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On behalf of the UCD School of Medicine and Medical Science, it gives me great pleasure to introduce the first annual report of UCD Medicine Research (UCD MR). This report represents an important milestone, coming half way through the current three-year cycle of the Research Strategy of the UCD School of Medicine and Medical Science (SMMS) and outlines the research profiles and key research outputs from Investigators affiliated with the SMMS Research Strategy for 2011 and 2012.

UCD remains at the forefront of health research both within Ireland and internationally. This report highlights the productive and varied research ongoing within the many campuses affiliated with SMMS. As part of the School’s research strategy, UCD MR has engaged with research-active investigators, both clinical and non-clinical, to identify key research areas, with a view to further enriching the quality and quantity of world-class research emanating from UCD SMMS.

This report presents these research areas through four principal research structures: (1) Academic Research Centres, our flagship leading research structures, (2) Research Groups, comprising outstanding researchers working in smaller groups on specific fields, (3) Research Themes, comprising large numbers of researchers working in a common broader field of research, and (4) Individual Investigators, who deliver a large proportion of research output arising from SMMS. Through this ongoing research strategy, we have already transitioned one Research Theme successfully into a fully-functioning Academic Research Centre and it is our hope that we will see further Academic Centres created over the coming months.

The generation of this report has been a considerable undertaking, and I am very grateful to the UCD MR project team for managing its production. I would also like to thank all the Investigators who have contributed to this report and the numerous support staff within SMMS who offered input and guidance throughout. Lastly, I would like to thank Claire O’Connell, journalist with the Irish Times, for helping shape the interviews that offer specific inputs into the varied research underway within SMMS.

Finally, I hope that this report is a useful source of information and pride for our many funders and supporters, without whom such progress – detailed in the pages within – would not be possible.

Dr Paddy Mallon
Associate Dean, Research & Innovation
UCD School of Medicine & Medical Science

It is my great pleasure to welcome the publication of the first UCD Medicine Research annual report. The information contained within this document underlines the depth of our research expertise, the immense talent of our principal investigators, and the scale of our ambition. I would like to express my gratitude to all who were involved in its production, particularly to Dr Paddy Mallon, Associate Dean for Research and Innovation at the School, and his team at the UCD Medicine Research office.

This document serves a noble purpose: the communication of our research and its impact on human health and society. It is in our collective interest, particularly in these straitened economic times, to communicate more effectively the excellent work that takes place throughout our academic and clinical network, and I am confident that this report will assist us in raising the profile of our research and that of our principal investigators.

At UCD School of Medicine & Medical Science, we are proud to be part of one of Europe’s leading research intensive universities – a status to which the School contributes a great deal at home and internationally. In the course of reading this report, it is most gratifying to see the benefits of our scale – at school and university level – translate back into collaborations at centre, group and individual level. With that in mind, I would like to extend my congratulations to Dr Sean Ennis and members of the Academic Centre on Rare Diseases, who were awarded full centre status by the University in the summer of 2013. Further collaboration and synergies are critical to our success, and I look forward in the next year to more groups and research themes moving forward to centre status. It is a tremendously exciting time for UCD Medicine Research, as we strengthen existing research links within the UCD College of Health Sciences and the Dublin Academic Medical Centre, and we initiate new research collaborations in the emerging Ireland East Hospital Group.

In the meantime, I want to thank you all for your time and effort in helping to make this report a reality. It provides just a snapshot of the work that you all do, and yet still it underlines what a privilege it is to work with such talented investigators.

I hope that you all find this publication useful and I look forward to seeing how the next edition develops over the coming twelve months.

Yours sincerely,

Prof Patrick Murray
Dean of Medicine & Head of School
Welcome to the UCD MR Annual Report 2012/13

The School aims to create an environment which supports world class translational research by providing excellent laboratory and clinical facilities resourced with expert support staff that includes post-doctoral fellows, research nurses, laboratory technicians, data managers and administrative staff. The School provides considerable financial and organisational support to our investigators and their teams to allow them compete for external research funding.

As part of the current SMMS Research Strategy the School has assembled and continues to develop a coherent set of supports to assist high calibre groups of investigators achieve their full potential.

UCD Medicine Research (UCD MR) has been developed to act as a central hub to connect our dispersed group of investigators to practical University support for grant writing, programme management, industry liaison and international collaborations. It also offers support to graduate students and to research-Graduate committees such as the SMMS Clinical and Biomedical Degrees committees, and the Summer Student Research (SSRA) Programme.

The UCD MR Office is staffed by experienced research administrators, led by Ms Yvonne Barry, Research Administration Manager UCD MR and supported by Ms Denise Gosling, Senior Executive Assistant UCD MR and Ms Niamh McCarthy, Senior Executive Assistant UCD MR.

Central to the functions of the UCD MR Office is rapid and effective communication with our investigators and students. This function is supported by Mr Mark Byrne, Communications Manager for the School of Medicine and Medical Science, who has worked closely with the UCD MR Office team to collate the information that has contributed to this annual report.

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Research Administration Manager

Ms Denise Gosling
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Visit us online at http://www.ucd.ie/medicine/ourresearch/
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Looking at disease through a genetic lens

Dr Sean Ennis, head of the new UCD Centre for Research in Rare Diseases talks to Claire O’Connell about how UCD is leading the way in genetic analysis of a range of rare disorders such as autism and familial diseases.

There are some things that run in families, like red hair and blue eyes. And sometimes medical conditions do too. When that happens, it can be helpful to know what genes are involved, to inform genetic counselling, to develop tests to help diagnosis and possibly even to identify new molecular targets for treatments. Dr Sean Ennis is using genetic techniques to analyse a range of inherited conditions, from relatively common disorders such as autism, to rare diseases that tend to concentrate in families.

New technologies, quicker results
The technology to analyse human genetics has developed rapidly over the last two decades or so, explains Dr Ennis, who is a Lecturer at UCD School of Medicine & Medical Science and a Principal Investigator at the National Centre for Genetics in Crumlin.

“There was a time when if you wanted to work out the mutations, or changes in DNA, that were linked to an inherited disease, you would get samples from the patients, analyse them and then put them in the freezer and wait for the next generation to be born so you could continue the study,” he says.

Times have moved on, he notes, and now approaches such as exome sequencing, which works out the ‘letters’ in DNA that encode genes, and other techniques offer the chance to find important mutations more rapidly.

Autism - genetic complexity
For many years, Dr Ennis has been working on the genetics of autism with colleagues in UCD, Ireland and internationally. One of their major breakthroughs was to highlight the complex nature of mutations in the condition - by genotyping 9,000 individuals in 3,000 families and looking to see whether there were common changes in the DNA letters that were linked with autism. The results were surprising, and they changed the thinking about autism genetics, explains Dr Ennis.

“Prior to that study it was thought there were a few common genes involved in autism,” he says. “But our data showed that there wasn’t, that instead there were multiple rare variants.”

Rare diseases - the genetic link
While Dr Ennis remains involved in autism research, he and colleagues at UCD have also developed a particular strength in investigating the genetics of inherited rare diseases. By their nature, individual cases rare diseases may not be numerous, but the sheer numbers in the rare disease category quickly add up, and most have a strong genetic component, he explains. “There are about 6,000 to 8,000 known rare diseases, and about 80 per cent of them are genetic in background.”

Because many of those rare diseases tend to involve a small number of key genes and are concentrated in families, it can make the hunt for participating genes and mutations more directed, explains Dr Ennis.

And at UCD there is considerable interest in finding out more about inherited rare diseases among the Traveller community in Ireland, he adds. “We reckon there are around 60 genetic conditions associated with the Traveller community here, and we are looking at some of these conditions.”

An eye to diagnosis
They have already had considerable success. One breakthrough was in a rare disease called microphthalmia, where children are born with eyes that are small or missing. One family had seven affected members, so the researchers, including Dr Jillian Casey, compared genetic information from affected people and their close relatives and homed in on a relatively small stretch of DNA that contained two genes of interest.

One of those genes was STRA6, which in involved in vitamin A uptake, an important factor in eye development, and the UCD/Crumlin study showed that mutated STRA6 was at the root of microphthalmia. The findings led to the development of a service test that can be used to inform genetic counselling for potentially affected families.

“An eye to diagnosis...”

“My aim in terms of rare diseases is to take it beyond individual investigators,” he says. “The study of rare diseases is bringing together clinicians, geneticists, experts in animal models and others who are in position to translate findings into the clinic. We want to get the research in a more established framework so we can look for longer-term funding and build strategies around rare diseases.”

“My aim in terms of rare diseases is to take it beyond individual investigators”

Rare Diseases Centre
He now wants to consolidate the ongoing work in rare diseases through a proposed new Rare Diseases Centre, which would harness the expertise that has grown organically in UCD, Crumlin and the Children’s University Hospital at Temple Street in recent years.

“My aim in terms of rare diseases is to take it beyond individual investigators,” he says. “The study of rare diseases is bringing together clinicians, geneticists, experts in animal models and others who are in position to translate findings into the clinic. We want to get the research in a more established framework so we can look for longer-term funding and build strategies around rare diseases.”

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UCD Conway Institute

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Taking the long view on research

Dr Paddy Mallon speaks to Claire O’Connell about his role as Associate Dean for Research and his plans to maximise the impact and reach of the School’s activities.

What makes medical research a success?

One key ingredient would be time for the mental and physical focus that research needs. Access to high-quality data is another factor that drives discovery and bringing researchers from different disciplines together can introduce new dimensions to a project. And bringing researchers from different disciplines together can introduce new dimensions to a project.

UCD School of Medicine & Medical Science is looking to enhance these factors through its new research strategy which has identified several themes of excellence across the School and is looking to bring groups together around them, explains Associate Dean for Research and Innovation, Dr Paddy Mallon.

When he took up the role last year Dr Mallon saw an opportunity to shape how the School manages research, by encouraging researchers across the School’s locations to engage in areas of common interest.

“We have got a very large campus that is spread over clinical and non-clinical sites,” he explains. “And in every University teaching facility where you have clinical and non-clinical elements, people can feel separate from each other. So we wanted to create an environment where we can bring people together and they can form an identity.”

Enter UCD Medicine Research, a hub and suite of assistive supports that spars the activities at Belfield, the Mater and St Vincent’s Hospitals. “No matter where a researcher in the School is based, they can affiliate with that structure,” explains Dr Mallon. “And within that umbrella we wanted to identify where our core research strengths were, where we had critical mass and get core groups of people working together in academic research centres. That is a structure that exists in the university but we haven’t really explored it.”

Themes of common interest

To identify those core themes, the School went to those in the know - the researchers themselves.

“We took a bottom-up approach,” explains Dr Mallon. “We asked people to list the types of research areas they were interested in, and out of that came some broad areas of strength.”

They include translational oncology, genetic rare diseases, women and children’s health, infectious diseases, diabetes and inflammation and fibrosis.

“We are now encouraging researchers to coordinate themselves and to submit applications for academic research centres in these areas to the university,” says Dr Mallon.

HIV - the long view on treatments

His own area of specialty is infectious diseases, particularly the clinical implications of long-term infection with and treatment for HIV, and he tracks his interest back to his college days studying medicine at Queen’s University Belfast.

“It was a disease that was just hitting the news and it was affecting my generation,” recalls Dr Mallon. During his clinical training in London and Sydney he carried out research into the side-effects of antiretroviral treatment, and in 2008 he set up the HIV Molecular Research Group (HMRG) at the Mater-Maamc cardiatal University Hospital, which he leads.

The group’s research has a strong focus on the clinical implications of long-term treatment for HIV, particularly on bone and cardiovascular health, and how HIV affects the immune system.

“When we know about it, the more we realise that screening and monitoring for these diseases in HIV is likely going to be completely different to how you do it for the general population,” he says. “Clinically we see what the right approach to management is, and understanding the mechanistic problems will give us an idea about how we could be using treatments more effectively.”

“We asked people to list the types of research areas they were interested in, and out of that came some broad areas of strength”
Nutrition in pregnancy to protect future health

Prof Fionnuala McAuliffe discusses with Claire O’Connell the long-term benefits - for baby and mother - of nutrition in pregnancy

A stitch in time saves nine, according to the old expression. Or, to put it another way, timely intervention can avoid costly problems later on. Could looking after nutrition in pregnancy be the ‘stitch in time’ that protects the long-term health of both mother and baby?

Prof Fionnuala McAuliffe, who heads Women’s and Children’s Health at UCD, believes so - and her research is gathering the evidence to inform new nutritional guidelines for expectant mothers. And with a large proportion of children and pregnant women in Ireland being overweight or obese, she believes pregnancy is an important window to get nutrition right.

Long-lasting Impacts of Pregnancy Diet

“There’s a lot of evidence that the pregnancy environment can impact quite significantly on maternal and foetal health during pregnancy at birth and even in later life,” says Prof McAuliffe, who is Associate Prof of Obstetrics and Gynaecology at UCD School of Medicine & Medical Science.

The mother’s nutrition and metabolic health can have a particular impact, she notes. “If the mother has diabetes or if the quality of her nutrition is poor during pregnancy, that can lead to the baby being overweight at birth. And babies that are at the heavier end of the spectrum of birth weight have an increased risk of obesity and type II diabetes in later life.”

That’s why Prof McAuliffe wants pregnancy to be seen as a valuable window where nutritional education and interventions could help to stave off costly health problems later on. “A huge amount of our money in health is being spent on dealing with cardiovascular disease and diabetes, and if we can reduce that by a relatively simple intervention and education in pregnancy then you can see the benefits to society in general,” she says. “That will have huge economic implication not just for this generation but for the next one as well.”

Sunshine Vitamin Affects Baby’s Bone Growth

A mother’s vitamin-D status can affect the growth of the foetus in late pregnancy, according to research recently carried out by Prof McAuliffe and colleagues at UCD and the National Maternity Hospital, where she is a consultant obstetrician and gynaecologist.

“You can get vitamin D through your diet. Two portions of oily fish a week will do the trick, though most Irish people don’t have even that - and you can also make it in the body through exposure to sunlight, but of course being above 42 degrees north means we don’t get a lot of sunlight in Ireland, especially during winter.”

The UCD study of 60 Caucasian women found that maternal vitamin-D status was linked to skeletal development. “We found that vitamin D influenced the length of the thigh bone of the foetus and the length of the baby at birth,” explains Prof McAuliffe. “It’s an example of how maternal nutrition can impact on baby’s growth in a physical way, and the message is that a pregnant woman should be eating two portions of salmon or mackerel a week, and if she is not then a vitamin-D supplement should be considered.”

Prof McAuliffe is now working as part of a sub-committee in the Food Safety Authority of Ireland to develop recommendations for nutrition in pregnancy, where her research findings will provide supporting evidence.

Sugar Not Such a Treat

Glucose is another area where nutritional guidelines in pregnancy could make a difference - this time to the mother’s longer-term health, explains Prof McAuliffe.

She recently directed a randomised controlled trial of 800 expectant women in Ireland to look at the effects of a low-glycaemic-index (GI) diet on pregnancy. The women, who had each previously delivered a baby weighing 4kg or more, were divided into two groups: one group had their usual diet, while the other group ate low-GI foods such as brown rice and bread instead of high-GI fare like white bread and sugary breakfast cereals that cause spikes in the body’s insulin.

“This was the largest trial of its kind internationally,” says Prof McAuliffe, who describes how the findings were a little surprising. “We expected to find a difference in birth weight of the babies but we didn’t find that. However what we did find was that the mothers put on less weight in pregnancy and they had less pregnancy diabetes.”

The results show that following a low-GI diet in pregnancy could help women avoid excessive weight gain, and by all accounts it was a simple change to make.

“This low-sugar, low-GI diet was quite acceptable to the women and it’s easy to follow. So it is a good diet to consider if a woman is at risk of excessive weight gain in pregnancy.”

The UCD team is now following up with the mothers and babies over the course of five years to look at the longer-term impact of the low-GI diet in pregnancy.

Investment in Future Health

Putting more emphasis on healthy eating in pregnancy would be a sound investment to make in tackling the obesity crisis, according to Prof McAuliffe.

“In Ireland half of all our pregnant women are either overweight or obese and a quarter of all our children are obese,” she says. “If an intervention in pregnancy as simple as a low-sugar diet will result in less maternal obesity and less childhood obesity then this is where we should be putting resources.”

“This is a hugely important area to focus on, not just for the mother’s health but for the health and wellbeing of the next generation.”
Not many people talk about it, but a substantial number of people in Ireland will experience faecal incontinence at some point in their lives. That’s why Prof Ronan O’Connell, Prof of Surgery at UCD School of Medicine & Medical Science, is researching ways to address it, and finding success by targeting the nerves involved.

“Faecal incontinence is known as the unvoiced symptom and there is an epidemic of it,” he says. “About eight percent of the population have faecal continence difficulties, it is eight times more common in women than men and it is the most common cause, apart from dementia, for people to be institutionalised.”

Childbirth changes
Childbirth is a particular risk factor for faecal incontinence in the short or longer term, explains Prof O’Connell, who is a Consultant Colorectal Surgeon at St Vincent’s University Hospital.

“Between 15 and 20 per cent of women who give birth vaginally will have some alteration in their continence after childbirth - most recover within six months but the remainder are left with difficulty,” he says. “And overall, the number who have ongoing difficulties with continence is between two and four per cent after first childbirth.”

Along with Prof Colm O’Herlihy, Prof of Obstetrics and Gynaecology at UCD and Dr Myra Fitzpatrick, he runs the Perinatal Clinic at the National Maternity Hospital, where they see between 300 and 400 new patients each year. Many have incontinence problems because tissue has torn during childbirth, but the stretching of the pelvic nerve supply during childbirth can also cause problems in the longer term, explains Prof O’Connell. “We know that nerves can usually be stretched about 15 per cent without being damaged but once you go beyond that, then you start getting disruption.”

Many women may simply manage the symptoms for years, but then arising menopause or more general ageing and those symptoms can become unmanageable, and these are the kinds of issues Prof O’Connell and his colleagues Ms Ann Hanly are now seeing at the country’s first pelvic floor centre, at St Michael’s Hospital, which opened for patients earlier this year.

“We provide comprehensive care with a uro-gynaecologist and a colorectal surgeon for pelvic floor disorders,” he says. “The Hospital refurbished the clinic and we have funding from industry and charitable foundations for state-of-the-art equipment.”

Firing up the nerves
So what can be done to help people with faecal incontinence? One approach is to artificially stimulate the sacral nerve, and Prof O’Connell has been using neuromodulation to help patients at SUJH and St Michael’s Hospital, working with patients for whom a colostomy is the alternative.

“Firing up the nerves”
Prof O’Connell is also interested in how the brain changes when peripheral nerves are ‘fired’ through artificial means, and working with Prof James Jones, Prof of Anatomy in UCD, he is looking closely at what happens an animal model. The work has shown how, when the nerve is damaged, the cells in its ‘control centre’ in the spine die away, and the nerve’s representation in the brain’s cortex is lost - if you don’t use it, you lose it.

However with neuromodulation you see encouraging changes in the brain too, as he describes: “You get up-regulation of NCAM [a sticky molecule that facilitates communication between brain cells] and an increased amplitude in the cortical-evoked potential in these animals.”

He is also working with a group at the Royal London Hospital to develop a minimally invasive investigation that can identify the patients who are most likely to benefit from neuromodulation.

Magnetic continence
Recently Prof O’Connell and Ms Hanly have been also using another type of technology to help patients who experience faecal incontinence: a magnetic anal sphincter.

How does such a thing work? “It consists of rare-Earth magnets, each one about the size of a small piece of chewing gum. They are linked together by titanium wires, they are in a titanium case, and at rest they are all linked together, closed,” explains Prof O’Connell.

“However it takes pressure of about 25 to 30 mm of mercury - about the same as a good push - and they come apart. Then you stop pushing and they come together again.”

The FerriB® Continence Restoration System has been used in around 100 patients worldwide to date, and Prof O’Connell’s team was one of the first to be invited to use it. “We were the first in these islands to be able to offer this to patients,” he says.
Early diagnosis of HIV for survival & prevention

Dr Gerard O’Connor talks to Claire O’Connell about how a rapid HIV screening programme, based at Dublin’s Mater Hospital, is changing the way we think about knowing our status.

A positive HIV result is certainly a landmark event in a patient’s life, but early diagnosis and treatment can mean a normal life expectancy. And if a person with HIV knows their status, they can take steps to minimise the risk of passing the virus on to others.

