



Coláiste na Tríonóide, Baile Átha Cliath  
Trinity College Dublin

Ollscoil Átha Cliath | The University of Dublin

**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Assistant Professor
Name:	Robert Baker
Email:	bakerrj@tcd.ie
Website:	<a href="https://sites.google.com/site/bakerresearchgroup/home">https://sites.google.com/site/bakerresearchgroup/home</a>

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Experience with 4f/5f chemistry would be preferred	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<ol style="list-style-type: none"><li>1. The intern will synthesise a series of thorium uranium compounds that have relevance to the storage of spent nuclear fuels, and fully characterise them using state of the art spectroscopic measurements available at TCD and in collaborators laboratories in Europe.</li><li>2. The student will learn advanced spectroscopic techniques and conduct them him/herself.</li><li>3. The student will be supervised by the PI and members of his group, particularly a PhD student.</li></ol>	
Link to research group or supervisor webpage:	<a href="https://sites.google.com/site/bakerresearchgroup/home">https://sites.google.com/site/bakerresearchgroup/home</a>
Location of lab:	Chemistry, TCD

<b>Working hours:</b>	
Number of Weeks offered:	8
Hours per week:	40
Earliest Start Date possible:	1/05/2017
Latest End Date possible:	1/8/2017



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	<b>The regulation of cell death and senescence by Sestrin2 in response to chemotherapeutic drug cisplatin</b>
Name:	Andrei Budanov
Email:	budanova@tcd.ie
Website:	<a href="https://www.tcd.ie/Biochemistry/research/a_budanov.php">https://www.tcd.ie/Biochemistry/research/a_budanov.php</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	N/A

<b>Student required:</b>	
Specify any previous training / experience the student should have: 3 postdocs	
2 master students	
Study level (3rd year, 4th year)	1 SS student
Any other requirements:	

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<ol style="list-style-type: none"><li>1) The student will analyse cell death, autophagy and senescence in control and Sestrin2-deficient lung adenocarcinoma A549 cells using flow cytometry and confocal microscopy. The autophagy assay is based on expression of LC3-GFP-RFP construct and analysis of double GFP-RFP and single RFP-positive puncta. The role of Sestrin2 in cell death will be determined by AnnexinV/PI staining. Senescence will be analysed by staining for acid beta galactosidase. The role of autophagy will be addressed by applying autophagy inhibitors in cisplatin treated control and Sestrin2-negative cells.</li><li>2) Performing this work the student will learn to work with cell cultures and analyse gene expression. He will determine the role of Sestrin2 in the regulation of cell death, autophagy and senescence and the role of autophagy in the regulation of cell death and senescence. The data potentially will be published in a peer-review journal.</li><li>3) PI</li></ol>

Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/Biochemistry/research/a_budanov.php">https://www.tcd.ie/Biochemistry/research/a_budanov.php</a>
Location of lab:	TBSI 5.48

<b>Working hours:</b>	
Number of Weeks offered:	12
Hours per week:	40
Earliest Start Date possible:	ASAP
Latest End Date possible:	N/A



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Research Fellow
Name:	Charlotte Callaghan, PhD
Email:	callaghc@tcd.ie
Website:	<a href="https://www.researchgate.net/profile/Charlotte_Callaghan">https://www.researchgate.net/profile/Charlotte_Callaghan</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	Prof. Shane O'Mara

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
No specific training necessary, this summer research internship is to offer an opportunity to an undergraduate student considering a career scientific research.	
Study level (3rd year, 4th year)	Minimum of 3 <sup>rd</sup> year study
Any other requirements:	Knowledge of molecular biology or neuroscience is desirable

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p>Project Title: <i>The Opioid System as the Brain's Interface between Cognition and Motivation</i></p> <p>Major depressive disorder (MDD), which comprises a biologically heterogeneous diagnosis, affects approximately 350 million people worldwide at any point in time. Given the shortcomings of available antidepressants in terms of response and remission rates current research focusses on the generation of novel antidepressants with different mechanisms of action. There has been a renewed interest in opioid modulators for the treatment of MDD for patients that don't respond well to standard therapy [1]. However, the role of individual opioid receptors in regulating mood and motivation remains unclear.</p> <p>The traineeship offered here will allow the student to take ownership of a small project which is part of a larger scale research programme investigating the role of opioid receptors in regulating mood and motivation [2]. Within this project, we explore the function of mu, kappa and delta opioid receptors in mediating mood and motivational behaviours in the interferon-alpha (INF-<math>\alpha</math>)-induced depression model and the Wistar Kyoto (WKY) rat.</p>

Specifically, the student project offered here will investigate the complex relationship between mu opioid receptors and IFN- $\alpha$  in the nucleus accumbens (NAc) prefrontal cortex and hippocampus, brain regions which are associated with mediation of motivation and cognitive behaviour. Further, the project will allow for investigation of synaptogenesis, synaptic connections between neurons, which is altered in depressive states [3]. We are developing novel immunohistological techniques to demonstrate receptor-ligand co-localisation and utilizing flow cytometry techniques to examine alterations in synaptogenesis in the NAc, prefrontal cortex and hippocampus.

**(1)** The student will develop understanding of the scientific process and acquire basic and advanced laboratory techniques, including immunofluorescence and flow cytometry.

**(2)** From the student's perspective, they will take ownership of a piece of research, improving confidence in the lab and helping to develop future research ideas. They will learn to work as part of a research team, and improve on transferable skills including presentations and scientific writing.

**(3)** Students will be supervised by Charlotte Callaghan, research fellow at TCD.

#### References

1. Lutz, P.E. and B.L. Kieffer, *Opioid receptors: distinct roles in mood disorders*. Trends Neurosci, 2013. **36**(3): p. 195-206.
2. Callaghan, C.K., et al., *Antidepressant-like effects of 3-carboxamido seco-nalmefene (3CS-nalmefene), a novel opioid receptor modulator, in a rat IFN-alpha-induced depression model*. Brain Behav Immun, 2017.
3. Dale, E., B. Bang-Andersen, and C. Sanchez, *Emerging mechanisms and treatments for depression beyond SSRIs and SNRIs*. Biochem Pharmacol, 2015. **95**(2): p. 81-97.

Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/Neuroscience/partners/PI%20Profiles/Shane_OMara2.php">https://www.tcd.ie/Neuroscience/partners/PI%20Profiles/Shane_OMara2.php</a>
Location of lab:	Trinity College Institute of Neuroscience

Working hours:	
Number of Weeks offered:	12
Hours per week:	35
Earliest Start Date possible:	1 <sup>st</sup> May 2018
Latest End Date possible:	30 <sup>th</sup> September 2018



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Professor
Name:	Celia Holland
Email:	cholland@tcd.ie
Website:	<a href="http://www.tcd.ie/Zoology/research/research/parasitology/">www.tcd.ie/Zoology/research/research/parasitology/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	N/A

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Experience in fish/aquatic ecology or parasite ecology an advantage but not essential	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	None

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>The student will complete his or her own project associated with a Ph.D. project on the role of parasites in biological invasions. The student will work closely with a Ph.D. student and P.I. within the parasitology research group. Possible projects include identification of helminth parasites from native and invasive fish, determining fish age from fish scales, fish diet analysis and analysis of parasite traits. The student will gain experience in identification of helminth parasites and aquatic macroinvertebrates, fundamental microscopy, dissection of fish hosts, handling and coding of data, with some limited statistical analysis. The student will also gain an understanding of concepts in wildlife disease and invasion biology. Supervision will be provided by the PI and the PhD student, Paula Tierney.</p>	
Link to research group or supervisor webpage:	<a href="http://www.tcd.ie/Zoology/research/research/parasitology/">http://www.tcd.ie/Zoology/research/research/parasitology/</a>
Location of lab:	Department of Zoology, School of Natural Sciences

<b>Working hours:</b>	
Number of Weeks offered:	16 weeks
Hours per week:	Normal working hours (9-5 pm)
Earliest Start Date possible:	1 <sup>st</sup> May 2016
Latest End Date possible:	30 September 2016



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Ussher Assistant Professor, Science of Energy
Name:	David McCloskey
Email:	dmcclosk@tcd.ie
Website:	<a href="http://www.tcd.ie/Physics/research/groups/nanothermal/">http://www.tcd.ie/Physics/research/groups/nanothermal/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Physics or Materials Science/ Engineering background	
Study level (3rd year, 4th year)	Either 3 <sup>rd</sup> or 4 <sup>th</sup> year in French system OK
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>We have developed a range of optical and electronic techniques for measuring temperature and heat flow in thin film systems. We are currently working on industry projects with companies such as Western Digital and Nokia Bell labs. As part of the project the student will be working on deposition and characterisation of thin film thermoelectric materials relevant to ongoing projects. They will gain experience in both optical and electronic materials characterization and possibly thin film deposition such as RF Magnetron sputtering. The student will be supervised day to day by a postdoc from the group, and will also interact with 3 other PhD students from the group.</p>	
Link to research group or supervisor webpage:	<a href="http://www.tcd.ie/Physics/research/groups/nanothermal/">http://www.tcd.ie/Physics/research/groups/nanothermal/</a>
Location of lab:	SNIAM Building and CRANN

<b>Working hours:</b>	
Number of Weeks offered:	Up to 16 weeks (May to August)
Hours per week:	35hrs



Earliest Start Date possible:	1 <sup>st</sup> May
Latest End Date possible:	31 <sup>st</sup> September



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	PhD Student
Name:	Michele Corrigan
Email:	dahoey@tcd.ie
Website:	<a href="https://www.tcd.ie/mecheng/staff/dahoey/">https://www.tcd.ie/mecheng/staff/dahoey/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	Dr. David Hoey

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Theoretical knowledge of mammalian cell culture and cell signalling	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year undergraduate preferable
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>This project will characterise and compare the behaviour of bone marrow stem cells from healthy and osteoporotic human patients. Our focus will be the response of cells to physiologically relevant mechanical stimulation and in particular the role of the primary cilium in this context.</p> <ol style="list-style-type: none"><li>1. This internship will consist of acquisition and analyses of immunofluorescent images of human and mouse cells and some biochemical assay preparation and analysis.</li><li>2. The student should hope to leave the process with a proficient knowledge of basic fluorescent microscopy as well as some experience in basic statistical analysis, mammalian cell culture and biochemical assay preparation.</li><li>3. The project will run alongside the work of a PhD student and the student will be trained on a day to day basis by a PhD student. Dr. Hoey will provide additional supervision and guidance at structured lab meetings.</li></ol>	
Link to research group or supervisor webpage:	<a href="http://www.mee.tcd.ie/biomaterials/People/DHoeyProfile">http://www.mee.tcd.ie/biomaterials/People/DHoeyProfile</a>

Location of lab:	Trinity Biomedical Sciences Institute, 152-160 Pearse St.
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<b>Working hours:</b>	
Number of Weeks offered:	8-12 weeks
Hours per week:	35 hours per week
Earliest Start Date possible:	1 <sup>st</sup> March 2018
Latest End Date possible:	1 <sup>st</sup> September 2018



# Coláiste na Tríonóide, Baile Átha Cliath Trinity College Dublin

Ollscoil Átha Cliath | The University of Dublin

## OFFER OF TRAINING FORM SUMMER 2018

<b>Proposer details:</b>	
Title:	Associate Professor
Name:	Stefan Hutzler
Email:	stefan.hutzler@tcd.ie
Website:	<a href="https://www.tcd.ie/Physics/research/groups/foams/">https://www.tcd.ie/Physics/research/groups/foams/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	n/a

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Physics or chemical engineering	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	Experience with experimental work

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
(1) assistance with experiments on foam drainage and stability (2) gaining experience with setting up and analysing exploratory experiments, e.g. structure of foams with finite contact angles (3) supervision on daily basis: Dr. Benjamin Haffner, post-doc in my group	
Link to research group or supervisor webpage:	<i>Foams and Complex Systems</i> <a href="https://www.tcd.ie/Physics/research/groups/foams/">https://www.tcd.ie/Physics/research/groups/foams/</a>
Location of lab:	SNIAM, basement

