



Cardiff University Research Society Summer Projects List 2014/15

One of the principle ways CUREs hopes to improve research opportunities for Cardiff medical students is to compile a list of academic and clinical staff each year who are enthusiastic and keen to supervise medical student projects during the summer vacation period.

Eligibility

All Cardiff University medical students who are interested in undertaking a research project during the 2015 summer vacation period.

Application process

Interested students should complete an interest declaration which will be directed to their chosen supervisors. Supervisors or CUREs will then contact students of availability and arrange a meeting to refine mutual project preferences. It is at the discretion of the supervisor as to how they select the appropriate student and design the project.

Project design

The list provides the supervisors area of interest in which the project will be based and does not indicate the exact title of the research project. It is anticipated that the specific design of projects will be a collaborative process between the supervisor and student, such that each is bespoke to the students' skill level and interests.

Project organisation process

The process of organising a project in the summer for students can be somewhat confusing. We have constructed a timeline of the dates and deadlines so it will be made clearer to you.

➡ [CUREs Timeline 2014/15](#)

Internal funding for students

Projects on the list will be put forward to the Cardiff Undergraduate Research Opportunities Programme (CUROP) by supervisors for funding. However we will not know whether the projects will be allocated CUROP funding until April 2015. The CUREs projects which have been allocated CUROP funding can be found then at: [\[http://learning.cf.ac.uk/curop/\]](http://learning.cf.ac.uk/curop/)

Email: CUREs@cardiff.ac.uk

External funding for students

Students and supervisors are encouraged to apply for funding from external sources. We have compiled some but the list is by no means exhaustive. Another useful resource for project funding on Money 4

Med Students: [<http://www.money4medstudents.org/competitions-and-awards->]

↳ [External Funding Sources- Updated 2014](#)

***** For interested students *****

INSTRUCTIONS

1. Please complete our online student [interest declaration](#):

➔ https://docs.google.com/forms/d/1EgrNUVupYw86TyiyWv7ntdJFm9o_mkDonZyj2smTpY/viewform

2. Students can submit declarations for as many projects as they wish.

3. Submit separate form per project.

4. We will send the forms to your chosen supervisors and they will contact you shortly.

5. Submission deadline for forms are 5pm, Friday, 16th January 2015.

6. Further enquires on projects or if you would prefer a field not listed, please direct to CUREs@cardiff.ac.uk

The Projects listed below are in their respective Institutes/Departments.

Happy hunting!

The CUREs Committee.

Email: CUREs@cardiff.ac.uk

School of Medicine, Cardiff University
Institute of Infection & Immunity

Supervisor(s): Dr Donald Fraser
Dr Tim Bowen

Project code: **001**

Project focus: **MicroRNAs as biomarkers and regulators in kidney disease.**

Type of project: Laboratory/Academic Research

Suitable for: Year 1 or above, Intercalated BSc or additional degree. Interest in basic laboratory science essential. Prior experience not essential (full training available)

Research group interests: MicroRNAs are a recently discovered form of regulator that show significant potential as a new class of biomarker, and as targets for therapy. This lab studies microRNAs in the context of kidney disease, and has a long track record of training clinical investigators to equip them with the skills needed to thrive in a clinical academic career.

Supervisor(s): Prof Paul Morgan

Project code: **002**

Project focus: **Infection and Immunity, Neuroimmunology and Markers of Neurological Disease**

Type of project: Laboratory/Academic Research

Suitable for: Year 1 or above, Intercalated BSc or additional degree

Research group interests: Precise project will depend on student availability and interests, but will be based on extending ongoing work in the Morgan lab.

Email: CUREs@cardiff.ac.uk

Supervisor(s): Dr Mark Toleman

Project code: **003**

Project focus: **Control of Multi-Drug Resistant (MDR) bacteria using bacteriophages.**

Type of project: Laboratory/Academic Research

Suitable for: Year 2 or above, Intercalated BSc or additional degree

Research group
interests:

The rapid rise of antibacterial resistance in Gram negative bacteria has caused treatment difficulties across the world and threatened the safety of modern medicine. The project focuses on the natural enemies of bacteria, bacterial viruses called bacteriophages that can be used to decontaminate people who are carrying MDR bacteria in their gut. The gut typically is the source of urinary tract infection and subsequent blood infections in the community and hospital. We have isolated many bacteriophages that specifically destroy these MDR bacteria and the project will focus on characterising these viruses and modulating their activity by mutation and selection.