That’s why the Mater-Bronx Rapid HIV Testing project, a collaboration between UCD, the Mater Misericordiae University Hospital and the Jacobi Medical Centre in the Bronx New York, is encouraging participants to get a HIV test and ‘know your status’.

Since September 2012, more than 2,800 people attending the Mater’s Emergency Department have taken part in the screening study, which asks participants to watch an educational video, answer questions about their risk factors and take a rapid HIV test.

“Early diagnosis is considered to be best practice,” says project lead at the Mater Dr Gerard O’Connor, a Lecturer in Emergency Medicine at UCD School of Medicine & Medical Science. Y et O’Connor, a Specialist Registrar in Emergency Medicine and Clinical PhD Research Fellow with the HIV Molecular Research Group led by Dr Paddy Mallon: “It means you are not asking people to come back in a day or two, they have the answer pretty much there and then And if it’s positive, the person is immediately linked into care.”

So far the rate of positive testing has been in single digits per 1,000 tests. “Our rates of HIV positive acquisition are comparable to what they have been seeing in the US,” says Dr O’Connor. “And the people we have diagnosed so far have had really robust, high CD4 counts so they are hope-fully going to stay healthy long into the future now that they are getting the appropriate care. Plus they are now in a position to take precautions and reduce the risk of passing HIV on to others in the community.”

The questionnaires have also been yielding some interesting findings, based on interim analysis of about 1,500 surveys. They indicate that less than one-fifth of those who have multiple sexual partners say they always use condoms. The answers also help to identify how people want to engage with the video itself, and that will help future design of the screening, explains Dr O’Connor.

“The ultimate aim of the Mater project is to prove that screening can be done, even in a challenging environment like an Emergency Department”

Future Plans

The project, which receives funding from an investigator-initiated unrestricted research grant through healthcare company Gilead Sciences, is now attracting interest from other sites. “We have been asked to roll it out to Manchester and Modena, and in that case Dublin will be the hub in a hub-and-spoke type model,” says Dr O’Connor.

“And we have had interest from Sydney, they also want to implement this type of project.” And the ultimate aim of the Mater project is to prove that screening can be done, even in a challenging environment like an Emergency Department.”

“For prioritising certain types of care for injecting drug users in North Dublin, will build on preliminary research at the Mater and will build up one of the largest cohorts of its type in the world, explains Dr O’Connor.

“A key outcome will be to understand the types of infection that injecting drug users are likely to experience.”

Most of the previous literature would say injecting drug users are infected with Gram positive bacteria, but we have found a lot of Gram negative organisms, so we want to explore that further,” says Dr O’Connor. “Also many of them develop pneumonia, so we are looking into maybe vaccinating them as soon as they come to the Emergency Department.”

More generally, he would like to build up evidence for prioritising certain types of care for injecting drug users who present. “I would like to see some mechanism where anyone coming to an Emergency Department with injecting drug use is by definition high risk for death, so we could perhaps have more effective intervention perhaps with an improved linkage to community services.”

Dr Gerard O’Connor with the M-BRiHT screening kit at the Mater Hospital Emergency Department

Dr Paddy Mallon, principal investigator on the M-BRiHT project, and Dr Gerard O’Connor
What do inflammatory bowel disease, rheumatoid arthritis, cardiovascular disease and cancer have in common? Apart from being debilitating—and in some cases even fatal—conditions, they are all linked through a common process: inflammation. In each case, cells and tissues have turned on chronic inflammatory responses in a way that promotes disease rather than protection.

Prof Cormac Taylor and colleagues at UCD School of Medicine and Medical Science are looking at new ways to dampen down chronic inflammation by making tissues think they have no oxygen to keep that fire burning.

A fine balance between protection and disease

We need inflammation to some extent—it’s a front-line response to a threat or injury in the body, explains Prof Taylor. “Inflammation is important because it represents our innate ability to deal with invading organisms—bacteria, viruses and other pathogens which can make their way into our bodies,” he says. “They represent a threat to our continued health and existence if we can’t deal with them and eliminate them from our body.”

Our immune system primarily tackles these potential threats by triggering inflammation, which can kill and eradicate organisms that might be there to cause us harm, he adds. But if the inflammation becomes chronic, or if it flares up in response to our own tissues rather than a real threat, that can cause damage in the longer term.

“Either it is switched on too much or it is not switched off enough but the end point is the same, chronic inflammation,” says Prof Taylor. “And that can lead to diseases such as rheumatoid arthritis, IBD, cardiovascular disease and cancer—they all have inflammation at their core.”

Dampening the flames

To develop new ways of putting out the fire of chronic inflammation, Prof Taylor is looking at the role of oxygen in affected tissues, particularly in IBD.

“In IBD the inflammatory response becomes overstimulated and large parts of the intestine become chronically inflamed,” he explains. “And quite often this means that people have to have that part of their intestine removed.”

Prof Taylor has been looking at what happens to oxygen levels in these inflamed cells and tissues. “When a tissue becomes chronically inflamed, because of all this immunological activity trying to eradicate the invading bacteria a lot of oxygen is used up and the tissue becomes starved of oxygen,” he says. “What we have found in our lab is that depletion in oxygen actually helps to control the inflammatory response.”

“We need inflammation to some extent—it’s a front-line response to a threat or injury in the body.”

So could we trick tissues into thinking their oxygen is low and so trigger this protection? It turns out that, in the lab at least, this works.

“When a tissue becomes deprived of oxygen it switches on an adaptive response to help deal with inflammation,” says Prof Taylor.

His group at UCD has found that making cells and tissues think they are running low on oxygen can trigger a protective response. “By using drugs to mimic this drop in oxygen in the tissue we can induce the tissue to heal itself and turn on protective mechanisms,” he explains.

Meanwhile other studies are evaluating such ‘hypoxia mimetic’ drugs in early clinical trials in patients, and so far the signs are positive, according to Prof Taylor. “The approach has been shown to be safe in terms of administration, and we are really only starting to get an understanding of the clinical utility of these drugs, but the next few years will be very exciting in terms of looking at the outcomes of clinical trials in IBD patients—which we hope of course to be positive,” says Prof Taylor.

“And the observations that we have made and the potential clinical importance of these discoveries are not restricted to IBD—we are hoping to start off with IBD but maybe expand our therapies to other diseases such as arthritis and other chronic inflammatory disorders.”
Biomarkers to offer a finer focus on prostate cancer

Prof Bill Watson speaks to Claire O’Connell about how recognising chemical signals in a patient’s blood is transforming how we diagnose and treat prostate cancer.

This year in Ireland around 2,500 men will be diagnosed with prostate cancer. In the UK, that figure is expected to be around 40,000, and for the US, that number goes up to around 238,000. Some of those men will benefit from treatment and some might do better without treatment - but how can you tell?

Prof Bill Watson and colleagues are looking at potential ‘biomarkers’ or biochemical signals in a patient’s blood that can help to inform what course of treatment would suit their disease.

“One of the biggest clinical issues at the moment with prostate cancer is around its overdiagnosis and overtreatment,” explains Prof Watson, who is Associate Prof of Cancer Biology at UCD School of Medicine & Medical Science.

The standard diagnostic marker for prostate cancer is PSA (prostate specific antigen), which is detectable in the blood, but there is plenty of room for improvement in stratifying patients for appropriate treatments, according to Prof Watson.

“There is this concept of an indolent form of prostate cancer – where a man may have the disease but it is not going to progress within his life span due to its slow progression,” he says. “And there is also clearly a more aggressive, aggressive form of the disease. So our work is not trying to come up with better tests of prostate cancer but to actually be able to stratify patients who are diagnosed into those men who need to be treated and those men who would not benefit from treatment at that time.”

Banking on Research

In order to look for potential biomarkers, Prof Watson is working with clinicians and patients, and he is Principal Investigator of the Prostate Cancer Research Consortium, which is funded through the Irish Cancer Society.

“Our research is hypothesis driven,” he says. “But these hypotheses are informed by the clinical unmet need they are facing when treating patients. There is a strong translational aspect to what we do and through the PCRC we have put together a bioresource of material from men who are being treated for the disease.”

Around 800 patients have now donated samples to the prostate cancer bioreource, which is administered by research nurses. The initiative collects tissue and blood samples from consenting men undergoing prostate surgery at the Mater, St James’s and Beaumont Hospitals in Dublin. “We don’t know the identity of the patients - the samples are coded - but the clinicians and nurse follow the progress of these patients over time,” explains Prof Watson, whose research tackles serum and plasma from the banked blood samples and looks for proteins that could help to predict the course of the disease.

Informative Panels

Mining into the biobanked blood samples has already yielded more than 60 proteins of interest - mainly linked with the body’s response to a tumour - that seem to stratify patients into having indolent or aggressive disease, explains Prof Watson.

“Any biomarker approach would also need to be integrated into current clinical markers, adds Prof Watson. “At the moment a clinician will take a biopsy, do a digital rectal exam and look at PSA, and we will look at integrating the stratification biomarkers with these current tests,” he explains.

“We are looking to develop commercial software that could sit on a urologist’s desk, and the clinician could put in the data with the patient and determine what is the most appropriate course of action.”

“Around 800 patients have now donated samples to the prostate cancer bioreource”

Researchers at UCD have now whittled those candidates down to smaller panels of potential biomarkers, and their work links in with other groups who are analysing the samples using different approaches. The potential biomarkers are now being put through their paces in international biobanks, being further validated against patient samples where the outcomes are known. And in parallel, the UCD researchers are developing a single assay to measure the proteins in question, which will form the basis of a commercial kit.

Future Directions

As well as searching for predictive biomarkers of indolent and aggressive disease, Prof Watson and colleagues are looking for molecular clues about why advanced tumours sometimes develop resistance against drug treatments. The work, which is funded by UCD through MoLeR, has now identified two proteins – both transcription factors - that appear to have key roles, and these could ultimately provide drug targets, he explains. “It further demonstrates the importance of collaborative multi-disciplinary and trans-institutional networks in addressing clinical and scientific questions.”

Other sources of funding for Prof Watson’s research include the Health Research Board, the Prostate Cancer Foundation in the US and Movember’s global fund. The latter supports a collaborative group called ToPCaP which links UCD and the PCRC with researchers in the UK, Sweden, Italy, Iceland and the US. That group is looking at not only biomarkers but also how different cell types in the prostate interact in cancer and even the role of exercise on treatment outcomes. “Exercise is an emerging area,” says Prof Watson. “We want to look at the mechanisms by which exercise decreases side-effect profiles of therapies for prostate cancer and ultimately provide drug targets.”
Academic Centres

26  UCD Centre for Research in Infectious Diseases
30  UCD Diabetes Complications Research Centre
36  UCD Academic Centre on Rare Diseases
44  UCD Centre for Human Reproduction
The UCD Centre for Research in Infectious Diseases (CRID), established and directed by Prof William W. Hall, is located in a dedicated research building in UCD. This is specifically designed for research on the pathogenesis of a range of infectious diseases. This centre has Biosafety level 2 (BL2) and BL3 (+) containment facilities and dedicated fully equipped laboratories for molecular virology, cellular biology and immunology.

UCD CRID currently comprises several Principal Investigators and research groups with projects focusing on many aspects of the pathogenesis, immunology and epidemiology of HIV-1, HTLV, HCV and other human viral infections. Importantly, CRID benefits from a close relationship with the UCD National Virus Reference Laboratory (NVRL), where there are joint research studies and a sharing of resources and expertise. Current and past research programmes are supported by Irish Aid, the Atlantic Philanthropies, Wellcome Trust, Japanese Foundation for AIDS Prevention, Science Foundation Ireland (SFI), Health Research Board (HRB), Irish Research Council(formerly IRSCET) and by UCD-seed funding.

The Ireland Vietnam Blood Borne Virus Initiative (IVBI) is a collaborative programme between UCD and the National Institute of Hygiene and Epidemiology (NIHE) in Hanoi. The programme aims to develop capacity in clinical and diagnostic virology and virus research in Vietnam through infrastructure development and specialized training programs. The concept was developed by Professor William Hall, Director of CRID, in response to the significant morbidity and mortality associated with blood borne virus (BBV) infections in Vietnam. Initial studies which have been recently published have focused on the molecular epidemiology and analysis of HIV and Hepatitis B and C viruses (HBV, HCV) in Vietnam, which have highlighted the extraordinary diversity of viral species there. The initiative has also been involved in molecular analysis of Dengue and Chikungunya viruses in Vietnam and has demonstrated dynamic changes in circulating Dengue virus serotypes which have significant implications for clinical outcomes.

The Molecular Reference and Research Unit (MRU) carries out molecular epidemiological and pathogenesis studies on a range of blood-borne and respiratory viruses, viral drug resistance and tropism assays and performs World Health Organisation (WHO) surveillance work on influenza, measles, mumps and rubella viruses. Recent research programmes have also focused on developing molecular assays for arbovirus infections (Dengue and Chikungunya viruses).

The Host-virus Interaction Mapping Programme aims at characterising at the molecular and functional levels, interactions between key human viruses (HCV, HTLV-1, HTLV-2 and HIV-1) and the host cellular machinery. To delineate the host-virus interface, we have developed an expanding portfolio encompassing a wide array of tools for cellular biology, molecular virology combined with proteomic and metabolomic approaches.

The Viral Pathogenesis Programme has focused on transgenic and SCID mouse models of adult T cell leukemia (ATL) which is caused by HTLV-1 infection. The studies which are in collaboration with the National Institute of Infectious Diseases (NID) in Tokyo are designed to identify specific molecular events in disease development so as to design focused treatments for this disease. These have focused on the role of cancer stem cells and have allowed the development of new targeted therapeutics and which are currently being studied in human clinical trials.

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My research interests are focused on viral pathogenesis and specifically involve blood-borne viruses including HIV-1, HTLV-1, HBV and HCV. In terms of the former two viruses the studies have focused on understanding details of virus replication using proteomic approaches. Studies on HBV and HCV are focused on molecular epidemiology.

I am also the founder of the Ireland Vietnam Blood-Borne Virus Initiative (IVVI) (www.ivvi.ie) which is a collaborative programme between University College Dublin and the National Institute of Hygiene (NIHE) in Hanoi. The programme, which began in 2007, aims to develop capacity in clinical and diagnostic virology and virus research in Vietnam through infrastructure development and specialized training programmes. The concept was developed by Professor William Hall, Director of CRID in response to the significant morbidity and mortality associated with blood borne virus (BBV) infections in Vietnam.

In 2001, I established a research group at UCD led by Professor William Hall, which is now the UCD Centre for Research in Infectious Diseases (CRID). The Centre currently houses 39 full time researchers including 17 postdoctoral researchers, 4 laboratory technicians and 3 research associates. The Centre is a key research facility in the School of Medicine and is managed by Professor William Hall, as Director. Research in CRID is strongly focused on infectious diseases. The Centre is home to a number of major national and international research projects, including the research project on HBV and HCV infections funded by the Health Research Board (HRB). The Centre is also home to the National Institute of Hygiene (NIHE) in Hanoi.

The IVVI is a collaborative programme between University College Dublin (UCD) and the National Institute of Hygiene and Epidemiology (NIHE) in Hanoi. The programme, which began in 2007, aims to develop capacity in clinical and diagnostic virology and virus research in Vietnam through infrastructure development and specialized training programmes. The concept was developed by Professor William Hall, Director of CRID in response to the significant morbidity and mortality associated with blood borne virus (BBV) infections in Vietnam.

Staff at NIHE and CRID are currently furnished with state of the art equipment in a custom-built laboratory building (IVVI). "We employ system-wide approaches to dissect the intricate interface between HIV and its host, to delineate how HIV hijacks the cellular machinery."

We are investigating the role of novel epigenetic mechanisms regulating HIV latency/reactivation, in an effort to accelerate HIV cure research.

Subcellular trafficking of viral proteins: We focus on how HIV-1 proteins hijacks transport pathways in order to transit across heterogeneous subcellular compartments.

Dr Noreen Sheehy
Lecturer in Molecular Virology

Location: UCD Centre for Research in Infectious Diseases
Contact: 01 716 1255
Email: noreen.sheehy@ucd.ie

My research area is Molecular Virology and specifically relates to the investigation of the pathogenesis of the human retroviruses human T cell leukemia viruses types 1 and 2 (HTLV-1 and HTLV-2, respectively), HTLV-1 causes adult T cell leukemia/lymphoma (ATLL) and chronic inflammatory disorders while HTLV-2 infection is not linked with specific virus related diseases. One key question that still remains unanswered despite intensive research in this area over the past 35 years is why HTLV-1 gives rise to disease while its closely related counter part HTLV-2 is not clearly associated with cancer development. The identification and characterization of key virus-host interactions that contribute to ATLL in individuals infected with HTLV-1 but not HTLV-2 has been the focus of much of my HTLV research to date. The overall goal of such work is not only to provide insights into the different clinical outcomes of HTLV infections but also to identify and characterize key cellular players in ATLL and chronic inflammatory disorders.

Dr Virginia W. Gautier
Principal Investigator Infectious Diseases

Location: UCD Centre for Research in Infectious Diseases
Contact: 01 716 1229
Email: virginia.gautier@ucd.ie

Our research programme focuses on HIV/AIDS molecular pathogenesis:

- HIV-1/Host interface: We employ system-wide approaches to dissect the intricate interface between HIV and its host, to delineate how HIV hijacks the cellular machinery.
- HIV-1/Latency: We are investigating the role of novel epigenetic mechanisms regulating HIV latency/reactivation, in an effort to accelerate HIV cure research.
- Subcellular trafficking of viral proteins: We focus on how HIV-1 proteins hijacks transport pathways in order to transit across heterogeneous subcellular compartments.

Grants:

Title: SIN3/HDAC complex transcriptional silencing activities at the HIV-1 LTR. Novel mechanistic insights into the epigenetic control of HIV-1 post-integration latency
Funder: Health Research Board (HRB)
Start/End Dates: 01-DEC-12 / 01-JUN-14
Amount: €100,000

Title: SIN3/HDAC complex transcriptional silencing activities at the HIV-1 LTR. Novel mechanistic insights into the epigenetic control of HIV-1 post-integration latency
Funder: Health Research Board (HRB)
Start/End Dates: 01-JUN-14 / 31-DEC-13
Amount: €209,026

Title: A targeted RNAi screen to uncover cellular signaling molecules involved in HIV-1 latency
Funder: Irish Research Council (IRC)
Start/End Dates: 01-OCT-12 / 31-SEP-13
Amount: €10,000

Title: Deconstructing HIV-1 latency to uncover novel signaling molecules involved in HIV-1 latency
Funder: Irish Research Council (IRC)
Start/End Dates: 01-OCT-12 / 31-SEP-13
Amount: €72,000

For more information about UCD Centre for Research in Infectious Diseases, and for a list of current and future initiative, please visit the School’s award-winning website, available at http://www.ucd.ie/medicine/ourresearch/researchcentres/ucdcen add/10905274/infectiousdiseases/
The UCD Diabetes Complications Research Centre (DCRC) investigates the microvascular complications of diabetes. Our work focuses on identifying novel drivers of disease progression, regression and genetic susceptibility with a view to identifying and developing innovative therapeutic paradigms and biomarkers.

The DCRC comprises a multidisciplinary research group with expertise in molecular cell biology, genetics, bioinformatics, pharmacology, systems biology, chemical pathology and clinical medicine. Investigators at the UCD Conway Institute and the Mater Misericordiae University Hospital work closely with international collaborators in academia and industry. Research programmes are funded by national and international sources including Science Foundation Ireland (SFI), the European Union, Wellcome Trust, the National Institute of Health (NIH), the Juvenile Diabetes Research Foundation (JDRF), European Renal Association (ERA) and bio pharma industry.

Over the past decade we have applied differential gene expression technologies to identify novel genes expressed in in vitro and in vivo models of diabetic nephropathy (DN) and, importantly, in human renal tissue. Current efforts focus on mining these datasets and probing the regulation of expression and actions of specific molecules. We have identified novel roles for molecules such as the BMP antagonist Gremlin, induced by high glucose-1, IHG-1, a protein that amplifies fibrotic responses in the context of DN and Connective Tissue Growth Factor, a growth factor which drives scarring in the kidney and other organs. As part of an international consortium with investigators at Harvard, Massachusetts Institute of Technology (MIT) and Queen’s University Belfast (QUB) we have used genome wide association studies to identify genetic polymorphisms linked to DN, which will help understand the genetic susceptibility to this devastating condition. We have explored the potential of the anti-inflammatory eicosanoid lipoxin to promote resolution and inhibit pathologic responses in models of disease. Thus, we have identified factors that may influence progression of DN and are potential targets for novel therapies including IHG-1, CTGF and Gremlin which exacerbate renal injury and protective lipid mediators such as lipoxins which are protective. These agents target distinct cell types and processes and may also implicated in the pathogenesis of diabetic retinopathy. We have further characterised these and related modulators in order to define the molecular mechanisms underlying DN. Our access to human samples including blood, urine and renal biopsy materials facilitates our efforts to identify those targets most relevant to human disease.