<b>Working hours:</b>	
Number of Weeks offered:	25 weeks (all dates in this section are flexible)
Hours per week:	35
Earliest Start Date possible:	March 1, 2018
Latest End Date possible:	August 31, 2018



# Coláiste na Tríonóide, Baile Átha Cliath Trinity College Dublin

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## OFFER OF TRAINING FORM SUMMER 2018

<b>Proposer details:</b>	
Title:	Assistant Professor in Microbiology
Name:	Joan
Email:	geoghegj@tcd.ie
Website:	<a href="https://www.tcd.ie/Microbiology/research/j_geoghegan.php">https://www.tcd.ie/Microbiology/research/j_geoghegan.php</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	N/A

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Biology Student. The trainee should have taken courses in Molecular Cellular Biology and Genetics.	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	N/A

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
1) The work will involve the study of virulence factors of meticillin resistant <i>Staphylococcus aureus</i> (MRSA). The student will be trained in laboratory techniques including DNA manipulation and mutagenesis, microbiology, working with cell lines and recombinant protein purification. 2) The student should master new experimental techniques, develop a better appreciation of laboratory based research in biomedical science and have generated new data to contribute to research on MRSA. 3) The student will be supervised by Dr Geoghegan and senior graduate student Aisling Towell	
Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/Microbiology/research/j_geoghegan.php">https://www.tcd.ie/Microbiology/research/j_geoghegan.php</a>
Location of lab:	Moyne Institute of Preventive Medicine, School of Genetics and Microbiology, Trinity College Dublin

<b>Working hours:</b>	
Number of Weeks offered:	10
Hours per week:	35
Earliest Start Date possible:	21 <sup>st</sup> May 2018
Latest End Date possible:	10 <sup>th</sup> September 2018



# Coláiste na Tríonóide, Baile Átha Cliath Trinity College Dublin

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## OFFER OF TRAINING FORM SUMMER 2018

<b>Proposer details:</b>	
Title:	Research Fellow (PI on H2020 AERIALIST project)
Name:	John Kennedy
Email:	<a href="mailto:jkenned5@tcd.ie">jkenned5@tcd.ie</a>
Website:	<a href="https://www.tcd.ie/research/profiles/?profile=jkenned5">https://www.tcd.ie/research/profiles/?profile=jkenned5</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	Prof. Henry Rice

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Knowledge of acoustics, signal processing or additive manufacturing would be of great benefit to the research work.	
Study level (3rd year, 4th year)	3 <sup>rd</sup> /4 <sup>th</sup> year
Any other requirements:	NA

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>In recent years a new class of acoustic materials with highly unusual properties has been proposed known as an acoustic metamaterial. These materials have the ability to alter the reflection, refraction or diffraction of sound in a controlled manner that is unlike any traditional or natural material. These metamaterials are often based on a complex geometric microstructure that must be precision manufactured to achieve the acoustic properties desired.</p> <p>This research placement will focus on the design and testing of an acoustic metamaterial and will interact with the European funded AERIALIST research project. The student will make use of the department's world leading additive manufacturing facilities to 3D print an acoustic metamaterial. They will then test this material in rigs that have been developed as part of the AERIALIST project. The design phase may include numerical modelling and optimisation of the acoustic metamaterial properties. The experimental testing phase will include a parametric study of samples and investigation of the achieved acoustic properties. The area of acoustic metamaterial research is rapidly moving and evolving. The student will have the opportunity to acquire valuable skills in acoustic testing, signal processing, additive manufacturing and material inspection. Due to the cutting edge nature of the research a dedicated project student could reasonably be expected to produce a conference or journal</p>	

level publication over the course of the summer.

The student will be supervised by Dr. John Kennedy, the Principal Investigator and lead of the AERIALIST project at TCD.

Link to research group or supervisor webpage:

<https://www.aerialist-project.eu/>  
<http://www.tcd.ie/mecheng/research/fluids-acoustics-vibration/>

Location of lab:

Department of Mechanical and Manufacturing Engineering,  
Parsons Building  
Trinity College

**Working hours:**

Number of Weeks offered:

8-16 weeks

Hours per week:

35 hours

Earliest Start Date possible:

1<sup>st</sup> May 2018

Latest End Date possible:

30<sup>th</sup> of September 2018



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Schuler Assistant Professor In Translational Organic Chemistry
Name:	Joanna McGouran
Email:	Jmcgoura@tcd.ie
Website:	<a href="http://joannamcgouran.wixsite.com/mysite">http://joannamcgouran.wixsite.com/mysite</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have: Chemistry/Biochemistry	
Study level (3rd year, 4th year)	3rd/4th year
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
(1) Lab work involving Organic synthesis and/or biochemical assays. (2) The student will complete a research project, planning, conducting an analysing experiments. They will gain laboratory skills and learn new techniques. (3) Day-to-day supervision will be given by a postdoctoral researcher within the lab.	
Link to research group or supervisor webpage:	<a href="http://joannamcgouran.wixsite.com/mysite">http://joannamcgouran.wixsite.com/mysite</a>
Location of lab:	TBSI

<b>Working hours:</b>	
Number of Weeks offered:	12
Hours per week:	37.5
Earliest Start Date possible:	01/06/17
Latest End Date possible:	01/09/17





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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Dr.
Name:	Jake Rowan Byrne
Email:	byrnejr@tcd.ie
Website:	www.jakebyrne.com
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Computer Science or Programming Experience. Experience working in teams	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	Ability to work independently

