PhD applications

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LONDON
SCHOOL of
HYGIENE
&TROPICAL
MEDICINE

- Please keep mics on mute when not speaking;

- Use the chat box lots;

- Trouble with sound? Try leaving and coming back, try a different browser (avoid Edge or Internet Explorer);

- The session will be recorded and put on Moodle.

Global and Public Health Careers panel

Tues 29 Nov, 5.30 pm start. Panellists:

- **Agok Benjamin Madhier** – Nutritionist at ICRC (Public Health, 2020);

- **Ayodele Yvonne Akinnawo** – Sub-Pillar Lead, Data Management at WHO (Epidemiology, 2020);

- **Bessie Bulman** – Project Officer, Thrive LDN (Public Health, 2019);

- **Emily Bowler** – Programme Support Officer at The Mentor Initiative (International Public Health, 2021);

- **Matiko Riro -** Regional Technical Advisor, Health Financing at Clinton Health Access Initiative (CHAI);

- **Najwa Rizkallah** - Nutrition Sector Coordinator at UNICEF Syria (PhD);

- **Saul Johnson** – Head of Practice, Genesis Analytics;

- **Sophie Mathewson** - Specialist, Vaccine Policy & Investment at Gavi, The Vaccine Alliance (Public Health, 2009).

What we will cover

- What academic recruiters want;
- Personal statements;
- The academic research CV;
- Speculative approaches to supervisors;
- Research proposals.

For an overview of PhD schemes and opportunities see slides and recording of 'Finding and Funding a PhD'.

[Slides and recording are here on Moodle](#) (under 'Further study – recordings').

As with all applications, the golden rule with PhD applications is: what are they interested in?

- What skills?
- What experience?
- What knowledge?
- What motivation?
- What interests?

That tells you what to present in your application.

What are they looking for?

"We look for several things in applications.

First, **academic excellence**, usually a first or upper second. This is very important as our programmes are very challenging.

Second, **research experience**, the student has spent some time in the lab or doing research at the computer. They should be able to execute [work] in the lab – this is really important. Those [two] are what most programmes look for.

In addition, students have to be highly motivated.. a burning desire to achieve.. And generally **interested in doing our kind of research** [highly inter-disciplinary]"

(Dr QueeLim Ch'ng, Chair of the LIDo Research Training Committee)

Top qualities

1. Have ideas for research proposal or design (stated by nearly 80% respondents)

2. Prior first degree grade attainment

3. Prior masters attainment

4. Evidence of research skills

5. Other research experience

- Emphasis placed on **evidence of experience of research** rather than potential aptitude

- Excellent academic performance at masters level (esp. dissertation) may be used as key differentiator

(Findings from 2014 Survey by HECFE, surveying senior academics from 60 institutions, across disciplines)

Personal statement:

- Why you want to pursue a PhD, career aims;
- Why is this particular area of research of most interest to you?
- Why you have chosen to apply to this particular university, research group?
  - **Motivation**: provide examples to illustrate key points, have you read the papers? Do you have an opinion / ideas?
- What previous academic and practical experience have you got that shows your capability to successfully complete a PhD?
- Technical & methodological skills you have to offer;
- Academic & personal skills & qualities;
  - **Think key selling points** (not necessary to cover every skill needed), key examples – evidence;
  - **Think achievements.**

About the programme:

Representing a collaboration of five of the leading universities in the English Midlands, the consortium provides students with a unique opportunity to pursue innovative interdisciplinary research projects.

Disciplines: Cell biology, Neuroscience, Immunology, Developmental biology, Physiology, Structural biology, Chemical biology, Biotechnology, Microbiology, Genetics, Evolutionary biology.

