

Time well spent: The four-year PhD neuroscience programme at UCL

SUMMARY

In the 1990s, the Wellcome Trust launched four-year PhD schemes in the UK. University College London – one of the first centres to compete successfully for Trust funding for the schemes – established a four-year PhD programme in the neurosciences in 1996. The programme has produced a cadre of highly successful scientists, and was awarded five years of further funding by the Trust in 2008.



Background

Traditional UK science PhDs run for three years. A student joins a lab, learns the techniques of the group and, with the lab head as their supervisor, devises a project to complete in the period. The drawback of this approach is that the student selects the supervisor and lab with limited knowledge of the field and the people involved. An alternative four-year approach – used in the USA – sees the students complete a Master's degree in a related subject and rotate through several labs before committing to a lab and a research project.

In the 1990s, the Wellcome Trust launched four-year PhD schemes in the UK, and Professor David Attwell at University College London was one of the first applicants to compete successfully for funding. The four-year neurosciences PhD programme at UCL was established in 1996.

The UCL PhD programmes in biomedical science cover a broad range of basic and clinical research – from molecular neurobiology to systems neuroscience and imaging. Around 30 per cent of England's contribution to the world's most highly cited neuroscience research is carried out at UCL, and 65 per cent of England's contribution to the top publications on neuroimaging is from UCL and associated hospitals.

Advance

The four-year PhD neurosciences programme is overseen by the UCL Graduate School. A committee of four neuroscientists, headed by Professor Attwell, selects the best students, provides guidance, and evaluates PhD plans and progress throughout the four years at UCL.

The first year of the programme consists of structured coursework, with some compulsory courses on contemporary neuroscience, library and database techniques, statistics, animal handling and ethics. Optional courses include management, thesis writing, radiation safety and a range of specialist neuroscience subjects.

The students also gain practical experience in their first year, choosing three neuroscience laboratories (out of the 66 available) in which to work for three months each. The aim is for students to experience different techniques and lab environments, preparing them to make an informed choice of PhD supervisor and to encourage an interdisciplinary approach to neuroscience. The following three years are spent focusing on their thesis work, although the students are also encouraged to go on further training courses in Europe and the USA, such as those run by the European Molecular Biology Laboratory and Cold Spring Harbor.

How it's making a difference

UCL's reputation as a leading neuroscience centre and the Trust's generous stipends have combined to attract high-quality applicants to the PhD programme. Each year, 150–200 applicants from UK and around the world compete for six places; 90 per cent of the selected students have first-class degrees. Both student and supervisor will experience working together before they commit to three years of the PhD project. The students themselves describe as outstanding the opportunity to try out supervisors and the theoretical and practical training.

Evaluation has shown that the four-year programme raises the productivity of students above that of three-year PhD programmes. For example, the programme's management committee looked at the productivity of ex-students nine years after they started their PhDs and found that scientists who trained on UCL's four-year programme published approximately twice as many papers as scientists who had been accepted for the scheme but opted to go elsewhere for their training. The same is true of scientists who studied on the four-year programme compared with those with the same supervisor who did a three-year PhD. The evaluation also shows that 95 per cent of the four-year students take up jobs in scientific fields after leaving (78 per cent to do postdoctoral research).

Next steps

The UCL four-year programme continues to attract high-quality students from the UK and abroad. The scheme currently funds six students each year and is looking to extend the opportunity to another two. The course is also being promoted to students with degrees in the physical sciences and mathematics, with the aim of training neuroscientists with a quantitative background.

In 2008, the PhD programme's management committee recruited an ex-student from the programme's first (1996) intake. Sarah Blakemore is now a Royal Society Dorothy Hodgkin Fellow at UCL, and brings first-hand experience of the programme to the running of the scheme.

Also in 2008, the Wellcome Trust awarded five years of further funding to the UCL programme, covering five studentships per year until 2013.

References

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Timeline of the four-year PhD neuroscience programme at UCL