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p>Ireland is to introduce Computer Science for post-primary schools (High School) in September 2018. The research group played a leading role in the development of the new curriculum and will be conducting research on the teacher training and resources developed to support the rollout of the new subject.</p> <p>Work will involve helping with collating and analysing data related to this work. Helping test and refine resources that will be available for teachers and students. Help mentor on a hackathon like event that aligns with elements of the new curriculum (promoting a team, project based learning approach).</p> <p>Interns should gain experience in research skills, resource development to support active, teas based learning and gain experience mentoring teenagers in the areas of programming, design and enterprise. They will also gain experience working with the innovative Bridge21 learning approach.</p> <p>Interns will work closely with the project leads and the wider Bridge21 and Trinity Access 21 team (PhD candidates, Post-Docs and Programme Coordinators). This will provide additional insights into the larger mission of raising aspirations for third level study among</p>

underrepresented demographics.	
Link to research group or supervisor webpage:	<a href="http://www.bridge21.ie">www.bridge21.ie</a>
Location of lab:	Bridge21, Oriel House, Trinity College Dublin, Dublin 2, Ireland

<b>Working hours:</b>	
Number of Weeks offered:	12
Hours per week:	40
Earliest Start Date possible:	May 2018
Latest End Date possible:	September 2018



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Suspended sediment bound and streambed phosphorus in geologically contrasting agricultural catchments
Name:	Laurence Gill
Email:	laurence.gill@tcd.ie
Website:	<a href="http://www.tcd.ie/civileng/people/gill/">http://www.tcd.ie/civileng/people/gill/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
hydrology / chemistry / geochemistry	
Study level (3rd year, 4th year)	4 <sup>th</sup> year
Any other requirements:	an advantage if they have a driving licence

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
1) Studying fluvial sediments and nutrient dynamics in monitored agricultural catchments. This will involve collecting sediment samples from the field sites and bringing them back to the lab for geological and surface water analysis.	
2) The student will gain experience of hydrological field research as well as more specifically developing an understanding of how particulate phosphorus is mobilised from agricultural catchments and its subsequent biogeochemical transformations as it makes its way down into and along rivers.	
3) The student will be supervised on a day-to day basis by postdoc David O'Connell and on a weekly basis by the project PI, Laurence Gill.	
Link to research group or supervisor webpage:	<a href="http://www.tcd.ie/civileng/research/environment/index.php">http://www.tcd.ie/civileng/research/environment/index.php</a> <a href="https://www.tcd.ie/civileng/research/environment/water/eutro-sed-project.php">https://www.tcd.ie/civileng/research/environment/water/eutro-sed-project.php</a>

Location of lab:	Watts Building
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<b>Working hours:</b>	
Number of Weeks offered:	up to 20 weeks
Hours per week:	40 hours
Earliest Start Date possible:	1 <sup>st</sup> April 2017
Latest End Date possible:	30 <sup>th</sup> October 2017



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Dr
Name:	Matthew Saunders
Email:	saudem@tcd.ie
Website:	<a href="https://www.tcd.ie/Botany/staff/mattsauanders.php">https://www.tcd.ie/Botany/staff/mattsauanders.php</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Fundamental understanding of biological sciences, knowledge of micrometeorology, peatland ecology and biogeochemical cycling advantageous.	
Study level (3rd year, 4th year)	4th
Any other requirements:	None

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>1). This internship will be largely field based (under direct supervision) and will utilise a newly established Eddy Covariance experimental field station at the Clara Bog SAC reserve.</p> <p>2). The student will investigate the impacts of peatland degradation/restoration and key environmental drivers on the ecosystem-atmosphere exchange of carbon dioxide, water vapour and energy. Particular focus will be given to plant driers through the assessment of growing season carbon, water and trace gas dynamics.</p> <p>3). The student will be supervised on a daily basis by Dr Matthew Saunders and will form part of the TCD School of Natural Sciences, Plant Ecophysiology Research group. The student will also contribute to the wider remit of the TCD nature+ consortia.</p>	
Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/Botany/staff/mattsauanders.php">https://www.tcd.ie/Botany/staff/mattsauanders.php</a> <a href="https://www.tcd.ie/Botany/research/ecophysoil/index.php">https://www.tcd.ie/Botany/research/ecophysoil/index.php</a>
Location of lab:	Botany Department Building; Watts Building; Anatomy Building.

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<b>Working hours:</b>	
Number of Weeks offered:	32 (max)
Hours per week:	40
Earliest Start Date possible:	1 <sup>st</sup> March 2018
Latest End Date possible:	31 <sup>st</sup> October 2018



Coláiste na Tríonóide, Baile Átha Cliath  
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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Assistant Professor
Name:	Marta Martins
Email:	mmartins@tcd.ie
Website:	<a href="https://www.tcd.ie/Microbiology/research/">https://www.tcd.ie/Microbiology/research/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Basic microbiology techniques	
Study level (3rd year, 4th year)	4 <sup>th</sup> year
Any other requirements:	Dedicated and responsible

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p><b>Title:</b> Antimicrobial peptides as alternative preservatives to enhance shelf life of fresh produce</p> <p><b>Background.</b> The food industry relies on preservatives to enhance shelf life of products and guarantee food safety; however with consumers driving the demand for “clean labels”, the need for natural solutions intensifies. Current solutions include cheap artificial ingredients however, reports on potential adverse health effects of these chemicals has tarnished their popularity with consumers. Therefore, companies are aiming to remove chemical preservatives from their products but are faced with a serious lack of effective natural alternatives, which are safe and cost effective. Plant derived antimicrobial peptide hydrolysates that can be sourced from sustainable food by-products, may offer a cheap and safe replacement to chemical preservatives.</p> <p><b>Objectives.</b> The main aim of this project is to study the potential of using natural antimicrobial peptides, as a replacement for artificial ingredients and chemical processing aids in the food industry. Previous work conducted in the lab has already identified novel antimicrobial peptides or hydrolysates presenting antimicrobial activity under general lab conditions. <b>In this project, we aim to test novel antimicrobial peptides or hydrolysates in a food model, such as lettuce.</b></p>

**(1) Type of work - Research methods.** Initially, the minimum inhibitory and minimum bactericidal concentrations will be re-confirmed in different liquid and solid media at a range of different pH values, using the broth microdilution method and the complete elimination method. Growth curves under the same parameters will be performed in parallel to determine the best conditions for setting the food model. The activity of the compounds will then be tested in a more complex food system, such as lettuce to assess if their activity is retained in this model and through time. This will involve techniques such as serial dilution, plating and CFU counting at different time points. The set up of the food model will also involve research on mimicking a media similar with lettuce and then the “*in vivo*” treatment of the lettuce with the selected compound(s). This treatment will be tested under different platforms, such as a dip/coating/spray to determine the best “delivery system”. Recovery of the bacteria and viability testing will be done by plating and also by flow cytometry analysis.