In year one - research training that provides mathematical and computational skills to understand and model biological processes and function. In year one you will experience three, 2-month lab rotations
In years 2 – 4 you will work on your selected project
At any point in years 2 – 4 you will undertake a 3-month industrial placement

The hook

Commitment to programme

Relevant academic background

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Samantha Singh - Statement of Purpose:

[P1]The challenge of elucidating the complex interplay between neurons and the subsequent network computations is a compelling one. The implications of characterising these computations are vast and it represents one of the major obstacles in our understanding of the human brain. Such a challenge is attractive to me on a personal level because it allows me to address both my affinity for physiology and computer science. After considering the opportunities available on the Midlands Consortium Interdisciplinary Doctoral Programme (MCDIP) and the potential range of research projects, I am sure the programme offers the best platform on which to further my career in neuroscience and satiate my interests. To be able to complete two four-month research projects in different laboratories is especially appealing, as the breadth of research across the five universities is one of the greatest strengths of the programme. The work of principle investigators utilising computational modelling to investigate neuronal networks is of particular interest to me and I hope the programme will allow me to expand upon this.

[P2] My undergraduate degree in Biomedical Sciences at Kings College London focused on Pharmacology, Psychology and Mathematics. Elective modules such as Pharmacology of the Central Nervous System and Biological Psychology demonstrated the complexity of our nervous system, from neuronal networks to receptor properties. Other modules such as Stress, Immunity and Health, taught me how psychological factors can affect other parts of the human body via Hypothalamic-Pituitary-Adrenal axis-mediated cortisol release. I believe these modules established much of the core biological knowledge needed for a successful career in neuroscience. My final year dissertation focused on Major Depressive Disorder (MDD) and allowed me to utilise the knowledge and critical thinking skills I had developed during my degree. As a result I was able to analyse and investigate current scientific findings to produce a critical literature review. Not only did my undergraduate degree provide a firm foundation for further study in neuroscience, but my academic success was recognised by the award of a British Neuroscience Association first prize.

Research experience

[P3] While studying Biomedical Science I was keen to gain work experience in neuroscience and this was achieved during my research year at The University of California, Berkeley. My work there was predominately focused on the neuronal basis of MDD and the role of neuronal nicotinic acetylcholine receptors (nAChRs). It was this research year that inspired me to pursue neuroscience as a career. It was fascinating to be able to target just one subunit of a nAChR in a specific brain region and visibly observe its effect on animal behaviour. I was intrigued by the fact that such a minuscule change at the molecular level can influence complex behaviours like anxiety and depression. The research itself was structured in such a way that I was given the opportunity to be responsible for my own project and experiments, which generally involved behavioural testing, histology and microscopy. These data were then presented as a prize winning poster when I returned to Kings College. The experience enabled me to develop many core skills, such as data analysis and interpretation that are required to succeed in a research environment. In addition it demonstrated that I can apply myself to challenges, both academic and personal.

Other experience – transferable skills

[P4] Upon completion of my bachelor's degree I wanted to challenge myself and learn skills that would transfer well to neuroscience research. I identified computer programming and data analysis as suitable skills because I believe they are key elements of both current and future neuroscience research. As a result I accepted a position with the company Geotech Enterprise as a software developer. My primary role was to provide database solutions for a range of clients, including the National Health Service. Exposure to some of the possibilities of current computer technology opened my eyes to how it could be related to neuroscience. I believe that many future advances will be formed from the partnership between information technology and neuroscience, ranging from new analysis techniques to pragmatic artificial intelligence. Importantly my year at Geotech Enterprise was an excellent opportunity to experience working outside of academia. I gained valuable insight into the world of business and the inner workings of a variety of companies. The industry placements for PhD Students that is incorporated into the MCDIP is a unique chance to develop this further and guide my future career decisions.

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[P5] The culmination of all these experiences was my application to the Master of Science (MSc) Neuroscience course at Imperial College Lodnon, a leading contributor of neuroscience research. Currently I am in the process of studying for the taught part of the course while also working on a masters project in the Sherborne group at the MRC Laboratory for Cell Biology. My project is focused on producing and testing a computational model of layer 2/3 cells in the mouse barrel cortex. This is a particularly exciting component of the course because it is an opportunity to investigate neuronal circuitry on a practical level, which will in turn prepare me for future research in the field. It is also an ideal way to apply the computer programming skills I learnt at Geotech Enterprise to the world of neuroscience. The SysMIC course fits well with this as additional training in mathematical, computational and statistical techniques is ideal for the modelling of neuronal networks and the option of a tailored third module will be particularly useful for a PhD project in the field.

