**Post Specification**

<table>
<thead>
<tr>
<th>Post Title:</th>
<th>PhD Studentship</th>
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<tbody>
<tr>
<td>Post Status:</td>
<td>4 years full-time</td>
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<tr>
<td>Department/Faculty:</td>
<td>Department of Genetics, School of Genetics and Microbiology</td>
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<tr>
<td>Location:</td>
<td>Smurfit Institute of Genetics</td>
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<tr>
<td>Reports to:</td>
<td>Dr Matthew Campbell</td>
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<tr>
<td>Salary:</td>
<td>€18,000 per annum (stipend) plus €5,500 towards fees</td>
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<tr>
<td>Closing Date:</td>
<td>12 Noon on Friday 12th July, 2013</td>
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The successful candidate will be expected to take up this position on the 1st September, 2013 or as soon as possible thereafter.

**Post Summary**

A PhD studentship is available to work in the laboratory of Dr Matthew Campbell in the Genetics department of TCD.

**Background:** The microvascular endothelial cells lining blood vessels in the brain and retina are held together by tight junctions, a series of up to 30 interacting proteins that together form a tight seal limiting paracellular transport between adjacent cells. These tight junctions are a major constituent of the blood-brain barrier/inner blood-retina barrier (BBB/iBRB) and have evolved for the specific purpose of protecting neural tissues from potentially damaging blood-borne agents such as viruses, bacteria and anaphylatoxins. Tight junctions are also however one of the key impediments to successful drug delivery and it has been estimated that between 95-98% of clinically validated drugs cannot easily diffuse across the paracellular pathway. These tight junctions have also been implicated in regulating specific signalling events at the BBB/iBRB yet their role in both health and disease is not well defined. This PhD studentship will focus on the elucidation of the function of individual tight junction proteins at the BBB/iBRB by selective RNAi-mediated suppression *in vitro* and *in vivo*. We also wish to analyse the role of these proteins in the progression of a range of neural and retinal conditions. The overall aim of this project is to discover molecular pathways and mechanisms that could be harnessed for future therapeutic strategies.

**Background to the Post**

This PhD studentship is an opportunity to join a team of ambitious researchers exploring the molecular complexities of a range of neural and retinal conditions. The studentship will involve working on a well-defined research project emanating from recent publications from this laboratory (Campbell *et al.*, PNAS-2009, *EMBO Mol. Med.*-2011 and *Nature Communications*-2012, Campbell/Doyle *et al.*, *Nature Medicine*-2012). The successful applicant will learn a range of molecular biology techniques as well as becoming proficient in imaging techniques such as magnetic resonance imaging (MRI) and optical coherence tomography (OCT).


**Standard duties of the Post**
- Working closely with the PI to reach a range of deliverables and milestones associated with the project.
- Regular presentation of results at lab meetings.
- Attend and contribute to relevant national and international meetings.
- The successful applicant will be expected to undertake a statistics diploma course in TCD.
- Involvement in the TCD graduate certificate in innovation & entrepreneurship will also be encouraged.

**Funding Information**
- Science Foundation Ireland (SFI), President of Ireland Young Researcher Award (PIYRA).

**Person Specification**

**Qualifications**
- Candidates for this post should have a first or upper second class honours or higher grade Bachelors degree in Genetics, Biochemistry, Molecular Biology or related discipline.
- Enthusiastic & highly motivated.
- Fluent spoken and written English.
- Excellent communication skills.
- Excellent organisational skills.
- Ability to take direction and work as a team member.

**Knowledge & Experience (Essential & Desirable)**
- Competitive applicants will be highly motivated and hard working individuals with a real interest in neuroscience and cell biology.
- Previous experience working in a scientific research laboratory is desirable.
- The successful applicant will be expected to conduct *in vivo* experiments and will be fully trained in this regard.

**Skills & Competencies**
- **Research Skills**: The ideal candidate would have previous experience or knowledge of molecular biology techniques such as Western blotting, RT-PCR, ELISA, immunohistochemistry, cloning, genotyping and cell culture.
- **Adaptability**: Ability to learn and apply new techniques especially in relation to quantitative imaging.
- Written skills are very important for this post as the successful candidate will be expected to write clearly and accurately in English and to report regularly to the PI on research completed.
- **Interpersonal skills** - Ability to communicate effectively with fellow students, co-workers and PI.
- **Organisational and Planning Skills** - Ability to plan experiments and work plans on a weekly basis.
- **Timekeeping** - Punctuality is essential for this post.
Futher Information on the Smurfit Institute of Genetics
The Smurfit Institute of Genetics is an academic unit of Trinity College Dublin. The Smurfit Institute and the Moyne Institute of Preventive Medicine together comprise the School of Genetics and Microbiology, which is part of the Faculty of Science. The Smurfit Institute has a very collegial atmosphere with a diverse group of faculty, researchers, and students from over thirty countries. The research and teaching in Genetics encompass and integrate molecular, cellular, developmental, behavioural, medical, population and quantitative genetics and evolution.

We are a research-led institute. Our objective is to conduct the highest quality research and to publish it in high impact journals. The research atmosphere sets the tone and the standards for all of our other activities. The high quality of our teaching derives directly from our research activity and output. The fact that more than 75% of our graduates proceed to higher degrees, primarily by research, attests to the powerful impact of the research ethos generated in the Smurfit Institute.

Our building was opened in 1998 and has state-of-the-art research facilities. We have an international reputation for world class research, reflected in an outstanding record of publication and funding. As such, the Smurfit Institute provides a superb environment in which to do research, and an undergraduate education and research training of recognised quality.