**(2) What the student should hope to achieve at end of the process.** The student will be trained in basic microbiology techniques as well as in the testing of peptides in more complex food models. The student will also acquire training in working in a level 2-biosafety laboratory and with more advanced techniques, such as flow cytometry. Additionally, the student will be challenged on a day-to-day basis regarding input to the experiments and analysis of the research results. The student will be integrated in the day routine of the research, including presenting his results at lab meetings that take place every week in the Martins’ Research Group in Antimicrobial Resistance and Host modulation. The student will also have the opportunity to attend lab meetings from other research groups in the department of Microbiology that can contribute to deepen his knowledge in microbiology. At the end of the project the student will be given the opportunity to give a seminar in the department of Microbiology as part of this project.

**(3) Supervision.** The student will be supervised by the P.I. Marta Martins and closely supervised on a laboratory daily basis by two PhD students, Ms. Niamh Mohan and Ms. Daniela Alves Ferreira (Martins’ lab).

Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/genetics-microbiology/assets/pdf/MartaMartins.pdf">https://www.tcd.ie/genetics-microbiology/assets/pdf/MartaMartins.pdf</a>
Location of lab:	Moyne Institute of Preventive Medicine, School of Genetics and Microbiology, Trinity College Dublin

<b>Working hours:</b>	
Number of Weeks offered:	9 weeks
Hours per week:	40
Earliest Start Date possible:	2 <sup>nd</sup> July 2018
Latest End Date possible:	31 <sup>st</sup> August 2018





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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Assistant Professor
Name:	Kim McKelvey
Email:	<a href="mailto:Kim.mckelvey@tcd.ie">Kim.mckelvey@tcd.ie</a>
Website:	<a href="http://chemistry.tcd.ie/">http://chemistry.tcd.ie/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Interest in nanoscience, experience in physical chemistry/physics.	
Study level (3rd year, 4th year)	Any
Any other requirements:	

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p><b>Aim:</b></p> <p><i>Study dynamic changes of a single nanoparticle using resistive pulse sensing in a double barrelled nanopipette.</i></p> <p>Nanoparticles (particles with a radius &lt; 100 nm) provide a platform for next generation sensing applications, drug delivery, as well as electrocatalytic and energy storage technologies. Understanding how individual nanoparticles behave is key to designing better nanoparticle based technologies. However, isolating and measuring a single nanoparticle is extremely challenging due to the nanoparticle size.</p> <p>Resistive pulse sensing is a solution phase technique that uses the blockage of the ionic current through a small opening to isolate the signal from a single nanoparticle as it passes through the opening. By reversing the driving force once a nanoparticle has passed through the small opening a single nanoparticle can be moved repeatable back and forward trapping it at the opening.</p> <p>Building on the resistive pulse sensing technique but using a double barrelled nanopipette for the first time will enable us to trap a single nanoparticle for many hours, compared to the typical &lt;1 second times that are currently reported in literature. This new technique will allow us to observe processes that happen on the order of hours (such a nanoparticle</p>

dissolution or changes in surface functionalisation) and that are not currently observable using resistive pulse sensing.

**Goals:**

1. Learn how to make both single and double barrelled nanopipettes.
2. Learn how to use resistive pulse sensing to measure a single nanoparticle.
3. Trap a single nanoparticle using a double barrelled nanopipette.
4. Optimise trapping conditions to trap a single polystyrene nanoparticle for more than 2 hours.
5. Measure the dissolution kinetics of a single polystyrene nanoparticle while being trapped in a double barrelled nanopipette.
6. Optimise condition for the trapping of a single Au nanoparticle, and observe changes in surface functionalisation.

**Supervision:**

By PI (Kim McKelvey)

Link to research group or supervisor webpage:

[mckelveylab.com](http://mckelveylab.com)

Location of lab:

0.5 Chemistry Building

**Working hours:**

Number of Weeks offered:

10

Hours per week:

40

Earliest Start Date possible:

4/6/18

Latest End Date possible:

24/8/18



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Associate Professor
Name:	Paula Colavita
Email:	<a href="mailto:colavitp@tcd.ie">colavitp@tcd.ie</a>
Website:	<a href="https://sites.google.com/site/colavitagroup/home">https://sites.google.com/site/colavitagroup/home</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	N/A

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
A student with chemistry or materials science knowledge equivalent to that of a 3 <sup>rd</sup> year BSc. or higher. Sufficient expertise in the chemistry laboratory through undergraduate practicals, internships or further degrees is a requirement.	
Study level (3rd year, 4th year)	3 <sup>rd</sup> /4 <sup>th</sup> Chemistry, Physics, Materials Science/Eng or similar
Any other requirements:	Prior experience in the chemistry laboratory (undergraduate practicals a minimum).

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>The ability to control and modulate interfacial interactions between a material and its host is critical for the rational design of biodevices. When biomaterials are implanted in biological fluids or tissue, a cascade of interfacial reactions takes place. The first step involves adsorption of small biomolecules, e.g. proteins, lipids; understanding this early stage process is important for tailoring host response, as the conditioning layer these biomolecules form modulates future solid-cell interactions. We are therefore interested in investigating how composition and surface chemistry of materials affects interactions with biological fluids. In turn, this will allow us to rationally modify solid surfaces to achieve the desired response from a host after implantation.</p> <p><b>Students involved in this project will study interfacial processes that occur at the surface of materials of relevance to biodevice manufacturing, such as polymers, metals, alloys or carbon. They will focus on the effect that modification with ultra-thin molecular layers has on protein adsorption and/or on improving the scalability of modification</b></p>	

**methods.**

**Tasks:** The student will prepare and characterise solid surfaces and carry out in situ or ex situ experiments to monitor changes in surface chemistry and their effect on biomolecule adsorption or binding. The student will be involved in the analysis and interpretation of results obtained on interfacial reactions at materials surfaces. The PI will supervise the progression of the project and a senior postgraduate student will be assigned to support the activities in the laboratory.