Email: CUREs@cardiff.ac.uk

School of Medicine, Cardiff University
Institute of Psychological Medicine and Clinical Neurosciences

Supervisor: Prof George Kirov

Project code: 004

Project focus: Continuation ECT for reducing the relapse rate after a successful ECT course.

Type of project: Clinical Audit

Suitable for: Year 3 or above

Research group interests:

Electroconvulsive treatment (ECT) is the most effective treatment for severe depressive disorder, with remission achieved by 70% of patients in Cardiff. However, more than half of those relapse within 12 months.

In Cardiff we are trying to reduce the relapse rate after ECT by offering continuation ECT. We are piloting a strategy that involves a gradual increase in the time between ECTs, to a period of one every 3 weeks, after patients achieve remission. We want to encourage patients and their doctors to take up this treatment strategy. We will analyse if this prolongs the duration of the remission. Continuation ECT is being monitored in the UK and might be recommended as standard practice if more clinics report positive results.

The student will take part in the implementation of this strategy and will be involved in assessments and follow-up of patients. He/she will have access to available data collected previously. The student will analyse the previous evidence in the literature, will receive teaching in appropriate statistical tests and working with SPSS.

Email: CUREs@cardiff.ac.uk

Supervisor: Prof George Kirov

Project code: 005

Project focus: **Psychiatry.**

Type of project: Clinical Audit

Suitable for: Year 2 or above

Research group
interests:

Electroconvulsive treatment (ECT) is the most effective treatment for severe depressive disorder, with remission achieved by 70% of patients in Cardiff. However, more than half of those relapse within 12 months.

In Cardiff we are trying to reduce the relapse rate after ECT by offering continuation ECT. We are piloting a strategy that involves a gradual increase in the time between ECTs, to a period of one every 3 weeks, after patients achieve remission. We want to encourage patients and their doctors to take up this treatment strategy. We will analyse if this prolongs the duration of the remission. Continuation ECT is being monitored in the UK and might be recommended as standard practice if more clinics report positive results.

The student will take part in the implementation of this strategy and will be involved in assessments and follow-up of patients, including cognitive testing. He/she will have access to available data collected previously. The student will analyse the previous evidence in the literature, will receive teaching in appropriate statistical tests and working with SPSS.

Email: CUREs@cardiff.ac.uk

Supervisor: Lesley Jones, Peter Holmans

Project code: 006

Project focus: Genetic modifiers of Huntington's disease.

Type of project: Laboratory/Academic Research, Clinical Research

Suitable for: Year 3 or above, Intercalated BSc or additional degree

Research group interests:

Huntington's disease (HD) is an autosomal dominant neurodegeneration caused by an expanded CAG repeat in the HTT gene. Subjects with more than 35 CAG repeats get HD and the length of the CAG tract partly determines age at onset of disease - longer repeats give earlier onset. However we have conducted a genetic study looking for genes that modify age at onset of HD and this has revealed candidates that we wish to follow up. In addition we have substantial clinical data from our genetic cohort (~1800 subjects) and we wish to examine whether other characteristics of the disease are genetically determined using the data available. The projects will involve data analysis where the minimum length would be 6 weeks FT equivalent, though some laboratory research would also be possible this is likely to take longer to produce data that could be written up.

Supervisor: Dr Rhys Bevan Jones

Project code: 007

Project focus: **Developing & evaluating an online multimedia psychoeducation package for adolescent depression.**

The research is guided by the MRC framework for complex interventions, and is funded by the National Institute for Health Research. The placement will be based with the Child and Adolescent Psychiatry Section at the Hadyn Ellis Building, Cardiff University School of Medicine..

Type of project: Clinical Research

Suitable for: Any year (years 3+ preferable)

Research group interests:

Background: Depression is common in young people and leads to distress and impairment for the individual and their family. Engaging young people in prevention and early intervention programmes is a major challenge for health and other services, and there has been increasing interest in the use of multimedia to help engage and inform. Over recent years, our research group has led studies into adolescent depression and online psychoeducation for bipolar disorder (psychoeducation is broadly about delivering information about health issues and self management).