In 2012 noteworthy achievements for DCRC investigators included Prof le Roux’s highly prestigious President of Ireland Young Researcher Award, NIH funding for the Diabetes Complications Consortium, EU Marie Curie Outgoing fellowship award to Dr Emma Borgeson to UC San Diego. Investigators were invited to make presentations at several important international conferences including the Keystone Conference on Diabetic Complications (USA), the International Society for Nephrology Conference on Systems Biology of the Kidney (USA), and the International Society for Nephrology Conference on Tubulointerstitial Fibrosis (Australia).
We collaborate closely with biopharma in an open innovation model. I have supervised 16 PhD students to completion and these are now engaged in industry policy, clinical medicine and academy spher e.s.

I play a leadership role nationally and internationally including board membership of the Health Research Board, Ireland (2007-2012), the European Board, and the Royal Irish Academy (2011). I was elected to the Royal Irish Academy in 2011.

My research focuses on differential gene expression in diabetic nephropathy with a view to identifying novel therapeutic targets and mediators of disease progression. Our most recent discoveries include novel fibrosuppressant biomolecules.

Our efforts form an important part of the critical link between the laboratory and the bench, helping to further the goals of translational research and improving the care delivered to our patients.

I am a consultant nephrologist at the Mater Misericordiae University Hospital. My research interests include diabetic nephropathy, the biology of inflammation and fibrosis, and chronic kidney disease. I am a co-supervisor of both MD and PhD students. Our efforts form an important part of the critical link between the laboratory and the bench, helping to further the goals of translational research and improving the care delivered to our patients.

My research team is primarily focused on understanding the underlying mechanisms regulating microvascular complications of diabetes as a result of longstanding hyperglycemia. New concepts on therapeutic intervention have begun to take hold; in particular the idea that populations of cells within the kidney have the capacity for self-renewal and that by exploiting these stem-cell like properties researchers can aim for effective clinical regression. Evidence suggests that this process involves renewal of cells from a resident “stem cell-like” niche. We are using TGF receptor silencing RNAs and receptor targeting extracellular antagonists to manipulate epithelial cell fate and determining the mechanism through which resident cells can be reprogrammed to effect repair. We work closely with industry partners and clinical colleagues in the University hospitals in a programme that is significantly translational in its ambition, recasting data from gene expression studies, animal models of disease and cell biology to inform the development of de novo therapeutics.

The work of DCRC researchers, please visit the School’s award-winning website, available at www.ucd.ie/medicine.
The UCD Academic Centre on Rare Diseases (ACoRD) was awarded formal centre status in June 2013. The focus of the centre is to investigate rare genetic diseases, particularly those affecting the Irish population and the Irish Traveller population.

The Centre’s aims are focused on the study of rare genetic diseases, with a view to the identification of the mutation(s) causing the disease. Once a causal mutation(s) is established, the objective is to develop diagnostic tests for translation back into a clinical setting. Once a gene is implicated, our PIs work to further investigate the gene function and biological pathways involved in the condition. The ultimate aim is to investigate those conditions / genes which might be amenable to drug targeting or gene therapy.

Rarely in a lifetime does a scientific or medical field of research ‘come of age’. The revolution that was the ‘Human Genome Project’, coupled with the latest technological advances in genomics is set to transform the field of rare genetic diseases. An ad hoc group of UCD based clinicians, scientists, specialists in bioinformatics and cell biologists have long since recognised these developments, and the rare disease group – prior to its establishment as a centre – has achieved considerable national and international recognition.

Rather than employing the traditional approach of a large, disease-specific research group which focuses on a common disorder, our PIs focus on rare genetic disorders and utilise new tools from the genomics revolution to aid our study of common and rare disorders. We pursue an integrated approach to our work, which involves close collaboration across clinical and research teams. In Ireland there are about 280,000 individuals with a rare disease. In addition, there are approximately 60 identified recessive disorders in the Traveller population. In a pilot study we have completed data analysis on six of ten rare disorders of unknown genetic basis, affecting 25 small Irish families. Of the six studies, the disease mutation has been successfully identified for five families, of which three studies have been published to date, with four translated back into the clinical setting. This translational success demonstrates our ability to identify rare disease genes in small families.

We have recently consolidated our various working groups under one recognisable centre to harness the successful outputs and future studies for UCD Ireland. A UCD academic centre on rare diseases is uniquely positioned to contribute to this plan. The centre aims to make a meaningful contribution in the progression of gene discovery to diagnostics, and ultimately in the cure or prevention of serious genetic conditions.
Dr Sean Ennis
Lecturer in Medical Genetics
Location: UCD Health Sciences Centre / National Centre for Medical Genetics
Contact: 01 716 6737
Email: sean.ennis@ucd.ie

My main laboratory based research is in Hereditary Spastic Paraplegia (HSP), a group of rare inherited neurodegenerative disorders. In collaboration with St. Vincent’s University Hospital we have been performing genotype phenotype correlations and identifying and characterising novel causative loci. We have been studying the molecular mechanisms involved in this form of neurodegeneration. I am also interested in optimising methods of educating medical professionals on rare genetic disorders.

Dr Paula Byrne
Senior Lecturer in Medical Genetics
Location: UCD Conway Institute
Contact: 01 716 6737
Email: paula.byrne@ucd.ie

My main focus of my group is to make a meaningful contribution to the field of Human genetics. I am particularly interested in contributing to the progression of gene discovery to diagnostics, and ultimately to the cure or prevention of serious genetic conditions. I have been involved in establishing international collaborative approaches to the study of the genetics of Autism Spectrum Disorder (ASD) and rare genetic diseases.

Prof Andrew Green
Professor of Medical Genetics
Location: Our Lady’s Children’s Hospital
Contact: 01 409 6902
Email: andrew.green@ucd.ie

My main interest is the research and clinical application of new genetic technologies in human disease, specifically the genetics of tuberous sclerosis, the genetics of autism, and genetic diseases in the Irish Traveller population. I also have involvement in medical ethics, and am chair of the Irish National Advisory Committee on Bioethics. I was a member of the Irish Council for Bioethics, the Commission for Assisted Human Reproduction and local and national bioethics committees.

Prof Mary King
Professor of Paediatrics/Head of Subject
Location: Our Lady’s Children’s University Hospital, Temple Street
Contact: 01 878 4309
Email: mary.king@ucd.ie

My research interest has always focused on the causation of neurological disorders in children in the broad sense and recently has focused on three areas: 1) Risk factors in neonatal hypoxic ischaemic encephalopathy 2) The molecular genetics of severe undiagnosed early onset epileptic disorders and Landau Kleffner syndrome (an older age dependent epileptic encephalopathy) 3) Movement disorders: novel genotype-phenotype associations. This research involves collaboration with researchers at UCD (SMMS) Mater and Rotunda Hospitals and internationally.

Dr Sally Ann Lynch
Consultant Geneticist/Senior Clinical Lecturer
Location: Our Lady’s Children’s Hospital
Contact: 01 409 4110
Email: sally.lynch@ucd.ie

My research interests are in rare disease gene identification and its translation into the clinical setting. New technologies have made it possible to identify disease causing genes in small families. We have had success in identification of several rare disease genes and have developed simple cost-effective genetic tests, which are currently being translated into the diagnostic laboratory. Some of these disorders are unique to Ireland. Local research is important as researchers can feedback results quickly through grand rounds which generates interest and new collaborations.

Researchers Supported / External Collaborators:

Dr Jillian Casey, National Childrens Research Centre
Dr Judith Conroy, Temple Street Children’s University Hospital
Dr Harinder Gill, Nation Centre for Medical Genetics
Dr Tiago R Magalhaes, National Childrens Research Centre
Dr Paul McGettigan, UCD School of Agriculture & Food Science
Dr Ruga Roger, National Childrens Research Centre
Dr Nicholas Allen, Children’s University Hospital, Temple Street

For more information about the work of UCD researchers working in the area of Rare Diseases, please visit the School’s award-winning website, available at www.ucd.ie/medicine.


The UCD Centre for Human Reproduction was established in 2007 to conduct clinical research in obstetrics and gynaecology at the Coombe Women and Infants University Hospital. Our present research focus is on maternal obesity and nutrition, intrauterine fetal development and caesarean section.

1. Maternal obesity

(a) Due to concerns about rising levels of maternal obesity, new revised American recommendations on gestational weight gain (GWG) were published in 2009 for obese women. There are, however, considerable research gaps on the subject. Dr Amy O’Higgins is conducting an observational longitudinal study on 1,000 women attending for antenatal care.

(b) In association with Professor Layte and using data from the Growing Up in Ireland study, Professor Turner is studying the social and demographic factors which influence postpartum weight retention and the subsequent development of maternal obesity.

(c) In association with Dr Andrew Hogan and Professor Donal O’Shea, Dr Nadiine Farah found that specific circulating cytokines such as IL-6, are increased in obese women in the third trimester.

(d) Previous meta-analysis reported a two-fold increase in CS rates in obese women. Dr Vicky O’Dwyer completed her MD on CS rates analysed according to maternal adiposity measured using both Body Mass Index and advanced Bioelectrical Impedance Analysis. Increases in CS rates are due to an increase in emergency CS in primigravidas.

2. Maternal nutrition

In association with Dr Bob McDonnell in the HSE (EUROCAT), a comprehensive 3 year national audit of Neural Tube Defects is being conducted. It is expected that the findings will inform future health policies.

3. Intrauterine fetal growth

Under the supervision of Dr Kennelly, Dr Clare O’Connor is conducting a longitudinal observational study examining the role of fetal pulse wave Doppler and ultrasound measurement of soft tissue markers in evaluating aberrant fetal growth.

4. Caesarean section

In association with Professor Richard Layte from the ESRI, Professor Turner is conducting a 20 year review of the factors that are causing caesarean section rates in Ireland and other developed countries to escalate. The study will combine obstetric outcomes from the Hospital Inpatient Enquiry (HIPE) and the National Perinatal Reporting Systems (NPRS).
Prof Michael Turner
Consultant and Professor of Obstetrics & Gynaecology

Location: UCD Centre for Human Reproduction, Coombe Women and Infants University Hospital
Contact: 01 408 5760
Email: michael.turner@ucd.ie

Prof Michael Turner is the UCD Prof of Obstetrics and Gynaecology based in the UCD Centre for Human Reproduction at the Coombe Women and Infants University Hospital. He served as Master of the Hospital from 1992-8 and is currently the National Director of the HSE Clinical Programme in obstetrics and gynaecology. Prof Turner’s research interests include the management of labour, caesarean delivery, maternal obesity, infertility and intrauterine fetal growth.

Dr Bernard Stuart
Associate Clinical Professor of Obstetrics

Location: UCD Centre for Human Reproduction, Coombe Women and Infants University Hospital
Contact: 01 408 5760
Email: bernardstuart@tcm.com

Dr Bernard Stuart is the UCD Senior Lecturer in Obstetrics and Gynaecology. Consultant and Subspecialist in Fetal and Maternal Medicine at the Coombe Women and Infants University Hospital. Dr Stuart’s research interests include fetal growth profiles including intrauterine growth restriction and epidemiological review of fetal abnormalities. At present, we are reviewing antenatal maternal and fetal predictors of abnormal fetal growth trajectories. We also establish normograms for fetal cardiac indices.

Researchers Supported:

Dr Vicky O’Dwyer, Clinical Lecturer
Dr Clare O’Conner, Clinical Research Fellow

Dr Marjad Kennedy
Senior Lecturer in Obstetrics & Gynaecology

Location: UCD Centre for Human Reproduction, Coombe Women and Infants University Hospital
Contact: 01 408 5760
Email: marjadal.kennedy@ucd.ie

Dr Marjadal Kennedy is the UCD Senior Lecturer in Obstetrics and Gynaecology. Consultant and Subspecialist in Fetal and Maternal Medicine at the Coombe Women and Infants University Hospital. Dr Kennedy’s research interests include fetal growth profiles including intrauterine growth restriction and epidemiological review of fetal abnormalities. At present, we are reviewing antenatal maternal and fetal predictors of abnormal fetal growth trajectories. We also establish normograms for fetal cardiac indices.

Grants:

The Cervina Consortium
(Grants from the Irish Health Research Board)
HRB €690,000
HRB €300,000

National variation in caesarean section rates
(Grants from the Irish Health Research Board)
HRB €690,000
HRB €300,000

Publications:


For more information about the work of Prof Michael Turner and the UCD Centre for Human Reproduction, please visit the School’s award-winning website, available at www.ucd.ie/medicine
Research Groups

50  UCD Clinical Bioinformatics Research Group
54  UCD Diagnostic Imaging Research Group
62  UCD HIV Molecular Research Group
68  UCD Maternal & Fetal Health
74  UCD Mucosal Pathogens Research Group
78  UCD Obesity & Immunology
82  UCD SVUH Neurology Research Group
88  UCD Tissue Engineering Research Group
The Clinical Bioinformatics group focuses on basic computational research underlying peptide therapeutic development, and on clinically relevant genetic variation. Peptide development focuses on platelet, cancer, infection and food areas, while genetic studies include cardiovascular and autism genetics, with a particular focus on genetic combination effects.

We are physically located in the Complex and Adaptive Systems Laboratory, currently in Belfield Office Park, which has helped drive collaborations with computer scientists (CLIQUE network analysis cluster; machine learning) and physicists (molecular modelling). We are a multidisciplinary group focused on computational analysis and modelling of biological and clinical processes (see http://bioinfo-casl.ucd.ie/shields/ for more details of our group's members' backgrounds, activities, and interests).

Activities 2012:

(1) We have expanded our cardiovascular genetics collaborations allowing us to pool resources with consortia of collaborators in Europe and US, so that genetic discoveries in the Anglo-Scandinavian Coronary Outcomes Trial (ASCOT) may be replicated elsewhere. Our genetic collaborations with various groups have advanced understanding of genetic factors in cardiovascular disease, renal transplant, and autism, including ongoing collaborations with the UCD and TCD autism research groups of Sean Ennis and Louise Gallagher.

(2) We have been active in software development for the prediction of short protein and peptide motif regions likely to contribute to bioactivity. Further details of this publicly available software may be accessed at our web server http://bioware.ucd.ie. This software is used extensively by researchers worldwide.

(3) We completed a survey of novel protein motifs in man, and this published resource (Molecular Biosystems vol 8 pp282-295, 2012) makes our findings available to the scientific research community interested in discovering new roles for short protein regions involved in controlling protein-protein interactions, signaling, and other processes. We continued research into better understanding the role of disordered regions in proteins.

(4) We continued to investigate experimentally the role of peptides predicted from our computational predictions, in collaboration with Niamh Moran, RCSI. A particular focus is on the integrin and cadherin adhesion complexes, which play key roles in thrombosis, cancer, and other processes.

(5) Our involvement in the Food for Health Ireland (FHI) collaboration with industry and academia partners in Ireland has helped to characterise and prioritise particular food hydrolysates for further investigation, based on analysis of their peptide content by mass spectrometry, in parallel with computational prediction and testing of active synthetic peptides.

(6) We initiated the ICON Newman Genomics Fellowship funded by ICON plc. The fellow is exploring the role of genetic factors in complex diseases.

The results of our findings were presented at international conferences and in peer-reviewed literature.
Contact: 01 716 5344

I am a Computational biologist focusing on physiological interactions mediated by short protein regions, such as adhesion and signalling domains. My interest is in functional interactions of peptides, and of inherited synergistic variants (polymorphisms).

I direct the interdisciplinary Bioinformatics & Systems Biology PhD programme (HESTM Funding) and am deputy director of the Wellcome Trust/Functional Food Centre (WP1) fund.

Active national and international collaborators & projects:

Prof. Das Higgins, UCD Conway Institute
Dr Ger Cagney, UCD Conway Institute
Prof. Fiaan Martin, UCD Conway Institute
Dr Galina Pollast, UCD Complex & Adaptive Systems
Dr Sean Emms, UCD School of Medicine & Medical Science
Dr Seamas Donnelly, UCD School of Medicine & Medical Science
Dr Glen Docherty, St Vincent’s University Hospital
Dr Louise Gallagher, Trinity College Psychiatric genetics
Dr Niamh Moran, Royal College of Surgeons in Ireland, Platelet biology
Dr Marc Devoselle, Royal College of Surgeons in Ireland, Peptide synthesis
Dr Giampiero Casselari/Prof. Peter Conlon, Royal College of Surgeons in Ireland, Genetics of renal transplant
Dr Aiko Stanton, Royal College of Surgeons in Ireland, Cardiovascular genetics
Dr Ronan Zaidel Bar, Integrative/Systems biology, National University of Singapore
Mrs Alessandra Banche, PhD

Grants:

Title: The co-evolution of human, bifidobacteria, and milk: a means for the discovery of novel therapeutic strategies
Funder: Irish Research Council for Science Engineering and Technology (RCSET)
Start/End Dates: 10-SEP-10 / 31-JAN-13
Amount: €180,000

Title: Functional Food Centre (WP1)
Funder: Enterprise Ireland (EI)
Start/End Dates: 01-JUN-08 / 31-MAY-13
Amount: $250,000

Title: Towards the drugable interactome: bioinformatic analysis of protein
Funder: Science Foundation Ireland (SFI)
Start/End Dates: 01-JAN-09 / 31-DEC-13
Amount: €1,100,000

Title: Bioinformatics and Computational Biomedicine PhD Programme
Funder: Irish Research Council for Science Engineering and Technology (RCSET)
Start/End Dates: 01-OCT-07 / 31-DEC-15
Amount: €6,400,000

Title: Prof of Clinical Bioinformatics Start-up Funding
Funder: UCD Conway Institute
Start/End Dates: 01-OCT-08 / 30-JUN-15
Amount: €239,000

Title: ICON Newman Fellowship in Genomics
Funder: UCD Foundation/ICON plc
Start/End Dates: Aug 2012 - July 2014
Amount: €100,000

Publications:

Diagnostic Imaging in UCD is the national training centre for radiography. The facilities for education and research include a dedicated “State of the Art” imaging suite on the UCD campus, equipped with computed and direct imaging technologies and NIMS aligned PACS, Tobii Eye tracking facilities and a growing Image perception suite, multiple anthropomorphic phantom models, and on-site dosimetry capability. The lecturers in Diagnostic Imaging are involved in research studies both in Ireland and internationally with PhD research studies incorporating work in the United States, Europe and Asia.

Research is focused upon imaging of cellular, animal or human biological processes and translating this knowledge into improved diagnosis, management, treatment and prevention of disease. A key strength of the group is its broad medical and allied healthcare professional expertise and on-going collaborations with the American Board of Radiology, several American Health Centres and numerous International Academic Institutions. Researchers in the group are professionally affiliated radiographers, nurses, computer scientists with several staff bringing the experience of senior management from the industrial aspect of Imaging to the groups’ activity.

Current research areas focus on image perception and user validation to investigate human perceptual limitations with respect to accurate diagnosis and improved patient outcomes; the quantification of disease states using MR, PET/CT and Ultrasound and related segmentation and visualization; CT raw data processing, fetal and adult electrophysiology and simulation with the aim of enriching cardiological diagnosis and treatment; neuro and cardiac applications and post-processing developments in MR diffusion imaging; RIS/PACS networking solutions in medicine and optimization of practice across a broad spectrum of imaging modalities.

The group continues to grow as an increasing number of staff completed their research studies, having moved from the clinical environment to work in the academic section. Dr Shane Foley and Dr Marie Louise Butler completed their PhD study in 2013. In addition to the peer reviewed publications in the academic year strong representation was made at the European Congress of Radiology, Vienna, with six oral presentations. Mr Jonathan Portelli, UCD PhD researcher, was awarded “Best Scientific Paper Presentation Award 2013” within the topic “Radiographers”. This is the second consecutive year that PhD researchers from UCD have won this award, Dr Frankie Zarb being the 2012 recipient. In addition to the conference presentations Jonathan McNulty, Shane Foley and Marie Stanton were invited guest speakers during specialised Workshop sessions and delivered excellent talks on MRI Spectroscopy, Innovation in CT technology and Clinical audit in Ultrasound to maximum capacity audiences.