**Learning outcomes:** Students will acquire expertise in surface characterization techniques for determining e.g. surface composition and chemistry, surface wetting, surface free energy, surface charge, thin-film thickness; also, methods for determining molecular coverage of proteins or small organic molecules via infrared spectroscopies or fluorescence imaging and spectroscopy. Applications of the above methods to alloys, polymers, metals or semimetals is a transferable skill that prepares students for higher studies (HiDip/MSc/PhD) or careers in industry, including pharma and food industries.

Link to research group or supervisor webpage:	<a href="https://sites.google.com/site/colavitagroup/home">https://sites.google.com/site/colavitagroup/home</a>
Location of lab:	School of Chemistry

**Working hours:**

Number of Weeks offered:	10
Hours per week:	40
Earliest Start Date possible:	10/6/2018
Latest End Date possible:	1/10/2018



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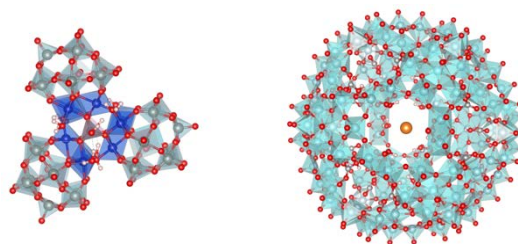
**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Ussher Assistant Professor in Chemical Energy Systems
Name:	Max García-Melchor
Email:	<a href="mailto:garciamm@tcd.ie">garciamm@tcd.ie</a>
Website:	<a href="http://www.chemistry.tcd.ie/staff/academic/garciamm/">http://www.chemistry.tcd.ie/staff/academic/garciamm/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	N/A

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Highly motivated candidate with good background and keen interest in the fields of Inorganic Chemistry, Coordination Chemistry, and Physical Chemistry.	
Study level (3rd year, 4th year)	3 <sup>rd</sup> and 4 <sup>th</sup> year
Any other requirements:	Basic knowledge of Quantum Chemistry, the Gaussian09 programme (or other Quantum Chemistry software), Unix operating systems and programming skills, are desirable but not essential.

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<p>Matching the global energy demand in a clean, reliable and economically affordable way is one of biggest challenges of this century. One promising solution is to store solar energy into chemical bonds, such as H<sub>2</sub>, by means of electrochemical water splitting. Unfortunately, the development of this technology is hampered by the lack of efficient and economic catalysts for the oxygen evolution half-reaction (OER).</p> <p>Polyoxometalates (POMs, see Figure) are molecular oxides that show great promise as OER electrocatalysts as they exhibit the tunability of homogeneous catalysts while displaying the robustness characteristic of heterogeneous catalysts. These molecular catalysts, however, display poor electron conductivity and relatively high overpotentials, especially those containing non-precious metals.</p>	

The project offered in this internship aims at using density functional theory (DFT) methods to rationally design Earth-abundant POMs with a superior electronic conductivity and OER activity. In this internship, the candidate will be instructed in the modelling of POMs and the electrochemical water oxidation process by means of DFT methods, as well as the use of the supercomputers based at the Trinity Centre for High Performance Computing (TCHPC) and the Irish Centre of High-End Computing (ICHEC).



**Figure:** Molecular structures of two model POMs.

At the end of the internship, the candidate will be able to optimise reaction intermediates, locate transition states, analyse the electronic structure of the modelled POMs, and assess their OER activity. This project will be directly supervised by Prof. García-Melchor, an expert in this field and with significant contributions (*Nature Energy*, **2016**, *1*, 16053; *Science*, **2016**, *352*, 333). The project will be also carried out in collaboration with a leading experimental group based at Trinity College Dublin, which will synthesize and test the computationally designed POMs exhibiting a predicted superior OER activity. It is worth mentioning that the results derived from this internship might be potentially included in a research article for its publication in an international scientific journal with the candidate as part of the authors list.

Link to research group or supervisor webpage:	<a href="http://www.chemistry.tcd.ie/staff/academic/garciamm/">http://www.chemistry.tcd.ie/staff/academic/garciamm/</a>
Location of lab:	Lloyd Institute, Trinity College Dublin, College Green, Dublin 2, Ireland

<b>Working hours:</b>	
Number of Weeks offered:	Between 14 and 52 weeks
Hours per week:	30–40
Earliest Start Date possible:	April 2018
Latest End Date possible:	N/A



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Generating, storing and releasing oxygen for biomedical applications
Name:	Prof. Dr. Mathias O. Senge
Email:	<a href="mailto:sengem@tcd.ie">sengem@tcd.ie</a>
Website:	<a href="http://chemistry.tcd.ie/staff/people/mos/Home.html">http://chemistry.tcd.ie/staff/people/mos/Home.html</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Fundamentals in chemistry, physics, biology	
Study level (3rd year, 4th year)	3 <sup>rd</sup> year and 4 <sup>th</sup> year
Any other requirements:	none

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
(1) Synthetic bioorganic chemistry, (2) work in an international and multidisciplinary research group, development of research level laboratory skills, planning and executing target oriented syntheses, preparation of results for publication, publication (3) supervision by PI and Susan Callaghan (postgraduate student)	
Link to research group or supervisor webpage:	<a href="http://chemistry.tcd.ie/staff/people/mos/Home.html">http://chemistry.tcd.ie/staff/people/mos/Home.html</a>
Location of lab:	SFI Tetrapyrrole Laboratory, Trinity Biomedical Sciences Institute, 7 <sup>th</sup> floor

<b>Working hours:</b>	
Number of Weeks offered:	12
Hours per week:	40
Earliest Start Date possible:	Any time
Latest End Date possible:	Any time



