FACULTY OF LIFE SCIENCES
DIVISION OF BIOSCIENCES
DEPARTMENT OF STRUCTURAL AND MOLECULAR BIOLOGY

Year 3 research project student-led inquiry labs with productive failure

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FEBS, Evolving Molecular Biosciences Education, Manchester, 2023

BURSARY

Year 3 Biochemistry BSc / MSci degree

120 credits

Literature Review Project in Molecular Biosciences (BIOC0021)

Specialist Research Project in

Course-based undergraduate research experience

Scalability and standardization

80-100 students

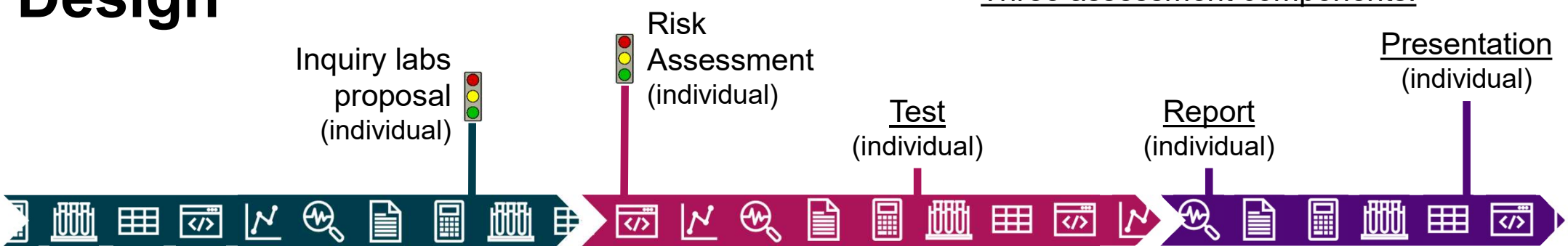
Metagenomics (BIOC0023)

Protein Structure and Function (BIOC0029)

20-30 students

Design

Three assessment components:



Term 1 (Oct-Dec, 10 weeks)

Orientation

- Learning lab techniques and data analysis
- Writing own protocols from provided selected papers and manufacturer's manuals through guided groupwork in tutorials
- Testing protocols and getting acquainted with lab set-up and safety

Term 2 (Jan-Mar, 10 weeks)

Inquiry: *reproduce, modify, or build on existing, self-chosen, peer-reviewed research (individual)*

- Gaining hands-on insights into real-life aspects of design, planning, testing, failure and troubleshooting, and reproducibility *(= the process of science)*
- Helping and learning from others through sharing experiences, setbacks, and successes

Term 3 (Apr-Jun, 7 weeks)

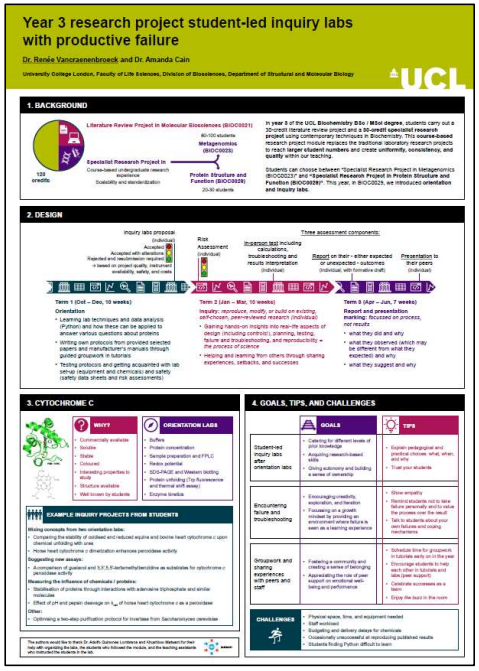
Report and presentation marking: *focussed on process, not results*

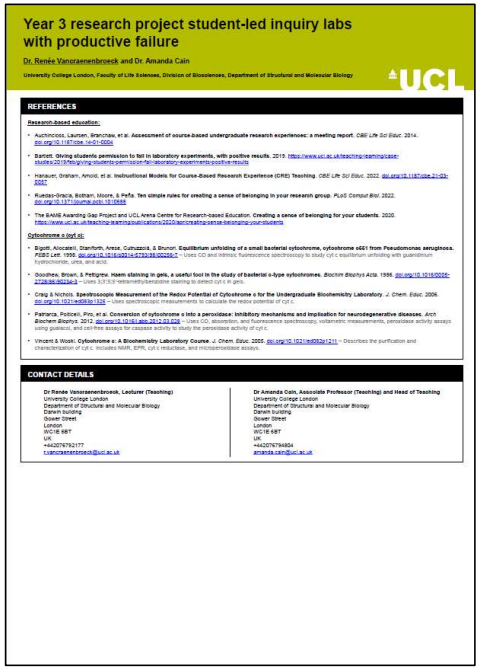
Goals, and challenges

Student-led inquiry labs after orientation labs	Encountering failure and troubleshooting	Groupwork and sharing experiences with peers and staff
• Catering for different levels of prior knowledge • Acquiring research-based skills • Giving autonomy and building a sense of ownership	• Encouraging creativity, exploration, and iteration • Focussing on a growth mindset by providing an environment where failure is seen as a learning experience	• Fostering a community and creating a sense of belonging • Appreciating the role of peer support on emotional well-being and performance

Challenges	Physical space, time, and equipment needed; budgeting and delivery delays for chemicals; staff workload; students finding Python difficult to learn

More information





PDF of poster
References
Contact details