The group also presented at several other international events including the SPIE Medical Imaging Conference, Florida, USA. Dr Louise Rainford and Mr Jonathan McNulty represented UCD as invited speakers to Portuguese and Italian national congress meetings to promote research in Radiography.

Research collaborations continued in 2013 with the American Board of Radiology and across several centres in Europe, in collaboration with research colleagues in the European Federation of Radiography Societies.

Group Head
Dr Louise Rainford
01 716 6537 / louise.rainford@ucd.ie
UCD Health Sciences Centre

Research Team
Senior Lecturers
Dr Louise Rainford
Ms Kate Matthews

Lecturers
Dr Marie Louise Butler
Dr Kathleen Curran
Dr Michaela Davis
Dr Shane Foley
Ms Jennifer Grehan
Ms Theresa Herlihy
Ms Joanna Lowe
Ms Marion Maher
Ms Mary Moran
Ms Edel Thomas
Dr Rachel Toomey
Dr Louise Rainford  
Lecturer in Diagnostic Imaging  
Location: UCD Health Sciences Centre  
Contact: 01 716 6539  
Email: louise.rainford@ucd.ie

Dr Marie Louise Butler is a Diagnostic Imaging lecturer and researcher in the School of Medicine and Medical Science. She is a member of the group of radiologists who coordinate the UCD postgraduate training in radiological imaging. Dr Rainford holds the National Education seat on the Irish Institute of Radiographers and Radiation Therapists council and has a particular interest in Continuing Professional Development in the role. Her research interests include radiographic technique, image quality and image perception.

Dr Kathleen Curran  
Lecturer  
Location: Complex & Adaptive Systems Laboratory  
Contact: 01 716 5305  
Email: kathleen.curran@ucd.ie

My research interests are in medical image analysis, image registration and modelling Diffusion-Tensor Magnetic Resonance Imaging data. My group conducts basic and applied research in developing new methods for registration, tractography and finite element modelling of DT-MRI images of the heart and musculoskeletal system and developing novel computer tomography reconstruction techniques. These interdisciplinary, international collaborations spanning medical imaging, computer science and engineering have a proven success in international peer-reviewed publications.

Dr Michaela Davis  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6538  
Email: michaela.davis@ucd.ie

I am a diagnostic radiographer by profession. My research interests are focused around child protection in relation to Non-Accidental Injury in children, which was the topic of my PhD. I also have diverse research interests in equine radiography, qualitative approaches to children and adolescents experiences of diagnostic imaging, and forensic radiography in relation to radiographic imaging and evidence collection.

Affiliations: - Child Health

Ms Joanna Lowe  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6644  
Email: joanna.lowe@ucd.ie

Current research interests include display quality assurance and calibration. Research this year predomi- nantly investigated general on-screen displays as well as primary display devices used for medical diagnosis. At present an international collaboration between the University of Sydney and various manufacturers across Europe and the USA is on-going. Other research areas include forensic radiography, DEKA, and Continuing Professional Development in the clinical radiology department.

I am currently one of the clinical co-ordinators for Diagnostic Imaging including all public teaching hospitals within Ireland. For which I am module co-ordinator for 4 undergraduate Radiography clinical modules across stages 2 to 4. In addition to my clinical responsibilities I am also actively involved in a variety of other Diagnostic Imaging modules covering a broad spectrum of the teaching curricula - some of which include radiographic technique, radiographic equipment, anatomy, digital radiology systems, and trauma imaging. Amongst others.

In relation to post-graduate responsibilities I am the course director for the professional certificate in DEKA Imaging and I have an active role in the three post-graduate RIS/PACS modules also.

Affiliations: - member of Complex & Adaptive Systems Laboratory

Ms Marion Maher  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6642  
Email: marion.maher@ucd.ie

My research areas of interest include dosimetry and image quality studies, image perception and observer performance, MRI (image quality / clinical applications / patient care) and forensic imaging. As one of the UCD Fellows in Teaching and Academic Development and Head of Teaching and Learning in Diagnostic Imaging I am interested in all aspects of educational research and am currently involved in several projects in this area.

Ms Kate Matthews  
Senior Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 5366  
Email: kate.matthews@ucd.ie

I worked as a radiographer, particularly in trauma, paediatrics, eneryography and computed tomography before coming to UCD as a lecturer. As Head of Diagnostic Imaging from 1993 to 2006 I led the development of the first radiography degree in Europe in 1989, and in 1993 directed the re-development of this degree as a four year honours programme. Between 1993 and 2003, I was responsible for the burgeoning graduate profile of Radiography at UCD, overseeing the introduction of postgraduate courses and research in Diagnostic Imaging.

I retain my enthusiasm for paediatric radiogra- phy and promotion of independent research in Radiography teaching undergraduate modules in these areas, and continuing my own research in paediatric radiography.

Affiliations: - Diagnostic Imaging / Biomedical Imaging

Mr Jonathan McNulty  
Head of Teaching & Learning, Diagnostic Imaging Programmes  
Location: UCD Health Sciences Centre  
Contact: 01 716 6530  
Email: jonathan.mcnulty@ucd.ie

My research areas of interest include dosimetry and image quality studies, image perception and observer performance, MRI (image quality / clinical applications / patient care) and forensic imaging. As one of the UCD Fellows in Teaching and Academic Development and Head of Teaching and Learning in Diagnostic Imaging I am interested in all aspects of educational research and am currently involved in several projects in this area.

Affiliations: - Diagnostic Imaging / Biomedical Imaging

Researchers Supported

Dr Aurelia Cebes, Post-Doctoral Research Fellow  
(NeuroSKILL project)

Dr James Durkan, Educational Technology  
(NeuroSKILL project)

Mr Deyan Alikjani, PhD  
Mr Daniel Mulligan, MSc

Dr Mary Moran  
Lecturer, Co-ordinator  
Location: UCD Health Sciences Centre  
Contact: 01 716 6536  
Email: mary.moran@ucd.ie

My background is as a radiography lecturer and I joined the academic staff at UCD in 2007. I currently coordinate all of the postgraduate Obstetric & Gynae Ultrasound Programmes for UCD. My research interests cover all aspects of obstetric & gynaecological ultrasound, with a particular interest in ultrasound assessment of placental function. This is the topic I am researching for my PhD, which will be completed in 2013.

Dr Descre O’Leary  
College Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6535  
Email: desiree.oleary@ucd.ie

I am a college lecturer in Diagnostic Imaging and the programme co-ordinator for the Breast Imaging programme. My research interests currently include all aspects of mammographic imaging and examinations, Nuclear Medicine, radiation control in diagnostic imaging and interventional radiology. I was an invited speaker for the European Congress of Radiologists in March 2012 in the "Breast screening programmes: roles and issues for radiologists" session of the programme where I spoke on: The radiographer’s role in optimisation of dose and image quality in mammography.
Dr John Ryan  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6539  
Email: johnryan@ucd.ie  

Me and my team are currently addressing several imaging problems including the automatic quantification/visualisation of disease states from MRI, CT, ultrasound and PET-CT datasets as well as several imaging problems including the automatic correction of structures that may identify structures generating beam hardening and effectively reduce or even eliminate the artifact in an independent single iteration step correction.

The research is now in its final year and has attracted funding & support from sources including UCD, Siemens Healthcare & Enterprise Ireland. The prototype program containing the automated correction algorithm is currently undergoing validation through the use of the UCD onsite CT reconstruction engine funded by Enterprise Ireland. In addition I support undergraduate research as part of the Biomedical programme and can be supervising up to 5 such research projects at a given time.

I am currently engaged in PhD research in the field of CT beam hardening image artifact. The research will investigate a novel predictive algorithm correction technique that may identify structures generating beam hardening and effectively reduce or even eliminate the artifact in an independent single iteration step correction.

I graduated from UCD with my PhD in 2010 before taking up a postdoctoral position in the Institute for Medical Science and Technology at the University of Dundee, gaining invaluable experience. In September 2011, I returned to UCD having been appointed to a lecturing post in the Diagnostic Imaging Division. My research interests are diverse; however at present my work is principally concentrated in the areas of medical image display and perception.

Grants:

Title: Registration of Diffusion Tensor Magnetic Resonance Imaging Cardiac Data with Cardiac CINE MRI Data  
Funder: Science Foundation Ireland  
Start/End dates: 01/10/2009 – 01/10/2013  
Amount: €267,117  
Title: PreTRACT: Sports Injury Prediction (Commericalisation Feasibility Study)  
Funder: Enterprise Ireland  
Start/End dates: 01/07/2012 – 01/09/2012  
Amount: €14,768

Title: FFP Proposal Preparation Coordinator Support  
Funder: Enterprise Ireland  
Start/End dates: 01/01/2012 – 21/03/2013  
Amount: €32,200

Active national and international collaborators & projects:  

Ms Joaoan Santos, PhD  
Ms Johnathan Porteik, PhD  
Ms Joana Leow, PhD  
Ms Muna Al Mulla, PhD  
Ms David Leong, PhD  
Ms Allison Mc Car, PhD  
Ms Jonathan Mi, PhD, BSc  
Dr Marie Louise Butler, PhD  
Mr Francis Zath, PhD  
Dr Shane Foley, PhD  
Dr Ben Donlon, PhD  
Dr Gergely Zombori, PhD  
Dr Taday O’Sullivan, PhD  
Ms Karen Grima Borg, PhD  
Dr Tanq Pun, PhD  
Dr Carla Gil, PhD  
Dr John Stone, PhD  
Prof Gerard Fealey, UCD  
Dr Maria Joyce, PhD  
Dr Joseph Chinedu Ndwodo, PhD  
Ms Wajid Alamri, BSc  
Ms Zaina Al Mashari, BSc  
Ms Rhona Leahy, BSc  
Ms Mersed Mackey, BSc  
Mr Kevin Cronin, BSc  
Mr John McGarry, BSc  
Mr Neil Burke, BSc  

University of Malta, Malta  
University of Coimbra, Portugal  
Higher Education Network for Radiography in Europe (HENRE)  
European Federation of Radiography Societies, Educational Wing  
Dr Ken Holmes, Diagnostic Imaging St. Martin’s Lancaster, UK  
Ms Tina Starc, Diagnostic Imaging of Ljubljana Slovenia  
Mr Eric Sundqvist, Department of Radiography, Örebro University  
Dr Philippe Van Leeuwen, ESHAL, Belgium  
Dr Jose Posas, University of Professional Education Fartys, Eindhoven  
Dr Sundaran Kada, Bergen University Norway  
Carsten Laveston, Diagnostic Imaging of Copenhagen  
Prof Gerolf Unterhamer, Vienna  
Kees Fredriks, Kardinaal Institute, Stockholm  
Dominique Zeroug, Jean Monnet University,  
Allison Wright, Diagnostic Radiography, Suffolk College, UK  
Dr Paul Bezzina, University of Malta  
Dr Pauline Reeves, Sheffield Hallam University  
Dr John Devaney, Queens University, Belfast  
Mr Colm Dempsey, National Director, National Child Protection Training Centre, Galway  

Publications:  


Ms Marie Stanton  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6539  
Email: marie.stanton@ucd.ie  

I am in the final year of a PhD in Education. My research involves investigating the effect of Problem-based learning on critical thinking abilities.

Mr Edel Thomas  
College Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6539  
Email: edel.thomas@ucd.ie  

I graduated from UCD with BSc in Radiography in 1993. I spent most of my radiography career in St Vincent’s University Hospital, Dublin. In 1997, I was awarded the HSDG Radiography (CT) and began working as an occasional lecturer on the postgraduate CT course in UCD in 2003. I was appointed to a lecturing post in UCD and am programme director of Graduate Diploma and Masters programme in CT. I lecture in various undergraduate Radiography modules.

My research interests include professional practice issues relating to CT imaging, radiation dose reduction and optimisation of CT practice.

Dr Rachel Toomey  
Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6587  
Email: rachel.toomey@ucd.ie  

I graduated from UCD with my PhD in 2010 before taking up a postdoctoral position in the Institute for Medical Science and Technology at the University of Dundee, gaining invaluable experience. In September 2011, I returned to UCD having been appointed to a lecturing post in the Diagnostic Imaging division. My research interests are diverse; however at present my work is principally concentrated in the areas of medical image display and perception.

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Title: FFP Proposal Preparation Coordinator Support  
Funder: Enterprise Ireland  
Start/End dates: 01/01/2012 – 21/03/2013  
Amount: €32,200


The HIV Molecular Research Group

Established in 2008, the HIV Molecular Research Group (HMRG) is internationally recognized for its translational research into long-term co-morbidities associated with HIV infection and its treatment with antiretrovirals and research into models of testing to increase early diagnosis of HIV.

The HMRG, based on the Mater Misericordiae University Hospital (MMUH) campus, coordinates international, collaborative, translational research in HIV. The group comprises researchers with laboratory, statistical and clinical research expertise and is funded through a number of streams including Science Foundation Ireland, the Health Research Board and several industry supporters. The group’s research focuses around four principal themes:

- **Models of HIV detection.** The Mater-Bronx Rapid HIV Testing Project (M-BRiHT), involves collaborations between UCD, MMUH and the Jacobi Medical Centre in the Bronx, New York, and aims to increase early detection of HIV, a core strategy to reduce onward HIV transmission. M-BRiHT combines rapid HIV testing with novel, computer-based video counseling and offers unselected HIV screening to attendees of the MMUH Emergency Department. Sponsored by UCD and funded by Gilead Sciences, M-BRiHT launched in September 2012 and has already recruited over 4,000 subjects, with plans for international expansion to sites in the UK and Italy in 2013.

- **Bone disease in HIV.** Low bone mineral density and osteoporosis is common in those with HIV. The HMRG coordinates a number of international collaborative projects to define the natural history and pathogenesis of bone disease in HIV including the establishment of the HIV UPBEAT cohort, the largest international prospective cohort of HIV positive and negative subjects. With funding from the Health Research Board and GlaxoSmithKline, HIV UPBEAT has started to yield very exciting results that will be published in 2013.

- **Cardiovascular disease (CVD)** is also increased in HIV. The Reverse Cholesterol Transport Study (RCTS), co-funded by the EU through the European AIDS Treatment Network (NEAT) and Science Foundation Ireland is exploring mechanisms of dyslipidaemia in HIV. RCTS expands on early work by HMRG published in the Journal of Infectious Diseases in 2012 on mechanisms of increased CVD in HIV, and is recruiting 100 subjects with HIV at MMUH and the Chelsea and Westminster Hospital in London.

- **HIV Immunology.** Through the MMUH ID Cohort Project, the HIV Immunology Study, supported by a number of industry partners aims to explore additional tests that better reflect and predict immune responses to antiretroviral therapy. This study, in collaboration with Rush University Medical Centre in Chicago, has recruited over 200 subjects.

In addition to a number of publications and conference presentations, HPRG’s achievements were recognized in 2012 with the award, by the British HIV Association, of the ‘Brian Gazzard Lectureship in HIV Medicine’ to Dr. Mallon.

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Dr Patrick Mallon
Associate Dean for Research & Innovation / Consultant in Infectious Diseases
Location: Mater Misericordiae Hospital
Contact: 01 716 4495
Email: paddymallon@ucd.ie

I head the HIV Molecular Research Group, which focuses on translational research into toxicities of antiretroviral therapy, strategies to increase population HIV testing and studies aimed at better understanding immune responses to antiretroviral treatment.

Major ongoing studies include the HIV UpBEAT Study, the largest, prospective controlled study into bone disease in HIV internationally, the M-BRiHT Study, an international collaborative study of the first ED-based HIV screening programme in Ireland, and the Mater Immunology Study part of the Mater HIV-ID Cohort Project. In 2012 I was awarded the Brian Gavard Lectureship in HIV Medicine by the British HIV Association.

Dr John (Jack) Lambert
Senior Lecturer in Medicine / Consultant in Infectious Diseases
Location: Mater Misericordiae Hospital
Contact: 01 716 4530
Email: jalambert@mater.ie

Current research focused on infections in pregnancy and treatment of HIV and hepatitis C. Has successfully developed a data base at the Rotunda and Mater to monitor pregnant women with various infectious diseases, and also monitoring HIV drug levels in HIV positive pregnant women in receipt of HIV therapy. Active in hepatitis C treatment and also developing national policies and strategies.

Dr Lambert is the recipient of a €228K two year grant from ViiV Access and Government Affairs department, to develop a pediatric AIDS database in two clinics in Eastern Cape South Africa. This data base will capture information on 2500 children, approximately 2000 of whom are on HIV treatment and capture important safety and clinical data on these children.

Dr Lambert and his team at the Mater, CRCC and Rotunda Hospitals were the recipient of a €1,000 prize for the best poster award for the HIV 11 conference held in Glasgow, Nov 2012. This conference was attended by over 3000 delegates from Europe and Worldwide. And such an award is recognition of the hard work of all involved. The study involved collecting TDM therapeutic drug monitoring samples on HIV infected pregnant women from during pregnancy, and labour and delivery and post partum, and comparing HIV drug levels in these women at different stages of pregnancy and in the cord blood samples.

Researchers Supported:
Dr Gerard O’Connor, Research Fellow
Dr Aníce Cotter, Research Fellow
Dr Jane O’Halloran, Research Fellow
Mr Willard Tinga, PhD Student
Mr Robert Magowan, PhD Student
Ms Siobhán Sweeney, Clinical Research Nurse
Ms Elizabeth Ceglian, Clinical Research Nurse
Mr Alan Macken, Data Manager
Mr Brendan Rogers, Laboratory Scientist
Ms Ailbhe Ni Flaitheartaigh, Clinical Research Assistant
Ms Kathleen Coyne, Clinical Research Assistant
Ms Anice Lacey, Research Student

Active national and international collaborators & projects:

Prof Caroline Sabín, University College London, HIV UPBEAT and HRTB Bone
Prof Jacky Compston, University of Cambridge, HIV UPBEAT
Prof Yvonne Cakir, Jacobs medical Centre, Albert Einstein College of Medicine, The Bronx, New York, M-BRiHT
Prof Peter Reiss, University of Amsterdam, RCTS Study
Prof Alan Landay, Rush University Medical Centre, Chicago HIV Immunology Study
Prof Dermot Kenny, Royal College of Surgeons in Ireland, Platelet Dysfunction in HIV
Dr Anton Pozniak, St Stephens AIDS Trust, Chelsea and Westminster Hospital, London
Professor Peter Reiss, Albert Einstein College of Medicine, The Bronx, New York, M-BRiHT

Title: Exploring Low Bone Mineral Density in HIV. Knowledge Exchange and Dissemination Grant
Funder: Health Research Board
Start/End Dates: 2012-13
Amount: €24,653

Title: HIV RCTS. Integration Grant
Funders: Janssen-Cilag, Merck Sharpe and Dohme, Bristol Myers Squibb.
Start/End Dates: 2011-2014
Amount: €42,543

Title: The HIV Reverse Cholesterol Transport Study ‘HIV RCTS’. Integration Grant
Funder: EU FP7 European AIDS Treatment Network (NEAT)
Start/End Dates: 2011-2013
Amount: €50,000 (€15,000 to UCD)

Title: The Mater Broncos Rapid HIV Testing Project (M-BRiHT Project)
Funder: AiCuris GmbH & Co
Start/End Dates: September 2012 – June 2013
Amount: €50,000

Title: The Mater Misericordiae University Hospital ID-HIV Cohort Project.
Funders: Janssen-Cilag, Menck Sharpe and Dohme, Bristol Myers Squibb.
Start/End Dates: 2011-2014
Amount: €564,119

Title: The Mater Bronx Rapid HIV Testing Project (M-BRiHT Project)
Funder: ViiV
Start/End Dates: 9/2/2012 to 31/12/2014
Amount: €228,000

Title: Paediatric ARV Software Development Project. South Africa
Funder: ViiV
Start/End Dates: 1/6/2011 to 01/07/2013
Amount: €52,700

Title: Exploring Low Bone Mineral Density in HIV
Funder: Health Research Board
Start/End Dates: October 2010 - 2013
Amount: €245,806

Title: Therapeutic Drug Monitoring in Pregnancy
Funder: Janssen
Start/End Dates: 22/01/2013 to 31/06/2014
Amount: - €4,000

Title: In vitro examination of toxicity of investigational antiretroviral agents
Funder: AiCuris GmbH & Co
Start/End Dates: September 2012 – June 2013
Amount: €51,000

Title: Understanding the Pathology of Bone Disease in HIV-infected Patients
Funder: GlaxoSmithKline
Start/End Dates: May 2010 - 3 years
Amount: £296,000 (€396,000)

Title: The St Marys and The Mater Maraviroc Switch Study. A prospective, randomised study to assess safety, changes in platelet reactivity, plasma cardiac biomarkers, immunological and metabolic parameters in HIV-infected subjects undergoing a switching in antiretroviral therapy
Funder: Pfizer
Start/End Dates: 2009-2012
Amount: UK£1,081,188 (€1,342,331)

Title: Exploring antiretroviral-induced adipose tissue toxicity through translational research
Funder: Science Foundation Ireland
Start/End Dates: May 2009 - 2013
Amount: €199,761
Publications:


7. Cotter AG, Mallon PW. The crosstalk between bone and fat in HIV-infected patients, with a focus on lipodystrophy. Clin Rev Bone Miner Metab. 2012;10;266-276.