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Associate Professor of Psychology
Name:	Robert Whelan
Email:	Robert.whelan@tcd.ie
Website:	<a href="http://www.whelanlabtcd.org/meet-the-team/robert-whelan/">http://www.whelanlabtcd.org/meet-the-team/robert-whelan/</a>

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Background in neuroscience, psychology or with quantitative skills	
Study level (3rd year, 4th year)	3 <sup>rd</sup> or 4 <sup>th</sup> year
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
<ol style="list-style-type: none"><li>1. Type of work. The work involves carrying out electroencephalography (EEG) recordings from the brains of participants while they complete behavioural tasks. The project concerns brain-computer interface (BCI) so the student would be involved in training participants to alter brain rhythms using feedback from a game-like display, and conducting behavioural tasks of performance on cognitive and motor tasks pre- and post BCI training</li><li>2. By the end of the internship the student would be trained in all aspects of EEG data collection, and would have an in-depth knowledge of brain rhythms and their relation to behaviour. Additionally, they will gain skills in behavioural testing of inhibitory control, and working memory testing.</li><li>3. On a daily basis, the student would be supervised by Dr. Kathy Ruddy, who is a postdoctoral research fellow funded by the Irish Research Council to carry out work in my lab concerning BCI and inhibitory control.</li></ol>	
Link to research group or supervisor webpage:	<a href="http://www.whelanlabtcd.org">http://www.whelanlabtcd.org</a>
Location of lab:	Trinity College Institute of Neuroscience, Lloyd building.



<b>Working hours:</b>	
Number of Weeks offered:	12
Hours per week:	37
Earliest Start Date possible:	April 2018
Latest End Date possible:	September 2018



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Research Coordinator
Name:	Dr Aibhín Bray
Email:	<a href="mailto:brayai@tcd.ie">brayai@tcd.ie</a>
Website:	<a href="https://www.tcd.ie/ta21/">https://www.tcd.ie/ta21/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	Prof Brendan Tangney

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Some experience with spreadsheets would be beneficial.	
Study level (3rd year, 4th year)	
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
This job will include the preparation of quantitative data for analysis and possibly the transcription of some interview data. The student will develop an understanding of how to prepare and format quantitative and qualitative data for analysis, and they will be introduced to some data analytic techniques using the software packages SPSS and NVivo. The purpose of this internship will be to assist with the development of recommendations for the next phase of this action research project. The student will be supervised by the coordinator of research for the project (Dr Aibhín Bray), and the project research assistant (Philip Byrne).	
Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/ta21/">https://www.tcd.ie/ta21/</a>
Location of lab:	Lloyd Institute, TCD

<b>Working hours:</b>	
Number of Weeks offered:	6 - 8
Hours per week:	25
Earliest Start Date possible:	4 <sup>th</sup> June 2018

Latest End Date possible:

31<sup>st</sup> August 2018



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**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Assistant Professor
Name:	Tim Persoons
Email:	<a href="mailto:tim.persoons@tcd.ie">tim.persoons@tcd.ie</a>
Website:	<a href="http://www.tcd.ie/mecheng/research/fluids-heat-transfer">www.tcd.ie/mecheng/research/fluids-heat-transfer</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	n/a

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Strong background in fluid mechanics	
Study level (3rd year, 4th year)	Preferably 4 <sup>th</sup> year, but 3 <sup>rd</sup> year with experience is acceptable
Any other requirements:	Aptitude for either experimental work (e.g., particle image velocimetry) or computational fluid dynamics work with commercial packages such as Ansys Fluent)

<b>Traineeship offered:</b>
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p><u>(1) Description of the traineeship project</u></p> <p>Title: <b>Active Flow Control for Drag Reduction of a Bluff Body in Cross-Flow</b></p> <p>Although tidal stream power generation is still in its infancy, the International Energy Agency (IEA) projects a significant investment in this technology in the coming decades [1]. However, some researchers are concerned about the current development of horizontal-axis turbines that sit on the sea floor, where the flow field is weakened and disturbed by the boundary layer [2]. For wind turbine farms, each machine creates a turbulent wake, which affects downstream turbine generators. Adverse wake interactions and flow-induced vibrations are concerns for the further expansion of wind turbine technology. For both cases (tidal and wind turbines), it could therefore be advantageous to have blade-by-blade control over the flow conditions. Devices such as synthetic jet actuators can be embedded within streamlined bodies to actively control the hydrodynamic boundary layers and prevent or delay separation.</p> <p>As a benchmark case, this project will consider a circular cylinder in cross-flow, with a</p>

rectangular slot orifice embedded in its surface from which a synthetic jet can be generated. An initial analysis will use transient computational fluid dynamics (CFD) simulations to study the effect of a synthetic jet emanating from the surface of a cylinder in cross-flow on the behaviour of the wake flow in general, and the instantaneous lift and drag coefficient in particular.

Specific attention will go to determining the mechanisms of drag reduction, looking for correlations between the drag force and characteristics of the near wake (e.g., separation zone size, pressure coefficient profile and wake turbulence intensity) and far wake (e.g., far wake width, length, deflection and turbulence characteristics). Depending on the preferences and background of the student, the project can be involve experimental or computational work, or a combination of both. CFD simulations can be carried out, building on earlier work [3]. Additionally, validation experiments can be carried out using a water tunnel test facility equipped with a lift and drag force sensor, and capable of performing time-resolved particle image velocimetry (PIV) measurements.

A strong background in fluid mechanics and aptitude for CFD and/or experimental work is required.