The student will get involved in the development and evaluation of an initial version of an online package for adolescents with (or at high risk of) depression. The student will gain some or all of the following, which could be discussed prior to the placement:

- Knowledge and understanding of adolescent depression;
- Knowledge and skills related to the development of an initial online prototype, in collaboration with a multimedia company. Possible formats: graphics, videos, animation, interactive platforms, links with mobile phones and social media;
- Skills related the analysis of quantitative data from questionnaires and online usage of the package;
- Skills related to the analysis of qualitative data from transcriptions of interviews and focus groups with young people, parents/guardians and professionals.

Email: CUREs@cardiff.ac.uk

Supervisor: David Linden

Project code: **008**

Project focus: **Neurofeedback**

This project will tie in with our EC-funded BRAINTRAIN consortium (www.braintrainproject.eu). As part of this consortium, we will be conducting a trial on functional imaging-based neurofeedback as a potential treatment tool for alcohol dependence (to promote abstinence). The students would learn about functional magnetic resonance imaging, models of self-regulation of brain activity through real-time feedback of brain signals (neurofeedback), the rationale for its therapeutic application in psychiatry and gain practical experience in the assessment of addictive behaviour.

Type of project: Clinical Research

Suitable for: Year 3 or above

Research group interests: Alcohol dependence is still very difficult to treat and new approaches, combining psychological and neurobiological strategies, are needed. Neurofeedback is ideally suited to provide this combination because it employs psychological strategies for the training of self-regulation of (potentially abnormally active) brain networks.

Supervisor: **Stephan Collishaw**

Project code: **009**

Project focus: **Testing link between child mental health and adult physical health**

Type of project: Laboratory/Academic Research

Suitable for: Year 3 or above, Intercolated BSc or additional degree, Epidemiological/statistical skills

Research group interests:

Evidence suggests that child mental health problems are associated with adult psychiatric illness. Links with physical ill health are less well understood. The project will make use of data from the 1958 UK birth cohort, with data collected on common child mental health problems at ages 7, 11 and 16, and data on adult physical health conditions at around age 45. Specific aims of the project are 1) to derive project specific measures of physical ill health from ICD codes (e.g. cardiovascular disease), 2) to test associations between childhood mental health variables and adult physical ill health, and 3) test associations whilst adjusting for confounders (e.g. childhood social disadvantage).

School of Medicine, Cardiff University
Institute of Molecular & Experimental Medicine

Supervisor(s): Dr Lei Zhang

Project code: 010

Project focus: **Thyroid hormone + Dio2 variation linked to low IQ**

Type of project: Laboratory/Academic Research

Suitable for: Year 2 or above

Research group

Interests: The Thyroid Research Group in Cardiff has over 20 years international research reputation with leading roles in the European Group of Graves Ophthalmopathy (EUGOGO), the British and European Thyroid Associations with EU programme funding. Our recent exciting research point to “children with a common DIO2 gene variation and lower thyroid hormone levels were four times more likely to have an IQ under 85”, which was announced by BBC early this year. Our ongoing investigation involves genotyping DIO2 in the cohort of controlled antenatal thyroid screening study (CATS) and comparing enzyme activity by DIO2 variants using in vitro analysis. This CUREs project is to continue from the above project outcome investigating the hypothesis that the common DIO2 variant with thyroid hormone level affects IQ via mitochondria.

Email: CUREs@cardiff.ac.uk

Supervisor(s): Professor Marian Ludgate, Dr Fiona Grennan-Jones

Project code: 011

Project focus: Development of novel bioassays to identify Graves' disease (GD) patients most likely to develop Graves' orbitopathy (GO).

Type of project: Laboratory/Academic Research

Suitable for: Year 2 or above

Research group

Interests: GD and GO are both autoimmune conditions, GD is caused by thyroid stimulating autoantibodies (TSAB). GO is a distressing eye condition in which the orbital contents expand due to excess adipogenesis and overproduction of extracellular matrix. In vitro studies have indicated a role for TSAB in both of these mechanisms, but autoantibodies to a second receptor, the IGF1R may also play a role. We aim to investigate the various signalling pathways using luminescent reporter assays. The project will provide experience in a wide range of cell and molecular biology techniques.