Since 2005, the Maternal and Fetal Health Research Group (MFHRG), led by Professor Fionnuala McAuliffe has been internationally recognised for its research in prenatal diagnosis and prenatal ultrasound, diabetes and nutrition in pregnancy.

The MFHRG, based at the National Maternity Hospital, Holles St coordinates national and international collaborative research into maternal nutrition and diabetes and its effects on adverse pregnancy and neonatal outcomes. The group comprises researchers with backgrounds ranging from clinical obstetrics, paediatrics, and dietetics to economics. All of this research has been funded by grants from the Health Research Board (HRB), National Maternity Hospital, Holles St and European Union.

In September 2012, results from the ‘Low glycaemic index diet in pregnancy to prevent macrosomia (ROLO) study were published in the British Medical Journal. This was a large RCT of 800 women which assessed whether the implementation of a low GI diet in pregnancy reduced the incidence of macrosomia. Whilst this diet had no effect on birthweight, it had a positive effect on maternal gestational weight gain and glucose intolerance. Achievements of the ROLO study were recognized in February 2012 with first prize at the 33rd annual meeting of the society of maternal and fetal medicine held in San Francisco.

The ROLO kids study is a longitudinal follow-up study to the original ROLO randomised control trial. Mothers and children from the ROLO study are being followed up at 6 months, 2 years and 5 years of age in order to determine whether maternal nutrition/low GI diet in pregnancy had an effect on childhood weight or adiposity but also to study the growth and development of a cohort of Irish children and the effect of environment on growth and adiposity. Anthropometry, lifestyle and eating habits are being examined.

Women with a BMI of greater than 25 kg/m² have a higher risk of developing Gestational Diabetes. A low glycaemic index diet in pregnancy has shown to lower glucose intolerance. As a natural progression from the ROLO study, the Pregnancy Exercise and Nutrition research study (PEARS) was designed to assess the impact of a low glycaemic index (GI) dietary and exercise intervention compared to regular lifestyle on the incidence of gestational diabetes at 29 weeks in an overweight and obese pregnant population. This is a randomized controlled trial of 500 women of which recruitment is ongoing.

The Probiotics in Pregnancy (ProP) study is a double-blind, placebo-controlled randomised trial which is investigating the effects of a probiotic capsule intervention on maternal fasting glucose and other indices of maternal metabolism including insulin, c-peptide, lipids and CRP. There are two separate cohorts of pregnant women; 1. obese women who receive the intervention prior to screening for gestational diabetes (GDM) 2. women diagnosed with GDM. Recruitment and follow-up of the obese cohort is now complete (N=138) and publication of results are pending. Recruitment of the GDM cohort is ongoing, with a target of 100 women.
Location: National Maternity Hospital, Holles St / UCD School of Medicine & Medical Science

Dr Jennifer Walsh, PhD

Children and Human Development Research Centre (CHD-RC) in UCD Dublin which brings together the College of Health Sciences and College of Life Sciences.

I am one of the key academics instrumental in application for a multidisciplinary research centre Children and Human Development Research Centre (CHD-RC) in UCD Dublin which brings together the College of Health Sciences and College of Life Sciences.

Publications:


30. Unterschneider J, Geary MF, Daly S, McAuliffe FM, Kennedy MM, Dorman J,


Mucosal Pathogens

Based in the Health Science Centre in UCD, we are a strong translational research group, specialising in cellular microbiology and the study of pathogen interactions. We have worked for a long time with the gastrointestinal pathogens Helicobacter pylori and Campylobacter jejuni and more recently we have started to work also with Pseudomonas aeruginosa an opportunistic pathogen that is a particular problem for individuals with cystic fibrosis.

Our area of interest is how bacteria interact with human and animal tissue and cause disease. An area of particular interest is how bacteria colonise and live in mucus. We have developed a number of novel systems to learn how bacteria colonise mucus and interact with different components of mucus. Such knowledge can lead to the development of new therapeutics that can prevent infection as alternatives to antibiotics.

Three projects that we are currently involved in are:

1. Biomodulation of the gastrointestinal epithelial glycome by bacteria.
   We are part of the Alimentary Glycoscience Research Cluster an SFI funded strategic research cluster lead by NUI Galway. In this project we aim to investigate the effect of bacterial colonization by both commensals and pathogens on glycosylation in the gut and how these changes can be either beneficial or harmful to the host. As part of this project we are also looking at the direct interaction of bacteria with oligosaccharides found on mucins and epithelial cell membranes and the role these interactions play in mediating infection.

2. Elucidation of the mechanisms that Helicobacter pylori uses to modulate TFF1 expression in the gastric mucosa.
   We have identified TFF1, a member of the trefoil peptide family of proteins found in gastric mucus, as a protein that interacts with H. pylori. This interaction which is mediated by the LPS of the bacteria plays an important role in mediating colonization of mucus and gastric cells by the bacteria. We are currently investigating how TFF1 promotes infection by H. pylori and also how the bacteria modulates expression of both TFF1 and the gastric mucin MUC5AC. This work is sponsored by IRCSET.

3. The role of mucus and mucins in mediating Pseudomonas aeruginosa colonization of the cystic fibrosis (CF) lung.
   Pseudomonas aeruginosa is commonly associated with chronic airway infection in CF patients. The reasons for the particular predilection of P. aeruginosa for the CF airway are incompletely understood. In this study we aim to test the hypothesis that the environment of the CF lung, which contains thick stagnant mucus and mucins with altered glycans compared to non-diseased individuals plays an important role in initiation of colonization and maintenance of chronic bacterial infection. This work is being done in collaboration with Scientists and Clinicians from Our Lady’s Children’s Hospital in Crumlin and is funded by the Cystic Fibrosis Association of Ireland and the Health Research Board.

Dr Marguerite Clyne
01 716 6619 / marguerite.clyne@ucd.ie
UCD Health Sciences Centre

Group Head
Dr Marguerite Clyne  
Lecturer UCD School of Medicine  & Medical Science  
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My research investigates how pathogens such as 
*Helicobacter pylori*, *Campylobacter jejuni* and 
*Pseudomonas aeruginosa* colonise the gut and the 
lung. I am involved in an inter-institutional, multi-
disciplinary consortium of academic and industrial 
researchers funded by Science Foundation Ireland 
aimed at understanding the glycobiology of human 
intestinal infections. I am also funded by the Cystic 
Fibrosis Association of Ireland and the Health 
Research Board to investigate how 
*P. aeruginosa* colonises and maintains infection in the lung.

**Grants:**

1. **Title:** Glycoscience Research Cluster: Characterising and Mining the Epithelial Glycosylation in Host/Microbial Interactions, Strategic Research Cluster Co Principal Applicant  
**Funder:** Science Foundation Ireland  
**Start End/ Dates:** Jan 2009-Dec 2013  
**Amount:** €376,069

2. **Title:** The role of mucus and mucins in mediating 
*Pseudomonas aeruginosa* colonization of the cystic 
fibrosis lung  
**Project grant**  
**Funder:** MRCG (Cystic Fibrosis Association of Ireland)/HRB  
**Start End/ Dates:** Dec 2011-Dec 2014  
**Amount:** €123,850

3. **Title:** Elucidation of the mechanisms that 
*Helicobacter pylori* uses to modulate TFF1 expression in 
the gastric mucosa  
**Postgraduate Scholarship**  
**Funder:** IRCSET  
**Start End/ Dates:** Sept 2011- Sept 2014  
**Amount:** €72,000

**Publications:**


**Active national and international collaborators & projects:**

Dr Colm Rea, UCD School of Veterinary Medicine  
Prof Stephen Carrington, UCD School of Veterinary Medicine  
Prof Billy Bourke, UCD School of Medicine and 
Medical Science  
Prof Ronan O’Connell, School of Medicine and 
Medical Science  
Dr Felicity May, University of Newcastle upon Tyne  
Prof Liberato Marzullo, University of Salerno  
Dr Valerie Urbach, National Children’s Research Centre  
Prof Lukash Iosif, NUI Galway  
Dr Rita Hickey, Teagasc
Obesity & Immunology Research group’s work focuses on the effects of obesity, smoking, sex hormones, gut peptide hormones and colorectal cancer on the immune system, specifically innate immune cells; the Invariant Natural Killer T cell, Natural Killer cells and Dendritic cells amongst others. The research findings have established that these outlined conditions/factors impair the immune responses, potentially increasing susceptibility to infection, cancer and autoimmunity.

The group, based on the St. Vincent’s University campus, coordinates international, collaborative, translational research in Obesity and its complications. The group comprises researchers with laboratory, statistical and clinical research expertise and is funded through the Health Research Board, the National Children’s Research Centre and a number of industry supporters.

Current studies include:

1. Investigating the effects of GLP-1 and other Type 2 Diabetes medications on innate immune cells and inflammation: Obesity and obesity related co-morbidities have been found to negatively impact innate immune cells. A novel clinical finding uncovered the positive effect that a GLP-1 analogue elicited on the psoriatic inflammatory condition. This gave rise to a number of in vitro studies attempting to uncover the mechanism by which GLP-1 reduces inflammation.

2. Investigating the effects of chronic inflammation and innate immune cell dysregulation in obese children and adolescents: The innate immune system in a paediatric cohort (mean age 12 years) displays the same pattern of dysregulation seen in adults patients (mean age 46). This paediatric cohort exhibit worrying patterns of gene expression involved in tumour suppression and metabolic control.

3. Enumerating Invariant Natural Killer Cells (iNKT) in Obese patients with obstructive sleep apnoea: The iNKT cell plays an important role in tumour defence, prognosis and may play a role in weight management. A cohort of obese patients attending the Sleep Apnoea clinic. It was found that patients suffering with severe sleep apnoea had reduced numbers of iNKT cells with reduced functionality.

4. Adipose Tissue iNKT cells Protect against Diet Induced Obesity and Metabolic Disorder through Regulatory Cytokine Production: This study was performed using a mouse model and the main finding of this work highlights the potential of iNKT cell-targeted therapies previously proven to be safe in humans, in the management of obesity and its consequences.

A number of pilot clinical studies are underway also;

5. A pilot study to determine the effects of Vitamin D Supplementation on physical function and inflammatory markers in the severely Obese.

6. Assessing the role of 11 ß-Hydroxysteroid Dehydrogenase Type 1 (11ß-HSD1) in obesity: Tissue cortisol metabolism is controlled by 11ß-HSD1 and is postulated to be involved in the pathogenesis of obesity and its complications.

7. Effects of Normalising Testosterone and Oestradiol Levels on Cardiovascular and Bone Health in Men with Severe Obesity: A Randomized Clinical Trial.

The group have had a successful year with a number of publications and conference presentations.

Research Team

Prof Donal O’Shea
Associate Clinical Professor

Dr Andrew Hogan
PhD - Immunologist, Senior Scientist

Dr Lydia Lynch
PhD - immunologist and Marie Cure Fellow

Dr Michelle Corrigan
PhD - Molecular Biologist, Scientist

Dr Tomas Ahern
PhD student – HRB Clinical Training Fellow in Endocrinology

Dr Erinn Carolan
PhD - Research fellow in Paediatric Endocrinology

Ms Cathy Brennan
PhD - Dietician

Dr Gadinshware Gaoatswe
PhD - Clinical Research Fellow in Endocrinology

Dr Conor Woods
PhD - Clinical Research Fellow in Endocrinology

Dr Aftab Khattak
MD - Clinical Research Fellow in Endocrinology

Dr Matt Armin
MD – Research Registrar in Endocrinology

Group Head
Prof Donal O’Shea
01 221 2425 / info@dosheaendo.ie
St Vincent’s University Hospital

St Vincent’s University Hospital
The Obesity Immunology group’s research is focused on dysregulation of the immune system in obesity and the effect of gut hormones and diabetes medication on innate cell function. The innate immune cells, invariant natural killer T cells (iNKT cells), are implicated in the pathogenesis of psoriasis, an inflammatory condition associated with obesity and other metabolic diseases, such as diabetes and dyslipidemia. We have also found that dendritic cell function is hindered by the obese state.

We have published the following papers in these areas:
- Adipose Tissue Invariant NKT Cells Protect against Diet-Induced Obesity and Metabolic Disorder through Regulatory Cytokine Production.
- Changes in human dendritic cell number and function in severe obesity may contribute to increased susceptibility to viral infection.

I am also affiliated with UCD Conway Institute of Biomolecular and Biomedical Research, where I have forged close ties with Prof Carel Le Roux and am in active collaboration with Prof Helen Roche and Dr Fiona McGillicuddy.

**Grants:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
<th>Funder</th>
<th>Start/End Dates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Expression and clinical relevance of the somatostatin sst receptors in GastroEnteroPancreatic Neuroendocrine Tumours (GEP NETs), an Irish-Italian population-based study</td>
<td>Ipsen</td>
<td>June 2011-May 2013</td>
<td>€90,000</td>
</tr>
<tr>
<td>2.</td>
<td>The interaction between steroid hormones and immune cells in metabolically healthy obese (MHO) &amp; metabolically unhealthy obese (MUO) patients and the response to weight loss following bariatric surgery (BARIC-CORT)</td>
<td>Sanofi</td>
<td>June 2011-May 2013</td>
<td>€90,000</td>
</tr>
<tr>
<td>3.</td>
<td>The Effect of Sex Hormones on Lymphocyte, Adipose Tissue and Vascular Tissue Inflammation in men with Obesity or cardiovascular diseases.</td>
<td>Irish Heart Foundation</td>
<td>March 2010 – February 2013</td>
<td>€156,000</td>
</tr>
</tbody>
</table>

**Publications:**


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Active national and international collaborators & projects:

- Dr Andrew Hogan, PhD
- Dr Lydia Lynch, PhD
- Dr Michelle Corrigan, PhD
- Dr Tomas Ahern, PhD
- Dr Emil Carolan, PhD
- Dr Godinathwa Garstowe, MD
- Dr Conor Woods, PhD
- Ms Cathy Breen, PhD
- Dr Aftab Khatkat, MD
- Dr Matt Armin, MD
The Neurology Research Group continues its work in a wide range of areas but especially in those of multiple sclerosis and movement disorders. The research team includes; Dr Okka Kimmich, Dr Anna Molloy, Dr Laura Williams, Newman Fellow in Movement Disorders; Dr Karen O’Connell, Newman Fellow in MS Research; Post-Doctoral MS Research Fellow, Dr Jean Fletcher (based at TCD); MS Nurse Specialists Marguerite Duggan and Lisa Buckley, Parkinson’s Nurse Specialist Heather Kevelighan and Clinical Trials Research Nurse Sinead Jordan.

In November 2012 we began recruiting for our first investigator-led interventional clinical trial entitled: ‘Dose-related effects of vitamin D on immune responses in patients with Clinically Isolated Syndrome or early MS and healthy control participants. An exploratory double blinded placebo controlled study’ (2012CIS/VD/SVUH). The principal investigator of this study is Professor Michael Hutchinson. To date 26 participants have been screened. A second interventional trial involving MS participants, led by Dr Christopher McGuigan is due to commence in spring 2013.

Neuropsychological assessments of participants with MS, conducted over three years, are ongoing as part of a larger study on evoked potentials in MS. Neuropsychological assessments are being completed in collaboration with Sean O'Donnchadh, Marie Claire O'Brien, Dr Jessica Bramham and Dr Teresa Burke from the School of Psychology, UCD.

Research in dystonia in conjunction with Prof Richard Kelly and Dr Robert Whelan of the Department of Neural Engineering has been funded jointly by the HRB and Dystonia Ireland with a two-year grant. We have shown that the temporal discrimination threshold is a useful endophenotype in adult onset primary torsion dystonia (AOPTD) and this may have important implications for understanding the pathophysiological mechanisms underlying this disorder and ultimately its genetic basis.

The Neurology Department at St Vincent’s University Hospital is currently led by three full time consultant neurologists; Professor Niall Tubridy, Dr Christopher McGuigan and Dr Sean Ó Riordan. Professor Hutchinson continues to work in four clinics every week as well as being one of the driving forces behind our Multiple Sclerosis and Dystonia research.
The Department of Neurology at St Vincent's University Hospital has significantly expanded in recent years and we are now running an extensive research program in multiple sclerosis and dystonia. We have published extensively in the last 5-10 years and are currently involved in more than 15 clinical trials in MS.We have set up a clinical trial for vitamin D in MS and are collaborating with others in Trinity College Dublin, London and beyond.

In addition we encourage student involvement and we have teaching weeks twice a year for all UCD medical students. We have produced a series of neuroscience teaching videos which went live via YouTube in 2013 and to date have been viewed over 75,000 times and accessed from 160 countries throughout the world.

Affiliations:
- Education & Research Centre, St Vincent’s University Hospital, Elm Park, Dublin 4
- Centre for colorectal Diseases
- Vascular Biology Group
- Neurogenetics Group with Dr Sean Ennis, Dr Sally Ann Lynch and colleagues.
- UCD COHR (Centre for Child Health Research)
- Novartis Newman Fellowship in Neurology Research
- The effect of sacral neuromodulation on inputs to the somatosensory cortex

Title: Dysregulation of pathogenic T cells in multiple sclerosis
Funder: Medtronic Inc.
Start/End Dates: 22-JUN-12 / 01-JAN-15
Amount: €105,000

Title: Reflex and behavioural studies of faecal continence and incontinence in an animal model and optimisation of frequency parameters of sacral neuromodulation
Funder: Medtronic Inc.
Start/End Dates: 22-JUN-12 / 01-JAN-15
Amount: €105,000

Title: Reflex and behavioural studies of faecal continence and incontinence in an animal model and optimisation of frequency parameters of sacral neuromodulation
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Funder: Medtronic Inc.
Start/End Dates: 22-JUN-12 / 01-JAN-15
Amount: €105,000
The Tissue Engineering Research Group (TERG) is focussed on the development of next-generation implants by combining nanotechnology and tissue engineering methods, with a particular focus on living, cardiovascular devices for the treatment of both paediatric and adult populations.

The TERG is currently based in the UCD Health Sciences Centre and focusses on the application of tissue engineering and regenerative medicine principles to the improved treatment of disease. The two major group research themes are summarised below.

1. Vascular graft / heart valve prostheses. The major research focus of the group specifically targets the treatment of congenital cardiac defects, and namely the development of vascular and heart valve prostheses to reconstruct such defects. The principal project within the group, funded by the National Children’s Research Centre, is a highly multidisciplinary study that aims to synthesise a novel, autologous elastogenic vascular graft that can be constructed entirely from materials isolated from the infant patient. The premise of this study is that autologous, or ‘self-made’, materials will remove the potential for graft rejection, and provide the infant patient with a living, elastic graft that can grow together with their surrounding body tissues, thereby eliminating the need for successive re-operations. The group has been working closely with Prof Stefan Jockenhoevel (RWTH Aachen, Germany) over the last number of years developing techniques to generate both living vascular grafts and heart valve prostheses based on a fibrin scaffold material. Fibrin can be isolated from a sample of patients’ blood, and used as a material on which to grow cells, which then transform the fibrin into a tissue-like structure. The current 4-year translational study will employ novel techniques to generate more stable, long-lasting vascular graft materials using specialised equipment, defined chemical supplementation, together with the patient’s own cells.

