

Franklin PhD programme

The Rosalind Franklin Institute (The Franklin) is a new national institute funded by the government through UK Research and Innovation (UKRI). The Franklin consists of a hub at Harwell Campus with partner spokes at leading UK Universities, including University of Edinburgh (UoE). The principal goal is to bring about transformative changes in technologies which will allow us to see the biological world in new ways: from single molecules to entire systems. The insights generated will speed up drug design and development, and push forward our understanding of human health and disease. Research is focused into five complementary themes: Artificial Intelligence and Informatics; Biological Mass Spectrometry; Correlated Imaging; Next Generation Chemistry; Structural Biology.

Franklin PhD students are immersed at the Franklin hub as a cohort where they experience a vibrant, cross-disciplinary research environment that draws strength from a network of UK academic partners and industrial collaborators. This combination of features (the immersion, the cohort, the cross-disciplinarity, the hub network) is unique. The main programme aims are: To achieve an outstanding student experience marked by excellence in science, technology, training and mentorship; Graduation of doctoral students with a technology focussed skillset leading to employment in high-value academic and industry positions; To make factors-of-ten difference in the technologies necessary to image life in multiple dimensions in order to unravel the mystery of infection and the body's response to it.

Structure & content

Year 1

Months 1-3 (Q1) consist of (A) three training strands and (B) research immersion.

Training strand A

The aim of the three training strands is to broaden out students who are coming from different undergraduate degree disciplines, to be able to work across different Franklin themes.

- (1) Core training necessary for PhD students: intellectual property, research ethics, EDI awareness, critical analysis of scientific literature, communicating research.
- (2) Scientific skills that are useful across disciplines: statistics, data management, programming (e.g., Python).
- (3) Theme-specific training: underlying principles of Franklin technologies.

Details on training offered in strand A1):

Compulsory

Research Ethics and Integrity, Library Skills.

One or two workshops from the following list:

DEVELOPING AS A RESEARCHER

How to be an Effective Researcher; Managing your Research Project; Seven Secrets of Highly Successful Research Students; Managing your Work, your Time, your Energy and your Goals; Getting Started with Postgraduate Research; Managing your PhD: School of Chemistry; Working with your Supervisor and Supervisory Team.

One or two workshops from the following list:

WRITING SKILLS

How to be your Best Editor; The Writing Process: Getting Started; Text Coherence, Structure and Argumentation; Writing a Literature Review; First year PhD writing workshop – School of Chemistry.

One or two workshops from the following list:

COMMUNICATION AND IMPACT

Writing and Designing your Academic Poster; Social Media for Impact- Strategy, Connecting and Metrics; Pitch Perfect – Public Speaking, Networking and Engaging.

Details on training offered in strand A2): Research Data Management; Introductory Statistics; Imaging: a Beginners' Guide to Imaging.

Details on training offered in strand A3): In the first three months of the PhD programme Y1, students complete Theme-specific activities. This is not formalised taught or assessed content, but flexible activities primarily designed to engage and challenge the students' thoughts on the research that takes place in each Theme. This promotes opportunities for students to become familiar with the expertise of various Franklin scientists. The activities include multiple ventures of various creative and interactive experiences including reviewing scientific literature (reviews or original research), seminars, workshops, case studies, problem solving, shadowing, group work and site visits to see infrastructure of Franklin technologies. The students explore research within each Theme, ask novel questions and work together. These activities take a maximum of 25 hours per week, and students also spend time each week preparing for activities (background reading).

Training strand (B)

Immersion of all students in the research groups of all 5 themes. This will involve increasing participation in group activities from attendance through to participation, e.g., in discussion and planning meetings. The immersion in Group activities of the five Franklin Themes (Training Strand B) is intended to give students a broad and deep view of the groups. Example activities include strategy meetings, health and safety meetings, review of scientific projects in the group, and specialised

seminars. Each group has its own structure and working practices, for example the balance between formal presentation versus round-table discussion. Students gain understanding of the best practices from each group. The immersion will promote cohort identity, giving students a shared experience. The immersion promotes participation, networking, and learning from a broad pool of researchers at different career points.

Months 4-6 (Q2): students will embark on a 3-month research project, developed on the basis of experiences gained in Q1, aiming towards co-creation of a PhD research plan. International students develop a 3-month project with a UoE academic supervisor. The 3-month research project is designed to give students a clear research objective in order to quickly achieve momentum in research. Students will gain the knowledge and tools to be able to begin planning their own research, with a view to developing their own research ideas. Close mentoring through supervisors, with the support network of their cohort peers and the Franklin Theme group, will promote the freedom and resilience needed for high-risk, high-reward research.

Students will complete a presentation (“project pitch”) in Week 10 of their project, on which they will receive feedback. This feedback helps shape a full PhD proposal, which students will formally present at their progression review following completion of their 12-week project.

Months 7-12 (Q3+4): students will continue to conduct research on the project with the continuing aim of co-creating a PhD research plan.

Year 2

In Years 2 to 4 students will continue to attend weekly Theme Group meetings, with increasing onus on leadership in group activities and discussion. Students will continue to conduct independent study and professional development, with the onus increasingly shifting to the student to identify training requirements and to act on them. Students will continue to record training and other activities such as public engagement and outreach.