Pathogenic mechanisms which cause thyroid dysfunction include autoimmunity, dietary insufficiency and genetic variation. Understanding which is in operation is vital to effective patient management. The Thyroid Research group in Cardiff has a long and distinguished international reputation in the Thyroid field both in terms of clinical and basic research, with a strong translational emphasis. The Group's latest EU funded project will investigate the role of the microbiome in the pathogenesis of GD and GO.

For further details see:

<http://medicine.cf.ac.uk/molecular-experimental-medicine/research/thyroid/>

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School of Medicine, Cardiff University
Institute of Primary Care & Public Health

Supervisor(s): Jonathan Hewitt

Project code: 012

Project focus: Surgical Disease in the Older Person

Type of project: Clinical Research

Suitable for: Year 2 or above

**Research group
interests:**

As part of www.opsoc.eu we collect data on the older surgical patient each year. To date our previous CuRES students have published two papers, as full authors, with several more still on going with publication anticipated. The work forms part of an epidemiological data project.

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Cardiff & Vale University Health Board

Surgical Services Division

Supervisor(s): Vinod Prabhu

Project code: 013

Project focus: Metastatic neck nodes- should it be revisited?

Type of project: Clinical Audit

Suitable for: Year 2 or above

Research group interests:

Majority of the head and neck cancers are squamous cell carcinomas. All though presentation varies, majority of them present with neck nodes when in advanced stage and such patients will be treated accordingly.

Concerns lie when the early SCC of the head and neck regions, do not present with neck nodes. Controversies lie about prophylactic treatment in the form of neck dissection and or radiotherapy, depending on the size of the tumour and experience within the MDT.

Aim of this study would be to look into South West Head and Neck cases over the last 5 years 2008-2013.

Data to be extracted from the Canisc data base. i.e patient demographics, diagnosis, radiology and FNAC , core results , primary treatment and pathology i.e depth of the tumour, margins of resection, radiotherapy field, follow up in months and recurrence and secondary treatment.

Exclusion criteria: all node positive neck case, thyroid and sinuses

Inclusion criteria: All cases with node negative necks, cancers of the oral cavity, oropharynx, larynx and pharynx

Outcome: Predictive factors for recurrence in the neck following primary treatment in node negative neck

Cardiff & Vale University Health Board
Medicine Division

Supervisor(s): Dr Mohid S Khan

Project code: 014

Project focus: **Gastrointestinal symptoms in patients with neuroendocrine and gastrointestinal cancers.**

Type of project: Clinical Research

Suitable for: Year 3 or above

Research group interests:

Once thought to be rare, neuroendocrine tumours are increasing in incidence with management undertaken by a number of different specialist across Europe. There is a lack of systematic documentation of gastrointestinal symptoms experienced by patients with these cancers which can lead to a poor quality of life. The aim would be to identify suitable patients with neuroendocrine tumours from outpatients and assess their symptoms using questionnaires or patient centred outcome measures. If appropriate, these patients can then be investigated and symptoms managed.

Previous work in neuroendocrine tumours has led to high quality international publications, posters and national/ international presentations.

Aneurin Bevan University Health Board
Royal Gwent Hospital, Newport

Supervisor(s): Dr. Amer Jafar

Project code: 015

Project focus: **STROKE MEDICINE.**

The main focus of the project is to investigate the magnitude of the risk factors for stroke patients in Gwent. It will address interesting subjects like Carotid Artery Disease and diabetes mellitus. It will address issues related to hypertension and Brain Haemorrhage as well.

Type of project: Clinical Audit

Suitable for: Year 3 or above

Research group interests:

It is vital to study the risk factors of stroke in the community. We admit about 700 stroke patients annually to Royal Gwent Hospital. It is important to establish the risk factors for different types of stroke including haemorrhagic type. The outcome of the project will determine the research questions that might be arise as a result of the project itself. There are few studies done worldwide regarding the risk factors for ischaemic stroke but this will be the first project of its kind in Gwent.

Supervisor(s): Dr Kofi Obuobie

Project code: 016

Project focus: **Audit of a Young Adult diabetes clinic based on Multidisciplinary team consultation model**

Type of project: Clinical Audit

Suitable for: Year 3 or above

Research group interests:

The Young adult Diabetes clinic based at the Royal Gwent hospital is based on clinic model which comprises of a Consultant Diabetologist, Dietician, and Diabetes Nurse specialist meeting with each patient at the same time.