2. In vitro models of disease. The second major research interest of the TERG is the application of tissue-engineered constructs as in vitro models of disease, primarily myxomatous mitral valve disease. While much work has been performed to look at diagnosis and treatment of this disease, efforts to better understand the cellular and molecular basis of this disease have been hampered by the lack of a suitable in vitro system. In a collaborative study with the Roslin Institute, University of Edinburgh and NUI, Galway the TERG is developing an in vitro bioreactor system to determine the factors that may influence the onset and progression of canine and human myxomatous mitral valve disease.

In addition to a number of publications and presentations, the highlight of the group in 2012 was to secure substantial funding from the National Children’s Research Centre for paediatric vascular graft development.

Group Head
Dr Tom Flanagan
01 716 6631 / thomas.flanagan@ucd.ie
UCD Health Sciences Centre
Dr. Tom Flanagan
Lecturer
Location: UCD Health Sciences Centre
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Email: thomas.flanagan@ucd.ie

Dr. Flanagan heads the Tissue Engineering research group at the School of Medicine & Medical Science, with a primary research focus in the fields of cardiovascular disease and cardiovascular tissue engineering, and in particular the development of novel heart valve prostheses and vascular grafts. Additionally, the group are involved in developing in vitro models of disease (e.g. myxomatous mitral valve disease, cancer), and have a number of active national and international collaborations in these areas.

Researchers Supported:
Ian Woods, PhD candidate
Sean Strauther, MSc candidate

Grants:
Title: Autologous, elastogenic tissue-engineered vascular conduits for repair of congenital heart defects
Funder: National Children’s Research Centre, Our Lady’s Children’s Hospital, Crumlin (CRC)
Start/End Dates: 01-OCT-12 / 01-OCT-16
Amount: €260,000

Publications:


Active national and international collaborators & projects:
Prof Stefan Jockenhoevel, Helmholtz Institute for Biomedical Engineering & Institute for Textile Technology, Aachen University, Germany
Alex Black, Department of Anatomy, National University of Ireland, Galway
Prof Brendan Cormican, Royal (Dick) School of Veterinary Studies & Roslin Institute, University of Edinburgh, Scotland
Research Themes

94 Child Health
104 Fibrosis
114 Translational Oncology
The theme of Child Health unites UCD researchers working to develop capacity in clinical, translational and health sciences research in paediatrics. Affiliated researchers propose to advance the establishment of the UCD Centre for Child Health Research (CCHR), which will centralise and streamline existing child health research at University College Dublin.

The CCHR comprises a cluster of clinical and translational researchers at University College Dublin and its affiliated paediatric hospitals. It includes investigators with expertise across the spectrum of translational research, including laboratory-based scientists, clinician scientists and clinician researchers. Research outputs cover a wide range of paediatric diseases, however strong focus has been brought to bear on certain research areas/themes with existing established research capacity.

Infectious diseases are the main causes of childhood mortality worldwide. Diarrhoeal disease research has benefited from the establishment of the DO-CHAS initiative funded by the National Children’s Research Centre which aims to understand the recent rapid increase in inflammatory bowel disease in Irish children and already has recruited over 150 patients. Furthermore, research by UCD affiliated investigators in the areas of childhood HIV infection and immune deficiency states relevant to TB has been published in the Lancet and New England Journal of Medicine.

Prevention of morbidity and mortality in premature infants is a major challenge of child health. UCD affiliated investigators have been awarded a number of investigator grants to study inflammatory and hypoxic injury in infants. Exciting results of studies aimed at analysing and predicting morbidity and mortality using clinical and laboratory indicators, and more effective methods for treating sick neonates, have been published.

Congenital birth defects have been the focus of research by UCD affiliated investigators based at the National Children’s Research Centre for many years. Investigator research grants have been awarded for the study of gastrointestinal and pulmonary congenital defects with multiple publications on the pathogenesis of, and outcomes in, a variety of congenital defects.

The Academic Lead for Child Health is Prof Billy Bourke. The Research Team is composed of the following individuals:

**Academic Lead**
Prof Billy Bourke  
01 716 6272 / billy.bourke@ucd.ie  
University College Dublin/Our Lady’s Children’s Hospital

**Research Team**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Billy Bourke</td>
<td>Associate Professor &amp; Consultant in Paediatrics</td>
</tr>
<tr>
<td>Dr Michael Barrett</td>
<td>Special Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Prof Carlos Blanco</td>
<td>Adjunct Professor</td>
</tr>
<tr>
<td>Dr Annemarie Broderick</td>
<td>Senior Clinical Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Dr Cormac Breathnach</td>
<td>Clinical Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Prof Kanna Butler</td>
<td>Clinical Professor in Paediatrics</td>
</tr>
<tr>
<td>Dr Marguerite Clyne</td>
<td>Lecturer</td>
</tr>
<tr>
<td>Dr Declan Cody</td>
<td>Consultant Endocrinologist</td>
</tr>
<tr>
<td>Dr Dee Cox</td>
<td>Consultant Respirologist</td>
</tr>
<tr>
<td>Dr John Cronin</td>
<td>Clinical Research Fellow</td>
</tr>
<tr>
<td>Dr Ellen Crushell</td>
<td>Consultant for Inherited Metabolic Disorders</td>
</tr>
<tr>
<td>Dr Adriana Foran</td>
<td>Consultant Neurologist</td>
</tr>
<tr>
<td>Dr Seamus Giles</td>
<td>Senior Lecturer</td>
</tr>
<tr>
<td>Dr Joanne Hughes</td>
<td>Consultant for Inherited Metabolic Disorders</td>
</tr>
<tr>
<td>Dr Seamus Hussey</td>
<td>Clinical Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Prof Mary King</td>
<td>Professor of Paediatrics &amp; Head of Subject</td>
</tr>
<tr>
<td>Dr Ina Knerr</td>
<td>Consultant Paediatrician</td>
</tr>
<tr>
<td>Prof Prem Puris</td>
<td>Newman Clinical Research Professor</td>
</tr>
<tr>
<td>Dr Marian Rowland</td>
<td>Lecturer in Clinical Research</td>
</tr>
<tr>
<td>Dr Jennifer Thompson</td>
<td>Senior Lecturer</td>
</tr>
<tr>
<td>Prof Ulla Knaus</td>
<td>Professor of Immunology</td>
</tr>
<tr>
<td>Dr Eleanor Molloy</td>
<td>Senior Clinical Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Dr Sinead Murphy</td>
<td>College Lecturer</td>
</tr>
<tr>
<td>Dr Colin O’Donnell</td>
<td>Senior Clinical Lecturer in Paediatrics</td>
</tr>
<tr>
<td>Dr Niamh O’Sullivan</td>
<td>Consultant Microbiologist</td>
</tr>
<tr>
<td>Dr Colm O’Donnell</td>
<td>Clinical Research Fellow</td>
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Laboratory-based investigation of the inflammatory and host defence mechanisms underlying important childhood diarrhoeal disease pathogens has been strengthened by an award from the National Children’s Research Centre of over one million Euro to a group of Science Foundation Ireland/Health Research Board-funded investigators interested in the role of reactive oxygen species during intestinal infection in children.
Dr John Cronin  
Clinical Research Fellow  
Location: National Children’s Research Centre  
Contact: 01 428 2634  
Email: john.cronin@ucd.ie

My research interests include acute pain in childhood and our group focuses on prehospital and the emergency department care setting. Pain is the number one presenting symptom in a paediatric emergency setting. Together with a group of close collaborators at Paediatric Emergency Research Unit (PERU), National Children’s Research Centre and UCD we are developing an international collaborative research programme. The PERU has established a track record in clinical studies and trials in the acute care setting.

In June 2012 I completed the recruitment of 250 patients for a randomised controlled trial (RCT) of dexmedetomidine and prednisolone in the treatment of acute exacerbations of asthma in children in the Emergency Department. This is the first RCT to be performed in an Irish ED. This work has been presented nationally and internationally and has won several awards.

I developed a novel Asthma Encounter Form that was introduced into practice in the ED at Our Lady’s Children’s Hospital, Crumlin April 2012. I then completed recruitment for another prospective study in the ED examining its impact.

Dr Seamus Glines  
Senior Lecturer  
Location: UCD Health Sciences Centre  
Contact: 01 716 6630  
Email: seamus.glines@ucd.ie

My main laboratory research interest is in teratology — the investigation of agents that cause birth defects. My main focus is present on the effects of ethanol on development, a leading yet preventable cause of neurological and physical defects. In a separate collaboration we are investigating the underlying mechanisms and efficacy of treating sublingual cannabinoids with anti-scarring agents such as Mitomycin C.

Collaborators:
Dr Meadhbh Murphy, UCD Conway Institute of Biomolecular & Biomedical Research  
Mr J Russell, Our Lady’s Hospital for Sick Children, Crumlin

Dr Ulla Kraus  
Professor of Immunology  
Location: UCD Conway Institute  
Contact: 01 716 6719  
Email: ulla.kraus@ucd.ie

Research in my laboratory focuses on advancing our understanding of the body’s first line of defence, the innate immune system. We focus on molecular mechanisms that determine the outcome of a pathogen’s interaction with the host organism, and how early intervention may ameliorate infection and tissue destruction. Together with collaborators we are using state-of-the-art techniques ranging from structure-function studies to animals models and from neutrophil biology to mucosal defence in airways and GI tract.

Researchers Supported:
Dr Aisling O’Dwyer, MD  
Dr Joseph O’Regan, MD  
Dr John Quigley, MSc

Dr Chikie Oyewumise, PhD  
Dr Aisile Teighe, PhD  
Dr Deirdre Sweetman, MD  
Dr Joan Donnelly, MD  
Dr Sam Doyle, MD

For more information about the work of UCD researchers in the area of paediatrics and child health, please visit the School’s award-winning website, available at www.ucd.ie/medicine
Title: Transcriptional profiling of the human pathogen Campylobacter jejuni during infection of the intestinal mucosa  
Start/End Dates: 2010-2013  
Funder: The Children’s Medical and Research Foundation  
Amount: €70,000

Title: Characterising and mining the epithelial glycoalyx in host-microbial interactions  
Start/End Dates: 2009-2014  
Funder: Science Foundation Ireland Alimentary Glycoscience Research Cluster  
Amount: €221,362

Title: Reactive oxygen species targeting the bacterial phosphotyrosine network as defense strategy against mucosal pathogens  
Start/End Dates: 2012-2016  
Funder: The Children’s Medical and Research Foundation  
Amount: €1,024,000

Title: Vitamin D and immunomodulation in Pediatric sepsis (DiPERS).  
Collaborator: Grant proposal with Conway Institute, UCD/Prof RW Watson.  
Start/End Dates: Jul 2011-1 Jul 2014  
Funder: Children’s Hospital University Hospital/Temple St Research Fund: Project grant  
Amount: €274,181

Title: Cytokines and neonatal brain injury and sepsis cTREM-1.  
Start/End Dates: 2010-2013  
Funder: National Maternity Hospital Fund  
Amount: €10,000

Title: Neonatal brain injury and systemic antioxidants.  
Start/End Dates: 2011-2013  
Funder: Children’s University Hospital/Temple Street fund  
Amount: €17,000

Title: The role of Protein C in Neonatal inflammation  
Start/End Dates: 2010-2  
Funder: National Children’s Research Centre  
Amount: €12,000

Title: Neonatal brain injury on MRI and early ECG association with disruption of the blood brain barrier and systemic antioxidants.  
Start/End Dates: 2009-2012  
Funder: Children’s Research Fund, Crumlin  
Amount: €110,000

Title: Neonatal Cardiac function novel echocardiographic and biochemical markers to predict neonatal outcome  
Start/End Dates: 2010-2012  
Funder: Children’s Research Fund, Crumlin  
Amount: €110,000

Title: Persistent inflammation and neonatal brain injury: association of systemic and cerebrospinal fluid biomarkers with MRI.  
Start/End Dates: 2009-2012  
Funder: Children’s Research Fund, Crumlin  
Amount: €187,000

Title: Sickle Cell Acute Pain in the Paediatric Emergency Department  
Start/End Dates: July 2011-Jun 2014  
Funder: National Children's Research Centre  
Amount: €50,000

Title: Bordetella pertussis infection in Ireland: - detection, differential diagnosis and source of infection  
Funder: Glasir OrthoTech  
Amount: €152,694.00

Title: Inflammation in children with recurrent Respiratory Infections.  
Funder: NCRP  
Amount: €327,243

Title: The origin of congenital foregut abnormalities in Oesophageal Atresia/ Tracheo-Oesophageal Fistula  
Start/End Dates: 1st Jan 12 – 31st Dec 2014  
Funder: NCRP  
Amount: €190,175

Title: DEVELOPMENT OF FGFR2-POSITIVE CELLS AN EXCITING NEW CELL TYPE IN THE HUMAN COLON  
Funder: NCRP  
Amount: €190,175

Title: The role of eosinophils in the pathogenesis of pulmonary hypoplasia in the rat model of congenital diaphragmatic hernia  
Funder: G. Sharp & Dome  
Amount: €20,188.00

Title: Pathogenesis of Congenital Diaphragmatic Hernia  
Funder: NCRP  
Amount: €40,000

Title: Study of the pathogenesis of pulmonary hypoplasia in an experimental rat model of congenital diaphragmatic hernia  
Funder: NCRP  
Amount: €110,000

Title: Pathogenesis of Congenital Diaphragmatic Hernia.  
Funder: NCRP  
Amount: €80,000

Title: Investigation of The Pathogenesis of Ventral Body Wall Defect using the Cadmium Chick Model  
Start/End Dates: 1st Apr 2011-30th Jun 2013  
Funder: The Children’s Medical and Research Foundation  
Amount: €221,362
Publications:


The UCD School of Medicine and Medical Sciences (SMMS) strategy for research support is to facilitate the coming together of individual investigators to create a coherent research group with a critical mass that can be efficiently supported and which can collaborate with industry and other academic institutions. The Fibrosis group has obtained commitments from colleagues in UCD and affiliated hospitals to move this collaborative research agenda forward. The group represents a cross-section of UCD Fibrosis research interests.

The Fibrosis group includes active PIs concentrated on developing our understanding of molecular, cellular, tissue and whole organism aspects of fibrosis. Specific current research clusters exist in the areas of cancer biology, hypoxia in disease, molecular vascular biology and proteomics/bioinformatics. The vascular system including blood vessels, blood cells, coagulation pathways, bone marrow and stem cells plays a central role in the development and progression of many major diseases including atherosclerosis, stroke, inflammatory lung disease, arthritis, cancer and complications of diabetes. Our focus is to enhance our understanding of the pathophysiology of fibrosis and particularly the role of vascular involvement in fibrosis in order to identify and develop novel treatments and prevention strategies.

Particular areas of strength include:
- Hypoxia responses in adaptation and disease
- Angiogenesis in inflammatory diseases
- Microvascular complications of diabetes
- Coagulation pathways in cardiovascular disease
- Pulmonary hypertension
- Biology of Fibrocytes

Key Achievements in 2012:
The Fibrosis group have published over 50 peer reviewed publications, while securing Euro 7 million in funding.
I am Professor of Ophthalmology at UCD and Consultant Ophthalmic Surgeon at the Mater Misericordiae University Hospital. I graduated from UCC in 1982 and did my clinical training at a number of centres in the UK followed by glaucoma fellowships at the New England Medical Center, Boston and Moorfields Eye Hospital, London. I was appointed Consultant Ophthalmologist at the Mater Misericordiae University Hospital in 1998.

My clinical and research interests are in the field of glaucoma, with a special interest in disease mechanisms underlying pseudo-exfoliation glaucoma and new therapies for inflammatory diseases such as diabetic heart failure and idiopathic pulmonary fibrosis. We focus on understanding the nature of chronic fibrotic disease and are investigating the roles of inflammation, epigenetic modifications, and hypoxia in aberrant wound healing and the development of tissue fibrosis.

Researchers Supported:
- Dr Stephen Horgan, PhD
- Dr Chris Watson, Post-doc
- Nadaisha Giezev, Post-Doc
- Ms Rossa Ni Neirig, MSc
- Mr Isaac Tea, MSc
- Ms Claire Toney, MSc

I also have a strong interest in Health Services Research and worked for many years as a board member at the National Council for the Blind.

I am Chairman of the Glaucoma Program Committee (AVRO) and Chairman of the Steering Committee, GATE Trial (NIHR). In addition, I am a member of the Steering Committee, EAGLE Trial (NIHR). In addition, I am a member of the Steering Committee, EAGLE Trial (NIHR). I was appointed Consultant Ophthalmologist at the Royal Infirmary of Edinburgh in 1992 and returned to Dublin in 1998.

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Our laboratory is interested in the role of fibrosis in glaucoma. Glaucoma affects over 60 million people worldwide, however current treatments are still limited & anti-fibrotic approaches remain largely unexplored. We have an active research group based at the CRC MMUH investigating glaucoma associated fibrosis through areas such as pathologica l cell biology and control mechanisms such as epigenetics. By way of active collaborations both nationally & internationally we endeavour to develop anti-fibrotic therapies.

Title: Novel Anti-Connective Tissue Growth Factor Antibody Therapy in Pseudoexfoliation Glaucoma
Funder: Health Research Board (HRB)
Start/End Dates: 01-OCT-12 / 31-JUL-13
Amount: €12,000

Title: Glaucoma: An Insight into Epigenomic Reprogramming
Start/End Dates: 01-Jan-13 / 31 Dec 2014
Funder: Health Research Board
Amount: €25,000

Title: An analysis of normal and glaucomatous human lamina cribrosa and trabecular meshwork cell behaviours as determined by rigidity of the surrounding extracellular matrix.
Start/End Dates: 01-Jan-13 / 31 Dec 2013
Funder: International Glaucoma Association (United Kingdom and Eire Glaucoma Society
Amount: £232,000

Title: Novel Anti-Connective Tissue Growth Factor Antibody Therapy in Pseudoexfoliation Glaucoma's
Start/End Dates: Jan-13 - Dec-2014
Funder: Health Research Board
Amount: €245,533

Title: Anti-Connective Tissue Growth Factor Antibody Therapy in Pseudoexfoliation Glaucoma's
Start/End Dates: May 2011 - May 2012
Funder: UK and Eire Glaucoma Society
Amount: £22,000

Title: 'Platelet hyper-reactivity in active inflammatory arthritis: implications for cardiovascular risk'
Start/End Dates: 2010/2012
Funder: Abbott Clinical Trial Contract For Chief Investigator Initiated Research
Amount: €167,000

Title: The role of Serum Amyloid P-Component in the prevention and treatment of diastolic dysfunction and diastolic heart failure
Funder: Irish Heart Foundation
Start/End Dates: 01-JUL-10 / 30-JUN-11
Amount: €15,000

Title: Boston Scientific Research Bursary
Funder: Irish Cardiac Society (ICS)
Start/End Dates: 01-SEP-10 / 01-SEP-12
Amount: €120,000

Title: The role of Serum Amyloid P-Component in the prevention and treatment of diastolic dysfunction and diastolic heart failure
Funder: Health Research Board (HRB)
Start/End Dates: 01-JUL-11 / 30-JUN-13
Amount: €142,625

Title: Biomarkers for the prevention of heart failure
Funder: Health Research Board (HRB)
Start/End Dates: 01-OCT-11 / 30-SEP-14
Amount: €283,000

Title: 5-aza-cytidine as a novel treatment for idiopathic Pulmonary Fibrosis
Funder: University College Dublin (UCD)
Start/End Dates: 01-MAR-12 / 31-OCT-13
Amount: €491,1

Title: Biomarkers of heart failure and Cardiac and Lung fibrosis
Funder: Enterprise Ireland (EI)
Start/End Dates: 01-APR-12 / 31-JUL-13
Amount: €11,000

Title: DNA Methylation Inhibitors as a novel treatment for Cardiac and Lung fibrosis
Funder: Enterprise Ireland (EI)
Start/End Dates: 01-SEP-12 / 31-DEC-12
Amount: €1,200

Title: 5-aza-cytidine as a novel treatment for idiopathic Pulmonary Fibrosis
Funder: University College Dublin (UCD)
Start/End Dates: 01-MAR-12 / 31-OCT-13
Amount: £4,911

Title: Biomarkers of heart failure and Cardiac and Lung fibrosis
Funder: Enterprise Ireland (EI)
Start/End Dates: 01-APR-12 / 31-JUL-13
Amount: €11,000

Title: DNA Methylation Inhibitors as a novel treatment for Cardiac and Lung fibrosis
Funder: Enterprise Ireland (EI)
Start/End Dates: 01-SEP-12 / 31-DEC-12
Amount: €1,200