Graduates of our B.A. (mod.) degrees in Genetics and Human Genetics have gone on to careers in diverse fields, many in science or areas related to it. These include academic research and teaching, the ever-growing field of biotechnology, agriculture, forensics, journalism, patent law, governmental organisations and many more. For those who choose a non-scientific career, the skills of critical thinking and problem-solving provided by the Moderatorships in Genetics and Human Genetics are in high demand in all fields.
Trinity College Dublin

Founded in 1592, Trinity College Dublin is the oldest university in Ireland and one of the older universities of Western Europe. On today’s campus, state-of-the-art libraries, laboratories and IT facilities, stand alongside historic buildings on a city-centre 47-acre campus.

Trinity College Dublin offers a unique educational experience across a range of disciplines in the arts, humanities, engineering, science, human, social and health sciences. As Ireland’s premier university, the pursuit of excellence through research and scholarship is at the heart of a Trinity education. TCD has an outstanding record of publications in high-impact journals, and a track record in winning research funding which is among the best in the country.

TCD has developed significant strength in a broad range of research areas including the 18 broadly-based multi-disciplinary thematic research areas listed below.

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<tr>
<th>Sustainable Environment</th>
<th>Next Generation Medical Devices</th>
<th>Identities in Transformation</th>
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<tr>
<td>Smart and Sustainable Cities</td>
<td>Creative Technologies – Digital Media, Arts and Entertainment</td>
<td>International Development</td>
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<tr>
<td>Cancer</td>
<td>Neuroscience</td>
<td>Immunology and Infection</td>
</tr>
<tr>
<td>Nanoscience</td>
<td>Telecommunications</td>
<td>Creative Arts Practice</td>
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<tr>
<td>Inclusive Society</td>
<td>Mathematics of Complexity</td>
<td>Intelligent Media and Human Communication</td>
</tr>
<tr>
<td>Ageing</td>
<td>International Integration</td>
<td>Digital Humanities</td>
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Its current flagship interdisciplinary research institutes are in areas such as biomedical science, arts and humanities, neuroscience, international integration studies, and nanostructures and nanodevices. The construction of Ireland’s first purpose built nanoscience research institute, CRANN, was opened in January 2008, which houses 150 scientists, technicians and graduate students in specialised laboratory facilities.

The building also includes an innovative public venue, the Science Gallery. In 2011, it received the Shorty Award for Best Cultural Institution on Twitter globally and the Irish Web Award for Best Education and Third Level Website. These joined a list of awards that includes European Museum of the Year Award – Special Commendation 2010 and National IT award for best use of technology in education, 2009.

The recently opened Trinity Biomedical Sciences Institute (TBSI) is an unprecedented development for Biomedical Research in Ireland, both in terms of scale and ambition. It
provides a facility for TCD to continue its upward trajectory in both basic and translational research programmes, notably in the areas of Immunology, Cancer and Medical Devices.

The Library of Trinity College is the largest research library in Ireland and is an invaluable resource to scholars. In addition to purchases and donations accrued over four centuries, the College has had 200 years of legal deposit. By this right Trinity can claim a copy of every book published in Ireland the UK. The Library has over 4.25 million books, 22,000 printed periodical titles and access to 60,000 e-journals and 250,000 e-books. The Library’s research resources also include internationally significant holdings in manuscripts (the most famous being the Book of Kells), early printed material and maps. Its collections and services support the College’s research and teaching community of 15,000+ students and academic staff.

Trinity continues to attract intellectually strong students from Ireland and abroad. More than half of its incoming undergraduates have earned in excess of 500 out of a maximum 600 points in the national Leaving Certificate examination. The accessibility of a Trinity education to all students of ability is also very important. Trinity College was the first university in Ireland to reserve 15% of first year undergraduate places for students from non-traditional learning groups – students with a disability, socio-economically disadvantaged students as well as mature students. The College has met its target in this respect. There is also an exciting international mix of its student body where 16% of students are from outside Ireland and 40% of these students are from outside the European Union. TCD students also have an opportunity to study abroad in other leading European universities through Trinity’s partnership agreements.

Students also benefit from a scholar teacher model where they have the opportunity of being taught by world-leading experts in their field. Interdisciplinarity forms a key element in the College strategy in increasing Trinity’s international standing as a research-led university.

Many of Trinity College Dublin’s alumni have helped shape the history of Ireland and Western Europe. They include author, Jonathan Swift, philosopher, George Berkeley, political philosopher, Edmund Burke, wit and dramatist, Oscar Wilde, historian, William Lecky, religious scholar, James Ussher, scientists, John Joly, George Johnstone Stoney, William Rowan Hamilton and physicians, William Stokes and Denis Burkitt.

Two of Trinity College’s alumni have won Nobel prizes – Ernest Walton for Physics in 1951 and Samuel Beckett for Literature in 1968. The first President of Ireland, Douglas Hyde was a graduate as was the first female President of Ireland, Mary Robinson.

Equal Opportunities Policy

Trinity College Dublin is an equal opportunities employer and is committed to the employment policies, procedures and practices which do not discriminate on grounds such as gender, civil status, family status, age, disability, race, religious belief, sexual orientation or membership of the travelling community.
Application Procedure

Candidates should submit a cover letter together with a full curriculum vitae to include the names and contact details of 3 referees (email addresses if possible) to Matthew.Campbell@tcd.ie

Applications will only be accepted by e-mail and information supplied by candidates will be used to shortlist.

For informal enquiries, please contact Dr. Matthew Campbell,
Smurfit Institute of Genetics,
Lincoln Place Gate,
Trinity College Dublin,
Dublin 2.

Tel: 00353 1 8962484