[1] International Energy Agency (IEA), (<http://www.iea.org/topics/oceanenergy/>)

[2] S.H. Salter, Proceedings of the 2012 International Conference on Ocean Energy, Dublin, Oct. 17, 2012

[3] P. McDonald, T. Persoons, Numerical characterisation of active drag and lift control for a circular cylinder in cross-flow, Applied Sciences, 7: 1166, 2017 (<http://www.mdpi.com/2076-3417/7/11/1166>)

### (2) Target outcomes

The student will take part in this research project, with a goal of preparing a working paper, which could later be submitted to a conference or journal, depending on progress made during the traineeship project. The student will gain valuable research skills on active flow control and advanced fluid mechanics. For experimental work, the student will gain practical hands-on experience in using and modifying a water tunnel test facility and its associated instrumentation (e.g., lift and drag sensor, flow velocity measurements, ultrasonic flow meters, pumps and variable speed drives, DC motor speed controllers and pressure sensors). For computational work, the student will gain experience with modelling transient turbulent flows using a commercial CFD package such as Ansys Fluent.

### (3) Supervision

The student will become a member of an active research team, working alongside several PhD students and postdoctoral researchers, and supported by the PI. An experimental officer and a team of design engineers are available in the Department to assist the student with practical aspects of lab work. Laser safety training will be provided by Trinity College if the student will be conducting lab work with laser-based instrumentation, such as particle image velocimetry. The PI will supervise the student and a senior PhD student will be assigned to the student on a mentorship basis.

Link to research group or supervisor webpage:

[www.tcd.ie/mecheng/research/fluids-heat-transfer](http://www.tcd.ie/mecheng/research/fluids-heat-transfer)

Location of lab:	Dept. Mechanical & Manufacturing Engineering Fluids & Heat Transfer research group Parsons Building Trinity College Dublin 2, Ireland <a href="http://www.tcd.ie/mecheng/contact/">http://www.tcd.ie/mecheng/contact/</a>
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<b>Working hours:</b>	
Number of Weeks offered:	10-12
Hours per week:	40
Earliest Start Date possible:	01/06/2016
Latest End Date possible:	30/09/2016



# Coláiste na Tríonóide, Baile Átha Cliath Trinity College Dublin

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## OFFER OF TRAINING FORM SUMMER 2018

Proposer details:	
Title:	Postdoctoral researcher
Name:	Dominika Tkaczyk
Email:	dominika.tkaczyk@adaptcentre.ie
Website:	<a href="https://www.scss.tcd.ie/~tkaczykd">https://www.scss.tcd.ie/~tkaczykd</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	Joeran Beel

Student required:	
Specify any previous training / experience the student should have:	
Programming (Python or R), basic knowledge of machine learning	
Study level (3rd year, 4th year)	any
Any other requirements:	

Traineeship offered:
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))
<p>During this internship, the student will work on a real-world data science problem related to extracting structured information from scientific documents. Depending on the student's interests and data available, the project can focus on the following information:</p> <ul style="list-style-type: none"><li>relationships between authors and institutions ("this person is affiliated with this institution"), or</li><li>the location of the tables and table captions in the document.</li></ul> <p>The goal of the project is to build a machine learning-based classifier able to automatically extract machine-readable information from a given document. Such a classifier will use clues from the text and layout of the document. Optionally, a deep learning approach can also be applied. During the project, the student will learn how to analyse and transform real-world data, design data representations for machine learning algorithms, train, inspect and evaluate supervised classifiers, and finally how to present the results. The internship will also provide an opportunity to gain hands-on experience with widely used machine learning libraries such as R's caret or Python's scikit-learn. This project will be primarily supervised by Dr. Dominika Tkaczyk, a postdoctoral researcher at TCD with vast experience in machine learning, data science and document analysis. Dominika Tkaczyk is a member of the ADAPT Centre and the working group of Dr. Joeran Beel who is an Ussher Assistant</p>

Professor in Intelligent Systems and who will co-supervise the project.	
Link to research group or supervisor webpage:	<a href="https://www.scss.tcd.ie/personnel/beeli">https://www.scss.tcd.ie/personnel/beeli</a>
Location of lab:	O'Reilly Institute

<b>Working hours:</b>	
Number of Weeks offered:	8
Hours per week:	40
Earliest Start Date possible:	02.07.2018
Latest End Date possible:	28.09.2018





Coláiste na Tríonóide, Baile Átha Cliath  
Trinity College Dublin

Ollscoil Átha Cliath | The University of Dublin

**OFFER OF TRAINING FORM SUMMER 2018**

<b>Proposer details:</b>	
Title:	Dr
Name:	Marian Tsanov
Email:	tsanovm@tcd.ie
Website:	<a href="https://www.tcd.ie/Neuroscience/">https://www.tcd.ie/Neuroscience/</a>
If your grade does not allow you to supervise students, please supply the name of support PI:	

<b>Student required:</b>	
Specify any previous training / experience the student should have:	
Programming experience, Matlab training	
Study level (3rd year, 4th year)	3rd year, 4th year, PG
Any other requirements:	

<b>Traineeship offered:</b>	
Brief job description: (please include (1) type of work, (2) what student should hope to achieve at end of the process, (3) who will supervise student on daily basis (post-doc etc.))	
The job includes multidisciplinary investigation of brain activity: <ol style="list-style-type: none"><li>1) Development of Matlab scripts analysing the concurrent neuronal patterns from in vivo recordings. The computational models will be run under MatLab and NEURON simulation environment. Variety of methods will be involved in the project: neuronal computation, network simulation, optogenetics, single-unit electrophysiology, local field potentials, signal processing, spatial information analysis, neuronal data analysis.</li><li>2) The student should be able to perform large-scale analyses of neuronal activity. Acquisition of the computational tools and skills to evaluate and investigate electrophysiological data obtained from behaving animals. The project will allow the student to learn identification of spikes of place cells and evaluation of the spiking properties of the neurons before and after optogenetic stimulation.</li></ol>	
The student will be supervised by the PI on daily basis.	
Link to research group or supervisor webpage:	<a href="https://www.tcd.ie/Neuroscience/omara-lab/Marian%20Tsanov.php">https://www.tcd.ie/Neuroscience/omara-lab/Marian%20Tsanov.php</a>
Location of lab:	Institute of Neuroscience

<b>Working hours:</b>
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Number of Weeks offered:	8-12 weeks
Hours per week:	30-35 hours
Earliest Start Date possible:	June 1 <sup>st</sup>
Latest End Date possible:	August 31 <sup>st</sup>