

The Sci-Phy-4-Health CDT Programme

Sci-Phy (pronounced Sci-Fi) will train cohorts of graduates from different scientific backgrounds together in a unique interdisciplinary programme that combines physical sciences, computer sciences and biomedicine and breaks down the boundaries between these disciplines.

Each Doctoral Research Student will be funded for four years and their research programme will be underpinned by a multi-disciplinary taught programme and enhanced by transferable and project management skills training, as well as Knowledge Transfer and Public Engagement of Science activities.

The students will apply their skills to address three key UK healthcare challenges:

- Trauma -the major killer of under 40s in the UK and over 65s
- Cardiovascular disease - the major killer of over 65s in the UK
- Ageing, a UK healthcare grand challenge.

Areas of physical science used to address these challenges will include:

- (i) New molecular & nanoscale compounds: probes, labels, sensors, diagnostics, therapeutics.
- (ii) Materials and fabrication: nano and microfabrication, microfluidics, sensors, biomaterials, prosthetics.
- (iii) New measurement platforms and techniques: detection, imaging, spectroscopy, microscopy, mass spectrometry.
- (iv) Data integration and handling.

Collaborations with 18 industrial companies, several national research institutes and a leading NHS acute Hospital are embedded in the programme to ensure developments have immediate impact on patients.

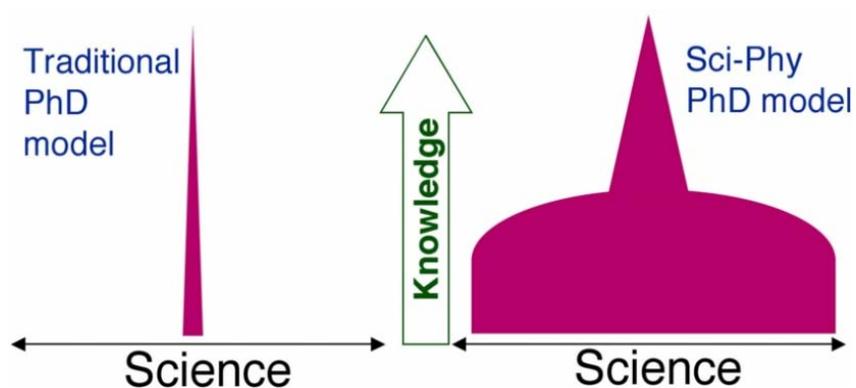
The Centre will train cohorts of students together and provides a supportive and exciting environment for students, building relationships between students, staff and industrial partners that will last far beyond the period of their doctoral studies.

The Centre will run from 2014-2022 and will train over 50 students. The £7M cost of the Sci-Phy Centre will be co-funded by EPSRC, The University of Birmingham and the industrial and public sector partners. The industrial partners will help to supervise students, offer placements and site-visits, deliver lectures as part of the training and monitor and advise on the training programme.

PSIBS Director, Professor Mike Hannon, who will direct the new programme, explains: “This unique interdisciplinary programme will underpin UK competitiveness in biomedical technologies. It addresses an identified need from our industrial partners for PhD scientists trained at the interface with biology and medicine, and able to communicate and research across these disciplines, such that they are flexible and innovative workers who can move between projects and indeed disciplines as company priorities evolve and change. The programme builds on our 6 years of success in which we have become a world leading centre for innovative doctoral research training. This year 80% of our graduates had secured employment even before they had completed their PhD studies, all in roles where they continue to apply the skills they have learnt to new biomedical challenges.”

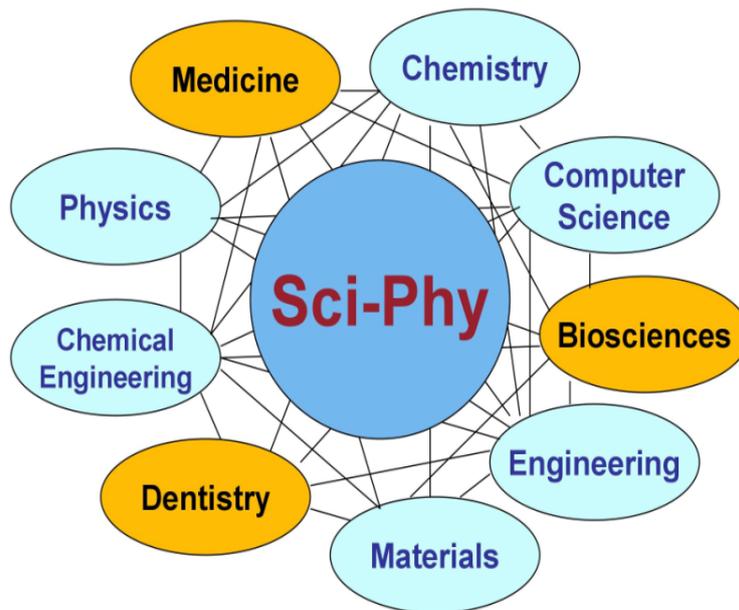
Further information about the course

The essence of our Sci-Phy programme is the training of a generation of scientists as interdisciplinary researchers with a broad skill-base who will be at the vanguard of developing physical science to contribute to future breakthroughs in biomedical sciences. Consequently the training programme we have developed, and are delivering, needs a structure inherently very different from the ‘traditional’ (very specialised, single-discipline) PhD.



Our Programme takes students from across the Engineering and Physical Sciences first degree programmes (chemists, physicists, computer scientists, engineers, mathematicians, materials scientists, natural scientists and bio chemists) and first (i) equips them with knowledge and practical experiences across the disciplines and highlights key scientific challenges (ii) gives them experience of working on interdisciplinary projects with multiple supervisors (iii) gives them experience of how to communicate across the disciplines and beyond.

Then the students build on this skills foundation within full research projects that have interdisciplinarity directly embedded into them, with each project required to have a physical science, a computer science and a biomedical science aspect within it and co-supervision from scientists from these three areas. Alongside this we develop the portfolio of other skills needed for a successful career, equipping them in a truly unique way to be future agents of change in UK science and beyond, and accentuating their competitive advantage.



The Sci-Phy CDT builds upon 6 years of experience of training physical scientists at the biomedical interface within PSIBS, and harnesses its unique training strategy that embeds physical science, computer science and biomedicine in every student and project.

In year 1

All students will study 6 taught modules as a cohort

- Molecules and materials in medicine
- Physical science analytical and measurement techniques
- Practical computing for data handling and analysis
- From bench to market- the development of biomedical techniques
- Introduction to cellular and molecular biology for physical students
- Medicine: physiology and disease processes

(60 credits)

Each student will do 2 different mini projects (3 months each) to learn core experimental skills across biomedicine and physical and computer science across our scientific scope. Students may choose a related project for their PhD thesis. The projects are selected by student choice but must be two distinct topics with different experiences: across the two projects the students must develop experimental skills in all these areas.

(90 credits)

All students undertake our bespoke Professional /Transferable Skills module as a cohort. This includes: Public understanding of science and press release training,

research skills, ethics in research and biomedicine, good clinical practice training, safety, a residential team skills course, IP protection and exploitation.

(30 credits)

In years 2-4 all students undertake an interdisciplinary research project involving physical science and computer science applied to a biomedical problem. They are supported by teams of co-supervisors drawn from across the three disciplines.

Ten fully funded 4-year studentships are available now for October 2014 entry. Suitable first degrees include Chemistry, Physics, Engineering, Materials Science, Biochemistry and Computer Science.

For further details contact our Programme Administrator Mrs Ann Smith on telephone number 0121 414 8808 or via email: psibs@contacts.bham.ac.uk