This unique model, has been in operation since 2013 and has enabled the team discuss patient concerns together. This has fostered unified management plans, shared decision making and reduced the need for multiple appointments and delays and long times spent in clinic.

Project:

An audit of the of clinical records of 93 patients registered to attend this clinic. type 1 diabetic patients was conducted. Clinical data from retrieved from hospital records, the majority is already available electronically.

Standards of care would be assessed by determining the percentage of patients who have completed the 15 point diabetes health checks, glycosylated haemoglobin, hospital admission and 'Did not attend' (DNA) rates. This data would be compared with national guidelines and data from National diabetes audit.

Presentation and Publication of data: would be as an abstract and poster presentation, which would also submitted to a national/ international diabetes meeting.

Bangor University
School of Medical Sciences

Supervisor(s): Dr Christian P Subbe

Project code: 017

Project focus: **Designing the Future Hospital: Should patients write their own records? Or which parts of them?**

Type of project: Clinical Research

Suitable for: Year 3 or above

Research group interests: The rising cost of health and the pressure to provide care for an ageing population with increasingly complex health requirements has brought the need for greater efficiencies into sharp focus.

At the same time it is obvious that staff overstretched with documentation are struggling to provide a safe environment for sick patients. Life saving information is often buried in copious amounts of redundant notes in clinical records.

Our group has contributed to this discussion by measuring the time that doctors working in UK hospitals require to look after acutely unwell patients. We have also established in a pilot that patients are able to take some of their own history with the help of a tablet computer and are contributing to automated systems of vital sign recordings for a safer ward environment.

The proposed project is based at the Ysbyty Gwynedd in Bangor and aims to take these principles further by exploring what parts of history taking, documentation, monitoring is essential for safe and efficient care and who is best placed to undertake it: doctors? nurses? patients?

Results from the project will inform development of a soft-ware platform for clinical documentation.

Output of the project will be suggestions for disruptive innovation of hospital documentation summarized in a paper in a peer reviewed journal.

I would be delighted to discuss further details on request.
Chris Subbe (Christian.Subbe@Wales.NHS.UK)

Email: CUREs@cardiff.ac.uk

Supervisor(s): Dr Christian P Subbe

Project code: 018

Project focus: **SAMBA, the Society for Acute Medicine's Benchmarking Audit - Measuring key quality indicators of UK emergency care**

Type of project: Clinical Audit

Suitable for: Year 2 or above

Research group interests: The project is based at Bangor University, 20 minutes from the mountains of Snowdonia and the beaches of Anglesey.

Acute Medicine is the specialty that cares for acutely unwell medical patients in the first 72 hours. Acute Medical Teams admit emergencies with cardiac, pulmonary, gastro-enterological, renal and other catastrophes, establish diagnosis, treatment and follow-up plans. Acute Medicine is the fastest growing medical specialty in the UK over the last few years.

The Society for Acute Medicine is asking its members once per year to collect data from the acute medical take for a 24 hour period. This data is measured against a set of benchmarking tools.

Together with colleagues from Nottingham we have run the audit in 2014 for the third time with 110 units contributing data on staffing and 65 hospitals contributing data on emergency admissions. To date we have published three papers from the data with a fourth in preparation.

Some of the analysis is based around the assessment of severity of illness, a key parameter to identify those patients who need the most urgent care. This part of the audit is strongly related to previous work from our group.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=subbe>).

The audit is an annual event and we will run again in June 2015 and June 2016. The student collaborators will review the incoming data, communicate with participating units about unclear data items, collate a data base for analysis, perform the analysis and issue results to the participants. They will also inform the format of the audit for the coming year.

Results will be presented at the International meeting of the Society for Acute

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Medicine in Autumn 2015 and an analysis will be published in a related paper in a peer reviewed journal.

Students will gain experience with the set-up of audit, principles of safe hospital care, management of data bases, statistical software and principles of analysis. They will design the poster and contribute to the first draft of the resulting peer reviewed paper while hopefully enjoying a tremendous summer in one of the UKs premier holiday regions.