutherford presented Erasmus+-sponsored work to engage students in reflective self- and peer-assessment using the Enhancing Equity, Agency, and Transparency in Assessment (EAT) framework. Next, Dr. Daniel Zahra (University of Plymouth, UK) challenged attendees to reconsider the ways in which



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instructors evaluate student performance, offering several different models for doing so. In particular, Dr. Zahra encouraged attendees to think of assessment not as looking for poorly performing students, but rather looking for poor assessments that do not allow students to demonstrate knowledge. The morning then session closed with an open discussion in small groups about the use of artificial intelligence in the classroom. Session Chair Helen Watson framed the discussion around AI as an inevitable tool with which instructors must learn to work; this set a positive tone for the discussion, allowing conversations to be constructive and productive.



Following tea, three more attendees presented flash talks on their work. First, Dr. Suzanne Ruddy (University College London, UK) contrasted the approach and behaviors of students in two very different first-year learning environments: one, a traditional lecture with high-stakes assessments; and the other, an exploratory active-learning classroom with zero mark but affirmation through peer recognition. Dr. James Connorton (University of Surrey, UK) then shared his experience running a remote collaborative online international learning (COIL) program in biochemistry between the University of Surrey and CEU San Pablo Madrid in which students from both institutions work in teams on a project-based learning activity on human disease. Dr. Timothy Pullen (Kings College London, UK) concluded the flash talks with a timely discussion of how to authentically assess students' abilities to write computer code

when students have access to generative artificial intelligence. A second highly interactive poster session was then held over the lunch break.





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The last session of the conference was titled, “Thriving, not just surviving: communities of practice for the development of teaching, considering both staff and students.” Dr. Jim O’Mahony (Munster Technological University, Ireland) shared how his institution developed and sustained 50 learning communities since 2019, including identifying barriers to participation. Learning communities including both disciplinary and cross-disciplinary interests, such as active learning, entrepreneurship, and equity, diversity, and inclusion. Dr. Lu Mello (University of Liverpool, UK) complemented this discussion by talking about how “scholarship” is defined (often it is not), evaluated, evidenced, and supported, especially with respect to junior faculty. The day ended with Kate Hammond (University of Liverpool, UK) being awarded a prize for the best poster (sponsored by FEBS OpenBio) for her work in bringing an increased awareness to how students with autism experience practical laboratories.



IUBMB would like to commend all of the organizers on an incredibly successful biosciences education conference. In particular, IUBMB wishes to thank Dr. Helen Watson, Dr. Lu Mello, Dr. Ferhan Sağın, and Dr. Dan Dries for organizing the conference. IUBMB also wishes to thank the Biochemical Society for inviting IUBMB as a partner and FEBS for the partnership in producing such a wonderful and sorely needed education conference. And finally, IUBMB wishes to thank all the staff both at the Biochemical Society and at the host venue for all their energy and work to producing a seamless meeting.

**Co-organizers Lu Mello (Biochemical Society), Dan Dries (IUBMB), and Helen Watson (Biochemical Society).**

*Not pictured: Ferhan Sağın (FEBS).*

*IUBMB offers a variety of mechanisms for supporting the professional development of educators in biochemistry and molecular biology. To learn more, please visit [iubmb.org](http://iubmb.org) to find out more about the [IUBMB Educational Activities](#) and the [IUBMB Tang Education Fellowships](#).*