[P6] Taking these experiences into account I believe I would be well suited to the MCDIP with my biological and computational background as well as my knowledge of both academia and business. The programme itself is attractive for numerous reasons. Firstly, the sheer breadth of high quality research and number of universities participating in the programme is ideal for identifying a project suited to my interests and experience. Secondly, the taught components of the programme and the opportunity for experience in industry provide a strong foundation for a successful career in neuroscience. Finally and most importantly, the programme will help me to make an informed decision about whether to pursue academia or industry upon completion of a PhD

Commitment to programme

Summary and the future

Content analysis

- Emphasised relevant knowledge gained during academic studies & some research skills – critical thinking [P2];
- Highlighted an academic achievement (BNA prize) [P2];
- Relevant tech. skills in California lab & commitment to research [P3];
- Transferable skills gained from other work experience [P4] & evidence of interdisciplinary knowledge [P4];
- Highlighting nature of masters demonstrates commitment to discipline [P5];
- Additional research skills & experience highlighted [P5];
- Programme choice: Identifying elements of programme that fit with self development needs & usefulness [P5];
- How PhD fits with ideas of long term career [P6].

Academic CV

What key achievements and types of experience on the CV would make the applicant 'stand out from the crowd'? (survey of academics, 2013)

- Publication, presentations / public exhibition track record
- High grades
- Attended leading university / course
- Prizes / Awards
- Relevant work experience
- Outreach activity
- Societies set up
- Initiative / Proactivity
- Research project experience

Research CVs for Academia: Key Sections

Personal details

Education / qualifications

Research experience

Skills (specialist / technical)

Other work experience

Interests / hobbies

Referees

OTHER (as your academic career progresses)

- Publications
- Awards
- Relevant training
- Conferences / seminars
- Teaching / mentoring
- Public engagement
- Grants / funding
- Memberships
- Administrative duties

SAMANTHA A. SINGH

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Summary

Current postgraduate student with an interest in neuronal networks and computational modelling, particularly in relation to central nervous system architecture. Previous experience in a research environment at the Department of Cellular Physiology at The University of California, Berkley and the MRC Laboratory for Cell Biology at Imperial College London.

Education

MSc Neuroscience, Imperial College London   2017 – 2018

Modules - Receptors and Synaptic Signalling, Developmental Neurobiology, Systems and Circuit, Neuroscience, Cognitive Systems Neuroscience.
- Project - Computational modelling of Layer 2/3 neurons in the mouse barrel cortex
- Journal Club – Co-organiser of a series of lunch time discussions for current students reviewing recently published papers

BSc Biomedical Sciences, Kings College London   2014 – 2017

Key Modules - Pharmacology of the Central Nervous System, Stress, Immunity and Health, Mathematics for Scientists, Cognitive and Behavioural Psychology.
- First Class Honours, Programme Percentage = 75.15%
- Dissertation - 'The Resurgence in the Cholinergic Theory of Major Depressive Disorder and its Potential to Provide Novel Therapeutics.'
- Awarded a British Neuroscience Association first prize for academic achievement.

AS/A2 Levels, The Queen's School, Wembley, London   2012 – 2014
Mathematics A*, Chemistry A*, Biology A, AS: Geography A

GCSEs, The Queens School, Wembley, London   2009 – 2012
11 at grades A-A*, including Mathematics, English and Science

Research Experience

Masters Research Project, Imperial College London   Oct 2017 – Oct 2018

Currently conducting a 10 month masters project in the Sherborne Laboratory at the MRC Laboratory for Cell Biology, Imperial College London
- The project is focused on creating and testing a computational model of layer 2/3 neurons in the mouse barrel cortex.
- Involves application of PyDream bioinformatics software for parameter inference and extensive data analysis using MATLAB