Title: Clinical Scientist Award to Prof Ken McDonald Natural History of Diabetic Cardiomyopathy
Funder: Health Research Board (HRB)
Start/End Dates: 01-Jan-13 / 31-DEC-18
Amount: £1,475,168

Title: Health Research Award to Dr Mark Leibridge Immunomodulatory matrix-metalloproteinase inhibition with tetracyclines in obesity, diabetes and asymptomatic left ventricular diastolic dysfunction impact on MPR-9 levels and cardiovascular function
Funder: Health Research Board (HRB)
Start/End Dates: 01-OCT-12 / 30-SEP-15
Amount: £330,000

Title: Elucidating the role of placental growth factor in mediating hypoxia-induced pulmonary angiogenesis and co-ordinated epithelial growth in the adult hypoxic lung
Funder: Health Research Board (HRB)
Start/End Dates: 01-OCT-08 / 30-SEP-12
Amount: £412,000

Title: Elucidating the potential therapeutic role of Ephrines in the treatment of emphysema
Start/End Dates: May 2013 / April 2017
Funder: MSD
Amount: €286,495

Title: Targeting gremlin in the diagnosis and treatment of fibrotic lung disease
Funder: Health Research Board (HRB)
Start/End Dates: 03-SEP-12 / 02-SEP-16
Amount: €320,000

Title: Gremlin in Acute Lung Injury SWF
Funder: University College Dublin Foundation Ltd.
Start/End Dates: 01-DEC-11 / 01-DEC-14
Amount: €50,000

Title: Gremlin in ALI (ICSI)
Funder: University College Dublin Foundation Ltd.
Start/End Dates: 01-OCT-11 / 30-SEP-13
Amount: €50,000
Title: Macrophage Migration Inhibitory Factor (MIF), enymatic activity and pulmonary disease
Start/End Dates: 01-SEP-09 / 01-SEP-14
Funder: Science Foundation Ireland (SFI)
Amount: €1,600,000
Title: Characterisation of the role of defective toll-like receptor 3 (TLR3) in pulmonary fibrosis
Start/End Dates: 01-OCT-11 / 30-SEP-14
Funder: HRB
Amount: €637,000
Title: Advancement in Respiratory Disease
Start/End Dates: 01-SEP-11 / 01-SEP-14
Funder: Philanthropic
Amount: €450,000
Title: Sarcoidosis research
Start/End Dates: 01-JAN-10 / 31-DEC-13
Funder: West Offaly Enterprise Fund Ltd
Amount: €40,000
Title: The role of defective TLR3 in Idiopathic Pulmonary Fibrosis
Start/End Dates: 01-OCT-11 / 30-SEP-14
Funder: HRB
Amount: €245,000
Title: Novel sensor technology in Pulmonary Medicine
Start/End Dates: 01-SEP-12 / 2013
Funder: RespMed
Amount: €475,000
Title: MIF, Pseudomonas & Barfin Formation
Start/End Dates: 01-SEP-12 / 01-SEP-13
Funder: Inish Lung Foundation
Amount: €27,000

Publications:


Translational Oncology

The primary vision of the UCD Academic Centre in Translational Oncology (ACTO) is to (a) acknowledge and foster the exceptional cancer initiatives already in place, with a particular focus on gaining international recognition within academic and industrial sectors, and (b) to unify the basic, translational already in place, with a particular focus on gaining international recognition (ACTO) is to (a) acknowledge and foster the exceptional cancer initiatives

Translational Oncology is the crucial bridge that enables application of scientific discoveries into clinical practice with the intention of improving clinical outcomes of cancer treatment. This can only be achieved by establishing a critical mass of clinicians and researchers, driven by a similar agenda. The recent creation of the Dublin East network of hospitals provides a catchment population in excess of one million and includes two of the eight designated centres in Ireland (Mater Misericordiae University Hospital and St Vincent’s University Hospital) that together currently treat the largest numbers of patients affected by all the major cancers (Breast, Prostate, Colorectal, Lung, Pancreas) within the country. This critical mass provides opportunities for enhanced basic research collaboration but also crucially will greatly enhance clinical outcomes of cancer treatment. This can only be achieved by establishing a critical mass of clinicians and researchers, driven by a similar agenda. The recent creation of the Dublin East network of hospitals provides a catchment population in excess of one million and includes two of the eight designated centres in Ireland (Mater Misericordiae University Hospital and St Vincent’s University Hospital) that together currently treat the largest numbers of patients affected by all the major cancers (Breast, Prostate, Colorectal, Lung, Pancreas) within the country. This critical mass provides opportunities for enhanced basic research collaboration but also crucially will greatly enhance interactions with the pharmaceutical and medical device industries.

ACTO has obtained commitments from over 50 colleagues in UCD to move this collaborative research agenda forward. The group represents a cross-section of UCD cancer research interests. Formal recognition as an Academic Centre in Translational Oncology will greatly enhance applications for significant national and international funding including the Irish Cancer Society Collaborative Cancer Research Centres programme, the SFI Centres call and the Horizon 2020 Funding Programme.

The ACTO group includes active PIs in computational biology, innovative model systems including canine, rodent, zebrafish and xenopus model systems, high-throughput proteomic and biomarker discovery platforms, substantial cancer tissue cohorts (through the Prostate Cancer Research Consortium, Molecular Therapeutics for Cancer Ireland, the TNBC Mater/SVUH allaince, OCR), synthetic chemistry, chemical biology and imaging. Moreover, Systems Biology Ireland (SBI) led by Professor Walter Kolch (Director, UCD Conway Institute) gives an exceptional pathway analysis approach integral to deciphering the complexity that cancer displays. As the ACTO develops, it will be in a very strong position to strategically recruit expertise as required.

The ACTO group published over 90 peer-reviewed publications, while securing Euro 7 million in funding. Recognition of the proposed Academic Centre will consolidate efforts in continuing to secure additional significant funding to support the unified agenda of translational oncology research.
My research focuses on the mechanisms underlying Paclitaxel (Taxol®) chemoresistance for women presenting with epithelial ovarian cancer (EOC) and Triple Negative Breast Cancer (TNBC) specifically the spindle assembly checkpoint protein MAD2L2 through which Paclitaxel exerts its apoptotic effect. Experimentally the group are also interested in profiling DNA methylation and histone modification signatures in hypoxia and how this relates to ultimate chemoresistance and the retention of cellular viability (weswessence/autophagy) in the face of chemotherapeutic engagement.

I am also Group coordinator of the UCD/Mater/Mater-St Vincent’s University Hospital/Triple Negative Breast Cancer (TNBC) Group. In addition, I am leading the submission of a proposal to the UCD authority for an Academic Centre in Translational Oncology.

Researchers Supported:
Mr Alexander McGoldrick, Senior Technician,
Ms Barbara Flynn, PhD,
Ms Mary Burke, PhD,
Dr Elana O'Reilly, Surgical MD,
Dr Shiela Sharma, Surgical MD,
Ms Luke Gobbin, MSc,
Ms Valerie Toh, Inter-disciplinary MSc.

Dr Mara Bengoechea Alonso
Research Fellow
Location: UCD Conway Institute
Contact: 01 716 7653
Email: mara.bengoechea-alonso@ucd.ie

We work on the SREBP family of transcription factors. These proteins control cholesterol and lipid metabolism and play critical roles during adipocyte differentiation and insulin-dependent gene expression. Disturbances in lipid metabolism are at the very core of several major health issues facing modern society including cardiovascular disease, obesity and diabetes. Thus, the factors and signals that regulate the function of the SREBP family of proteins are very relevant to metabolic disease.

Prof Dolores Cahill
Professor of Translational Science
Location: UCD Conway Institute
Contact: 01 716 6967 / 086 172 5572
Email: dolores.cahill@ucd.ie

My group is involved in translating biomarkers to benefit patients, from their use in improved diagnosis, including in applications in Ovarian Cancer (Murphy et al, 2012a; Murphy et al, 2012b), and in understanding the mechanisms underlying cancer causation and progression with our collaborators in Ireland, MD Anderson Cancer Centre, Texas, USA (Staquicini et al, 2012) and Lund Cancer Centre, Lund (Oxlon et al, 2011).

Researchers Supported:
Mr Manuel Murphy, PhD
Dr David O’Connell, Post-Doctoral Researcher
Ms Saga O’Kane, Research Assistant (collaboration with Prof Cowen, Mater Hospital)
Dr Amin Laskami, MD
Dr Alejandro Menne, Post-doctoral Researcher
Ms Fiona O’Hannigan, SMSS student
Ms Joanna Cornell, PhD
Mr Aedhsh Bezaie, PhD
Ms Maave Daly, SMSS student

Dr Fidelma Flanagan
Consultant and Senior Clinical Lecturer
Location: Mater Misericordiae University Hospital
Contact: 01 882 6244
Email: fidelma.flanagan@cancerscreening.ie

I am a Consultant Radiologist at the Mater Misericordiae University Hospital, Dublin. I am also Clinical Director of BreastCheck, Eclee Screening Unit. The Breast Screening Programme is responsible for the detection and diagnosis of patients with breast cancer to the end of primary surgery. Over 40,000 screening mammograms were performed each year in the Eclee Unit. As a radiologist in the general radiology department in the Mater Misericordiae University Hospital I am actively involved in the delivery of the breast symptomatic service.

My fellowship training began in the Division of Breast Imaging and the Division of Nuclear Medicine and PET Imaging Mallinkrodt Institute of Radiology, Barnes Hospital, Washington University, St. Louis, Missouri, USA. Following both fellowships at Mallinkrodt Institute of Radiology, I joined the division of Breast Imaging, Mallinkrodt Institute of Radiology. Following on from this, I returned home to Ireland as a Special Lecturer in Radiology. This post fellowship lecturer post combined significant clinical duties in the radiology department at the Mater Misericordiae University Hospital with dedicated research time based at the Institute of Radiological Sciences (IORS). I received my Medical Doctorate (MD) in Breast Cancer Imaging while in the post. I continue clinical research and teaching in breast care management.

Major research interests for 2012 include Atypical ductal hyperplasia follow-up and breast cancer following triple assessment.

Prof Michael J. Duffy
Professor (Adjunct)
Location: Clinical Research Centre, St Vincent’s University Hospital
Contact: 01 716 5814
Email: michaelj.duffy@stvincentst.hc.ie

Our research focuses on the identification and validation of new biomarkers and therapeutic targets for breast cancer. This work is being carried out in collaboration with other Molecular Therapeutics Cancer Ireland (MTCI) members based in University College Dublin, Dublin City University and Trinity College Dublin. In addition, we have ongoing collaboration with investigators at the University of Los Angeles, California (UCLA) University of Oxford and Cambridge University.

Collaborators
Prof Enda McDermott, St-Vincent’s University Hospital
Prof John Cunyn, St-Vincent’s University Hospital
Prof William Gallagher, UCD Conway Institute of Biomolecular & Biomedical Research
Dr Darren O’Connor, UCD Conway Institute of Biomolecular & Biomedical Research
Dr Amanda McCann, UCD Conway Institute of Biomolecular & Biomedical Research
Dr Norms O’Donovan, Dublin City University
Dr Robert O’Connor, Dublin City University
Dr Noel O’Reilly, University of California, LA
Prof Denis Simon, University of California, LA
Prof G. Murphy, University of Cambridge
Dr A. Kong, University of Oxford

Dr Helen Gallagher
Lecturer
Location: UCD Conway Institute
Contact: 01 716 6726
Email: helengallagher@ucd.ie

I hold degrees in pharmacology and pharmacy from UCD/ TCD & RCSI. My main research interests are in the areas of neuropharmacology & pharmaceutical care. I currently the recipient of a Cochrane Fellowship from the Health Research Board of Ireland and a member of the Cochrane Pain, Palliative & Supportive Care Review Group. I have strong interdisciplinary collaborations, including joint non-exchequer funding, with the clinical anesthetists at the Mater Misericordiae University Hospital (Prof Donal Buggy).

Major research interests for 2012 include Atypical ductal hyperplasia follow-up and breast cancer following triple assessment.

Researchers Supported:
Dr Georgina Flood, MD Student (co-supervised with Donal Buggy)
Dr Georgi Vatches, Researcher
Mr Eamonn Leane, Researcher
Dr Michael Lowery, Consultant in Anesthesiology
Dr Adam Jauras, Researcher
Ms Laura Ivers, Consultant in Anesthesiology
Dr Robert O’Connor, University Department of Anesthesia, Mater Misericordiae University Hospital, Dublin
Dr Michelle Butler, School of Nursing and Midwifery, UCD

Dr Niall Itaeki
Senior Lecturer
Location: UCD Health Sciences Centre
Contact: 01 716 6657
Email: niall.itaeki@ucd.ie

Our research interest is in the molecular mechanism of embryonic development, especially in the epithelial-mesenchymal transition and the Wnt signaling pathway. We also study the metabolic behavior of cancer cells in vitro, as cancer progression shows striking similarities with developmental processes of embryos, sharing common signaling pathways for cell proliferation, migration and tissue dynamics. We employ both in vitro and in vivo approaches and benefit from Conway’s core facilities for imaging.

Researchers Supported:
Ms Laura Ivers, MSc
Ms Eamon Keane, MSc.

Dr Leo Lawler
Senior Clinical Lecturer
Location Mater Misericordiae University Hospital
Contact: 087 316 3800
Email: leowlawler@ucd.ie

- Consultant Cross Section and Interventional Radiologist MPRU
- Proctologist, StVU/Temple StCuimhín
- Special interests Cardiovascular and Oncology Disease

Dr Amanda McCann
Senior Lecturer
Location: UCD Conway Institute
Contact: 01 716 6742
Email: amanda mccann@ucd.ie

My research focuses on the mechanisms underlying Paclitaxel (Taxol®) chemoresistance for women presenting with epithelial ovarian cancer (EOC) and Triple Negative Breast Cancer (TNBC) specifically the spindle assembly checkpoint protein MAD2L2 through which Paclitaxel exerts its apoptotic effect. Experimentally the group are also interested in profiling DNA methylation and histone modification signatures in hypoxia and how this relates to ultimate chemoresistance and the retention of cellular viability (weswessence/autophagy) in the face of chemotherapeutic engagement.

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Ms Mary Burke, PhD,
Dr Elana O’Reilly, Surgical MD,
Dr Shiela Sharma, Surgical MD,
Ms Luke Gobbin, MSc,
Ms Valerie Toh, Inter-disciplinary MSc.
My research is focused on the molecular pathology of colorectal cancer. Much of this translational work is in collaboration with the Centre for Colorectal Disease at St. Vincent’s University Hospital. Using array technology we are assessing methylation levels at multiple sites across the genome to determine how patterns of methylation relate to the traditional classifications of colorectal cancer. Results are validated using pyrosequencing and immunohistochemistry to facilitate integration of our findings into patient care.

Researchers Supported:
Dr Maciej Milewski, PhD
External Collaborations:
Centre for Colorectal Diseases, St. Vincent’s University Hospital, Dublin

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I am a 1981 UCD graduate with training in Ireland, London and Boston in Gastroenterology. Appointed Consultant Gastroenterologist to Mater Misericordiae University Hospital in 1993. Trained in clinical and GI research in areas from Colon Cancer biology, CT Colon Imaging, High Risk colorectal Cancer screening and endoscopic intervention. Research grant funding from Irish Cancer Society, HRB and SFI. Member of Advisory Board of European GI Endoscopy Society. Appointed Associate Prof of Medicine in 2006 and is currently Secretary of the BJS Society. I have published widely and have an active research programme funded by Science Foundation Ireland. I have served as editor of the British Journal of Surgery (1999-2006) and is currently Secretary of the BJS Society. I am co-editor of Bailey and Love’s Short Practice of Surgery. I am President elect of the European Society of Coloproctology.

Researchers Supported:
Dr Colum O’Hare, University College Dublin
Dr Margaret Cleme, University College Dublin
Prof Desmond Winter, St. Vincent’s University Hospital
Dr John Hyland, St. Vincent’s University Hospital
Prof Piers Shanahan, University College Cork
Dr Paul Cotter, Teagasc
Dr Paul Ross, Teagasc
Dr Niall Doherty, Trinity College Dublin
Prof John O’Leary, Trinity College Dublin
Dr Anna Smyth, Dr Margaret Walshe, Biliary Research Fellow
Dr Paul Ross, Teagasc
Dr Paul Cotter, Teagasc
Prof Fergus Shanahan, UCD School of Medicine

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I am also working collaboratively with Dr Amanda McCormick and her research team at UCD, investigating the expression and significance of Mad2 in TNBC.

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I use this knowledge to address clinically relevant research questions. I am also working collaboratively with Dr Amanda McCormick and her research team at UCD, investigating the expression and significance of Mad2 in TNBC.
<table>
<thead>
<tr>
<th>Title</th>
<th>Funder</th>
<th>Start/End Dates</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Fate of Chemoresistance in Triple Negative Breast Cancer (TNBC)</td>
<td>The Mater Surgical Oncology Research Appeal/ University College Dublin Foundation Ltd.</td>
<td>11-JUL-11 / 11-JUL-13</td>
<td>€50,000</td>
</tr>
<tr>
<td>A therapeutic roadmap for ovarian cancer using Mi088-MAD2 as</td>
<td>Royal City of Dublin Hospital Trust</td>
<td>01-SEP-12 / 01-SEP-15</td>
<td>€67,101</td>
</tr>
<tr>
<td>The anti-IL6 antibody siluB0m enhances the efficacy of Paclitaxel</td>
<td>Eccles Breast Health Research Fund (EBHR)</td>
<td>01-SEP-12 / 01-SEP-13</td>
<td>€10,000</td>
</tr>
<tr>
<td>Tumour Derived Exosomes (TEXs) from Paclitaxel Cultured Triple</td>
<td>The Mater Surgical Oncology Research Appeal/ University College Dublin Foundation Ltd.</td>
<td>11-JUL-12 / 11-JUL-14</td>
<td>€40,000</td>
</tr>
<tr>
<td>MIRT - Ireland fund-raising/pharmaceutical industry</td>
<td>Enterprise Ireland CF Grant</td>
<td>2011-12 and 2012-3</td>
<td>€80,000</td>
</tr>
<tr>
<td>Colonisation by sulphate reducing bacteria (SRB) subspecies in</td>
<td>Science Foundation Ireland (SFI)</td>
<td>01-JUL-10 / 10-JUL-15</td>
<td>€647,750</td>
</tr>
<tr>
<td>Pharmacological policies: Policies that determine which drugs are</td>
<td>Health Research Board (HRB)</td>
<td>10-JUL-10 / 10-JUL-15</td>
<td>€240,000</td>
</tr>
<tr>
<td>ETS SFI Travelling Fellowship</td>
<td>University College Dublin (UCD)</td>
<td>01-MAY-12 / 31-OCT-13</td>
<td>€50,000</td>
</tr>
<tr>
<td>Molecular therapeutics for cancer: translational research to</td>
<td>Science Foundation Ireland (SFI)</td>
<td>01-OCT-09 / 01-OCT-14</td>
<td>€9,999</td>
</tr>
<tr>
<td>Tumour Derived Exosomes (TEXs) from Paclitaxel Cultured Triple</td>
<td>Health Research Board (HRB)/MRCCG Project /KEDS Application supporting</td>
<td>01-JUL-12 / 11-JUL-13</td>
<td>€9,999</td>
</tr>
<tr>
<td>Neuroimaging Skills in Dementia (NeuroSKILL)</td>
<td>University College Dublin (UCD)</td>
<td>01-JUL-12 / 31-JUL-13</td>
<td>€3,000</td>
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<tr>
<td>The effect of CTGF polymorphisms on surgical recurrence following</td>
<td>Health Research Board (HRB)</td>
<td>10-JUL-10 / 10-JUL-15</td>
<td>€647,750</td>
</tr>
<tr>
<td>The effect of sacral neuromodulation on inputs to the somatosensory</td>
<td>Science Foundation Ireland (SFI)</td>
<td>01-SEP-12 / 01-SEP-13</td>
<td>€2000</td>
</tr>
<tr>
<td>Translational studies on anaesthesia and cancer progression</td>
<td>Enterprise Ireland CF Grant</td>
<td>1/2/13 - 3/11/14</td>
<td>€12,000</td>
</tr>
<tr>
<td>Pharmaceutical policies: Policies that determine which drugs are</td>
<td>Health Research Board (HRB)</td>
<td>01-SEP-12 / 01-SEP-13</td>
<td>€12,000</td>
</tr>
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<td>Health Research Board (HRB)</td>
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<td>€12,000</td>
</tr>
</tbody>
</table>
Title: Neuromodulation in an animal model of fecal incontinence
Funder: Medtronic Corporation
Start/End Dates: 01-JUL-12 / 31-Jun-14
Amount: €200,000