Research Associate, University of California, Berkeley   Sept 2015 - May2016

Year-long industrial work placement in the Rutger laboratory at the Department of Cellular Physiology at The University of California, Berkley. Investigated the role of the cholinergic system in Major Depressive Disorder, using the mouse as a model system.
- Common experimental procedures involved viral stereotaxic surgery, behavioural paradigms and basic immunohistochemistry.
- A scientific write up of my work was required at the end of the year.
- Subsequently named as a co-author of the paper - 'Expression of the 8-GT1C Dopamine Receptor in the Corpus Collosum Is Required for Stress Resilience and the Antidepressant-Like Effects Induced by the Nicotinic Agonist Guanine.' Published in Nature, Cell Biology

Work Experience

Software Developer, Geotech Enterprises   Jun 2016 -Sep2016

Developed business solutions for a range of clients across a variety of industries, including small medical technology firms, professionally liaising with clients daily.
• Software development using the program Filemaker.
• Utilised problem-solving skills and the ability to create novel solutions to provide technical support to clients for the personalisation of data management systems.
• Expanded my knowledge of IT and the industry through interactions with industry specific data and exposure to a number of industry experts.

Positions of Responsibility

Team Leader, Outlook Expedition   Jun 2015-Jul 2015

A month long expedition to Thailand, Cambodia and Laos with the aim of improving amenities in a small Laos community.
• Developed leadership skills when designated as team leader for six of the volunteers for part of the expedition, tasked with building a temporary school hut.

Primary School Volunteer, The Queen's School   Sep 2014-May2015

• Volunteered at a local primary school once a week and helped children to understand scientific concepts, including basic cell biology and chemistry
• Improved communication skills through the teaching of younger pupils using visual media and practical demonstrations using microscopy and simple bench chemistry.

Skills

Proficiency with Microsoft Office, Apple products, Filemaker scripting language, cloud services and MATLAB. Coding proficiency in Python and C++.

Interests and Activities

Long distance running
- Competed as a member of various clubs and currently part of Imperial College London cross country team. Running has developed my determination and persistence.

Intermediate level guitar skills.
- Produce short compositions using Propellerhead computer software.

References Available on request

Self-sourced and funded PhDs

Find Supervisor:

Submit research proposal;

Apply for PhD place – must meet academic requirements

Finding Funding – view slides and recording of 'Finding and Funding a PhD' on this page.

Approaching potential supervisors

[Useful guidance (for any university) from UCL](#).

- Have a clear idea of the problem you seek to study;
- Know the staff and their specific research interests – align your approach accordingly;
- Be flexible about other options for research;
- Research potential funding options.

- Keep email short - two paragraphs;
- First paragraph needs to show why are contacting them and specifically them. Show you have done some research to know that they are the right person.
- Get their title right!

Common errors/omissions

- No research into department;
- No approach to possible supervisors;
- Lack of motivation.

- Failure in overseas applicants to address the ESOL requirement;
- Lack of detail re qualifications and/or not 'translating' them to UK equivalence;
- Not aware of funding requirements.

- No detail about previous research projects (e.g. objective, method, outcome);
- Being too general ('I am interested in the brain');
- No indication as to why 'a suitable student', i.e. just focusing on qualifications;
- Sending out a non-specific standard statement;
- Vague research proposals.

- Over-selling experience/skills;
- Over-emphasis on goals / motivations / hopes.

Tips for research applications/proposals

Advice on FindaPhD.com

Those evaluating your proposal/application for money will look for:

- Your track record and your potential;

- A 'timely' research question (emphasise why now is the right time to address this question);

- Supporting pilot data which indicates the question is an important one to ask (but is only pilot data – i.e. the question has not yet been tackled fully);

- Indication that you are well set up to address the question (it will be feasible to collect data, it can be done within the time frame).

Give clear project details which show you are the right person to tackle the question, the question is an important one, you are well set up to answer it.

Make sure you meet the expectations of the funding organisation, be overt in referring to their aims and expectations.

Be clear about the difference between aims and objectives in setting out your proposal:

- Aims: the changes in knowledge that you want to achieve – your vision for the future.
- Objectives: deliverables – activities you will perform to achieve the aim (aim for 3 objectives).

We value your feedback

Please complete the feedback form – the link is in the chat box!

And now let's move to your questions.....

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