Title: Integrating biomarkers for the stratification of patients into ineffective and significant prostate cancer
Funder: Irish Cancer Society
Start/End Dates: 01-Oct-11 to 30-Sep-14
Amount: €750,000

Title: Protein expression profiles of morphologically discrete foci in prostate cancer
Funder: Health Research Board
Start/End Dates: 01-Oct-11 to 30-Sep-14
Amount: €1,350,000

Title: Proteomic Analysis of Psoriatic Arthritis
Funder: University College Dublin Foundation Ltd.
Start/End Dates: 05-Apr-11 to 30-Sep-14
Amount: €30,000

Title: The ADAMs family of proteases: new biomarkers and therapeutic targets for Patients with Colorectal Cancer

Title: Mechanisms of Docetaxel resistance in castrate resistant prostate cancer
Funder: University College Dublin
Start/End Dates: 01-JUL-12 / 30-JUN-13
Amount: €450,000

Title: Influence of oestrogen on breast cancer cell viability and metastasis.
Funder: L’Air Liquide
Start/End Dates: 12-DEC-11 / 11-DEC-13
Amount: €100,000

Title: Discovery and Validation of Biomarkers to Predict response in Inflammatory Arthritis
Funder: University College Dublin
Start/End Date: 01-May-12 to 31-Oct-13
Amount: €1,895

Title: Biomarkers of Heart Failure and Cardiovascular Disease
Start/End Dates: September 2012-2013
Funder: Enterprise Ireland
Amount: €450,000

Title: Natural History of Diabetic Cardiomyopathy
Start/End Dates: October 2012-2015
Funder: Health Research Board Clinician Scientist Award
Amount: €161,193

Title: To investigate the mechanisms of treatment resistance in advanced Prostate Cancer
Funder: The Mater Foundation
Start/End Dates: 01-JAN-12 / 30-JUN-13
Amount: €56,345

Title: Validating a panel of serum biomarkers to inform surgical intervention for prostate cancer
Funder: Health Research Board (HRB) /Science Foundation Ireland (SFI)
Translational Research Award
Start/End Dates: 01-JUN-11 / 30-NOV-12
Amount: €836,582

Title: Molecular therapeutics for cancer: translational research to individualise therapy with targeted agents
Funder: Science Foundation Ireland (SFI)
Start/End Dates: 01-SEP-09 / 31-AUG-14
Amount: €839,407

Title: Shedding light on stromal-epithelial interactions in prostate carcinogenesis and mortality A programme of ToCoP
Funder: Prostate Cancer Foundation - US
Start/End Dates: 01-OCT-12 / 31-SEP-14
Amount: €563,345

Title: Integrated Global Serum Biomarker Project
Funder: Movember Global Action Plan
Start/End Dates: 01-Dec-12 / 30-Nov-14
Amount: €450,000

Title: Mechanics of Docetaxel resistance in castrate resistant prostate cancer
Funder: University Foundation
Start/End Dates: 01-JUL-12 / 30-JUN-13
Amount: €90,500

Title: Influence of oestrogen on breast cancer cell viability and metastasis.
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Title: Discovery and Validation of Biomarkers to Predict response in Inflammatory Arthritis
Funder: University College Dublin
Start/End Date: 01-May-12 to 31-Oct-13
Amount: €1,895


Individual Investigators

Dr Dara Breslin
Dr Stuart Bund
Prof Gerard Bury
Dr Michael Carr
Prof Patricia Casey
Dr Geoffrey Chadwick
Dr Mary Clarke
Dr Paul Crossey
Dr Glen A. Doherty
Dr Peter Doran
Prof Johann Ericsson
Dr Ursula Fearon
Dr Robin Feeney
Prof Oliver Fitzgerald
Prof Sean Gaine
Mr James Geraghy
Prof Stephen Gordon
Dr Ally Guerandel
Prof Desmond Higgins
Dr Eoin Kavanagh
Dr Brendan Kelly
Prof Peter Kelly
Dr Lorraine Kyne
Dr Jason Last
Dr Matthew Lawless
Prof Brendan Loftus
Dr Patricia McCarthy
Prof Aiden Mc Cormack
Mr Enda Mc Dermott
Dr Aisling Mulligan
Dr William Murphy
Prof Patrick Murray
Dr Jean O’ Connor
Dr Mark Pickering
Dr Terence Prenderville
Dr Karen Ryan
Mr Asim Shiekh
Dr Dubhfeasa Slattery
Dr Albert Smolenski
Prof Michael Stephens
Prof Cormac Taylor
Prof Douglas Veale
1. Anaesthesia at Duke University, North Carolina

2. Botox injections.

3. Dr Dara Breslin

4. Dr Stuart Bund

5. Dr Michael Carr

List of Publications:


List of cross-sectional studies in Duke’s south inner city:


List of grants active in 2012:

- Title: MERIT (R9744)
  Amount: €60,641

- Title: MERIT (R9744)
  Start/End Dates: 1/1/2005 - 1/1/2008
  Amount: €150,356

- Title: New technology to screen for AF (R11614)
  Amount: €324,076.

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  Amount: €324,076.

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  Amount: €324,076.

List of researchers supported:

- Prof Gerard Bury
- Dr Dara Breslin
- Dr Stuart Bund
- Prof Michael Carr

List of Drs Contributing to the Study:

- Prof Gerard Bury
- Dr Dara Breslin
- Dr Stuart Bund
- Prof Michael Carr

List of grants:

- Title: MERIT (R9744)
  Amount: €60,641

- Title: MERIT (R9744)
  Start/End Dates: 1/1/2005 - 1/1/2008
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  Amount: €324,076.

- Title: New technology to screen for AF (R11614)
  Amount: €324,076.

Funder:

- NIHR-CCF (National Institute For Health Research Clinical Commissioning, UK)

Research interests:

- My research interests include the evolution and pathogenesis of respiratory and blood-borne viruses infecting humans and host genetic variation associated with differing clinical outcomes and treatment responses.

Researchers supported:

- Ms Maebh Collins, MSc
- My Nimmo Hall, MSc
- Ms Anna Marie McCartney, MSc
- Mr Conor Boyde, MSc

List of publications:


List of presentations:


List of publications:

List of Publications:

List of Grants received in 2012:
- HRB Partnership Award: Suicide in first episode psychosis
- HRB Project Grant Course and Outcome of Psychosis at 12 Years
- HRB Strategic award: A randomised controlled trial of an intervention to treat comorbid cannabis abuse in psychosis.
- JHRB Strategic award: A randomised controlled trial of an intervention to treat comorbid cannabis abuse in psychosis.

List of Grants active in 2012:
- HRB Strategic award: A randomised controlled trial of an intervention to treat comorbid cannabis abuse in psychosis.
- JHRB Strategic award: A randomised controlled trial of an intervention to treat comorbid cannabis abuse in psychosis.

List of Publications:
1. Lynne F Turner N, Clarke M. Treat negative symptoms of schizophrenia early on. BJP. 2012;344:e2297.
The main focus of our research is to identify the key mechanisms involved in dysregulation of angiogenesis and subsequent cartilage invasion in the inflammatory joint. We have developed a number of novel models using human tissue and patients with inflammatory arthritis which more closely reflect the joint environment. These models are designed to reproduce the in vivo environment of the inflammatory joint and have attracted industry partnership funding to examine novel anti-angiogenic and anti-inflammatory therapeutic agents. Using these "preclinical proof of concept" models we are dissecting novel models using human tissue that regulate the function of the SREBP family of transcription factors, which are very relevant to metabolic disease.

Affiliations:
- UCD MR Oncology

Researchers Supported:
- Dr Maria Teresa Bengoechea Alonso, Research Fellow

Location: UCD Conway Institute
Contact: 01 716 6753
Email: m.teresa.bengoechea@ucd.ie

We work on the SREBP family of transcription factors. These proteins control cholesterol and lipid metabolism and play crucial roles during adipocyte differentiation and insulin-dependent gene expression. Dyslipidemia in lipid metabolism are at the very core of several major health issues facing modern societies including cardiovascular disease, obesity and diabetes. Thus, the factors and signals that regulate the function of the SREBP family of proteins are very relevant to metabolic disease.

Affiliations:
- CORE-Vascular

Researchers Supported:
- Dr Len Hartly, Clinical Research Fellow

Location: UCD Institute of Cancer Research (UCR)
Start/End Dates: 01-JAN-09 / 31-DEC-12

Amount:€80,000

Title: Identification of novel mechanisms that regulate the SREBP family of transcription factors, key regulators of lipid metabolism
Funder: FRI
Start/End Dates: 01-Feb-11 / 31-Jan-16

List of Publications:

Dr Ursula Fearon
Research Fellow

Location: UCD Health Sciences Centre
Contact: 01 716 3646
Email: ursula.fearon@ucd.ie

The major focus of our research is to identify the key mechanisms involved in dysregulation of angiogenesis and subsequent cartilage invasion in the inflammatory joint. We have developed a number of novel models using human tissue from patients with inflammatory arthritis which more closely reflect the joint environment. These models are designed to reproduce the in vivo environment of the inflammatory joint and have attracted industry partnership funding to examine novel anti-angiogenic and anti-inflammatory therapeutic agents. Using these "preclinical proof of concept" models we are dissecting novel models using human tissue that regulate the function of the SREBP family of transcription factors, which are very relevant to metabolic disease.

Affiliations:
- CORE-Vascular

Researchers Supported:
- Dr Len Hartly, Clinical Research Fellow

Location: UCD Institute of Cancer Research (UCR)
Start/End Dates: 01-JAN-09 / 31-DEC-12

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List of Publications:

Dr Ursula Fearon
Research Fellow

Location: UCD Health Sciences Centre
Contact: 01 716 3646
Email: ursula.fearon@ucd.ie

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Amount:€80,000

Title: Identification of novel mechanisms that regulate the SREBP family of transcription factors, key regulators of lipid metabolism
Funder: FRI
Start/End Dates: 01-Feb-11 / 31-Jan-16

List of Publications:
A systematic literature review of drug therapies

Title: Differential expression of T cell subsets

Bowes, J., Eyre, S., Flynn, E., Ho, P., Salah, S., War-

€240,000

Title: Funder:

2010 – 2013

€170,000

Funder:

Title: Publication:

Publications:

Ash, Z., Gaujoux-Viala, C., Gocsek, L., Henrot E., M.

Bowes, J., Eyre, S., Flynn, E., Ho, P., Salah, S., War-

Funder:

Bristol Myers Squib (BMS)

Title: Bone biomarkers and bone imaging in early inflammatory arthritis

Start/End Dates: 2010 – 2013

Funder:

Abbot

Amount: €170,000

Title: Development of Inflammatory Arthritis database

Start/End Dates: 2007 – 2013

Funder:

Abbot

Amount: €340,000

Title: Differential expression of T cell subsets including regulatory T cells (Treg) following the介绍of the intrabreast in Psoriatic Arthritis

Start/End Dates: 2010 – 2013

Funder:

Profs Benno Troidl and Christiane Moritz

Amount: €140,000

Title: Bone biomarkers and bone imaging in early inflammatory arthritis

Start/End Dates: 2010 – 2013

Funder:

Abbot

Amount: €170,000

Title: Development of Inflammatory Arthritis database

Start/End Dates: 2007 – 2013

Funder:

Abbot

Amount: €340,000

Title: Differential expression of T cell subsets


Publications:


3. Bowes, J., Eyre, S., Flynn, E., Ho, P., Salah, S., War-

Funder:

Bristol Myers Squib (BMS)

Title: Bone biomarkers and bone imaging in early inflammatory arthritis

Start/End Dates: 2010 – 2013

Funder:

Abbot

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Funder:

Abbot

Amount: €170,000

Title: Development of Inflammatory Arthritis database

Start/End Dates: 2007 – 2013

Funder:

Abbot

Amount: €340,000

Title: Differential expression of T cell subsets
Mr James Garergy
Consultant Breast Surgeon

Location: St Vincent’s University Hospital
Contact 01 418 8411
Email: james.garergy@ucd.ie

I am a Consultant Surgeon working in the field of Breast Diseases in St Vincent’s University Hospital. My research interests are twofold. Firstly, in the area of Transcription Master Regulators of Senescence in Breast Cancer and the second area of interest is in the field of Familial Breast Cancer and in particular genes associated with breast cancer. A unique liaison has been set up between the Breast Department at St Vincent’s University Hospital, University College Dublin and the world renowned Smurfit Institute of Genetics at Trinity College Dublin. Specifically a link was established initially with Prof David McConnell with the appointment of a lecturer; Dr Adrian Braden who is the main individual conducting the joint research project. The research currently funds a PhD post as well as a visiting surgeon who is doing a PhD in Genetics and Breast Cancer. This work is ongoing and is funded via St Vincent’s Foundation, the Health Research Board, Enterprise Ireland and is the subject of a further application to the Health Research Board.

Additional info
I have been involved in two specific EU projects. The first was in the establishment of a European wide fellowship Programme for young doctors wishing to train in a clinical setting in different types of cancer. This is done in conjunction with the European School of Oncology based in Milan. This project, which is co-ordinated by University College Dublin is also associated with cancer centres in London, Paris and Milan. The first Fellows to undertake this project did a six month Fellowship Programme in St Vincent’s University Hospital.

The second European Project was the hosting of an International Conference on Young Women with Breast Cancer which was held in the O’Reilly Hall Dublin in November 2012. This conference had an International Faculty from Europe and the United States with over 400 participants from 40 different nationalities. The conference was funded by an unrestricted educational grant from the European School of Oncology and was very successful.

Researchers Supported:
Dr Adrian Braden, Lecturer, Smurfit Institute of Genetics, Trinity College Dublin.
Mr Garry Braun, Post Doctoral Researcher, Smurfit Dr Fiona Lanigan, Post Doctoral Fellow, Smurfit Institute of Genetics, Trinity College Dublin

List of Grants active in 2012:
Title: Master Transcription Regulators
Funder: St Vincent’s Foundation
Start/End Dates: 2011 – to present
Amount: €100,000

Title: Genetics – Novel Genes Involved in Breast Cancer
Funder: St Vincent’s Foundation
Start/End Dates: 2010 – to present
Amount: €100,000

List of Publications:
Publications specific to the above projects are currently being submitted with the intention of aiming for the European School of Oncology and was very successful.

Researchers Supported:
Dr Hiberet Tessema, Lecturer, Smurfit Institute of Genetics, Trinity College Dublin

List of Grants active in 2012:
Title: Master Transcription Regulators
Funder: St Vincent’s Foundation
Start/End Dates: 2011 – to present
Amount: €100,000

Title: Genetics – Novel Genes Involved in Breast Cancer
Funder: St Vincent’s Foundation
Start/End Dates: 2010 – to present
Amount: €100,000

List of Publications:
Publications specific to the above projects are currently being submitted with the intention of aiming for the European School of Oncology and was very successful.
and progression after transient ischemic attack and stroke.
- Population based epidemiology of stroke and transient ischemic attack.
  - Phase 2, 3, and 4 studies of therapeutic agents to prevent stroke, coronary disease, and vascular cognitive decline in high risk individuals.

Appointments:
Clinical Lead (Neurology), National Stroke Programme, Ireland
Member Organising Committee (Chair, Prevention Category), American Stroke Association/American Heart Association International Stroke Conference

Researchers Supported:
Dr Lorraine Kynne
Consultant and Senior Lecturer
Location: Mater Misericordiae University Hospital
Contact: 01 716 4537
Email: kynne SCMater
My main area of research is Clostridium difficile and healthcare-associated infections in older people together with a group of collaborators at UCD, the Mater Misericordiae and St Vincent’s University hospitals, Beaumont hospital and the Health Protection Surveillance Centre (HPSC) our research has focused on the epidemiology and the human immune response to C. difficile. We are currently examining the host inflammatory response to C. difficile infection and outcome, as well as changes in faecal microbiota in hospitalised patients. As a member of a sub-committee of the HPSC, I was involved in drawing up National Guidelines for the Surveillance, Diagnosis and Management of C. difficile infection which were launched in 2008 and revised in this year. I am also involved in other collaborative research on stroke, atrial fibrillation and medical education.

Researchers Supported:
Dr Alan Martin, MD
Dr Cassie O’Donoghue, MD
Dr Kate Solomon, BSc

List of Papers in 2012:


Dr Jason Last
Associate Dean for Programmes and Educational Innovation and Director of Pre-Clinical Studies
Location: UCD Health Science Centre
Contact: 01 716 6269
Email: jason.last@ucd.ie

My main responsibility within the School is educational innovation and programme leadership. In addition, I teach clinical anatomy and physical anthropology to a wide range of health science students and continue to practice medicine. Research interests include clinical anatomy, physical anthropology and medical education. Research achievements in 2012 included publishing significant findings on the maturational timeline and in establishing a cross university partnership with archana in research in physical anthropology.

Researchers Supported:
Dr Alan Martin, MD
Dr Cassie O’Donoghue, MD
Dr Kate Solomon, BSc

List of Papers in 2012:

Prof Brendan Loftus
Professor of Comparative Genomics
Location: UCD Conway Institute
Contact: 01 716 6718
Email: brendan.loftus@ucd.ie

I am an SFi Prof in Host-pathogen interactions at the Conway Institute and the Director of Genomics at the Conway Institute. Prof Loftus is interested in Genomics, Bioinformatics, transcriptomics and high throughput mechanisms for identifying host-pathogen interactions. I set up an Illumina based high throughput sequencing facility at the Conway Institute and am the head of genomics at the Conway Institute. I am also a PI on a Science Foundation Ireland (SFI) funded research cluster in reproductive biology which has been funded for 5 years.

List of Publications:


Dr Patricia McNally
Lecturer
Location: The School of Psychotherapy
Department of Psychiatry and Mental Health Research, St Vincent’s University Hospital
Contact: 01 231 3936
Email: patricia.mcnally@usc.ie

I am a medical graduate of UCD and am a member of the College of Psychologists of Ireland and am a practising psychoanalyst.

As a member of The Irish School for Lacanian Psychoanalysis ISPW www.islpw.ie, I participate in a research group, where I engage in the critical examination and interrogation of the organism of Jacques Lacan. This method of conceptual research by means of textual excesses is the unique means by which psychoanalysis as a clinical praxis is progressed.

I am on the editorial board of The Letter: Irish Journal for Lacanian Psychoanalysis www.letterie.org, this specialised journal, in which I have numerous publications, is held in 30 legal deposit libraries worldwide, including The Library of Congress. My last publication, Evidence-Based Practice and Psychoanalysis: Thought Disorder and the Dream published in Vol 56 (11) of The Letter, was part of the conference proceedings On Treatment Challenges in Bipolar Affective Disorder: Voices of Difference – Psychiatry and Psychoanalysis in Dialogue, for which I was the Organiser.

At present, I am completing a paper for publication in Vol 52 (3) of The Letter entitled: The Other, its Paradoxes and ‘Unknowing’.

I am the academic lead for two postgraduate...

Prof Aidan McCormick
Consultant Hepatologist / Gastroenterologist
Location: St Vincent’s University Hospital
Contact: 01 221 3396
Email: amccormic@vsru.ie

Consultant Hepatologist, Liver Unit, St Vincent’s University Hospital, Dublin 4 and Newman Clinical Research Professor University College Dublin.

Interests: Portal hypertension, hypersplenism, clinical trials in chronic liver disease and liver transplantation.

Researchers Supported:
Dr Lamong Chen, MD

List of Publications:

2. Flusk et al. PMCID: 3096838
   Title: Whole host response to pathogen. Funder: SFI
   Start/End Dates: 1/1/2006 - 3/1/2015
   Amount: €180,000

List of Publications:


List of Publications:

Dr Mark Pickering
Lecturer
Location: UCD Health Sciences Centre
Contact: (1) 716 6642
Email: mark.pickering@ucd.ie

My research is currently focused on the biology of myelin in the central and peripheral nervous system. Myelin repair as a therapeutic strategy for demyelinating diseases, Neuro-glia interactions

List of Publications:

Dr Martin Rowland
Lecturer in Clinical Research
Location: Catherine McAuley Research Centre
Contact: 01 676 4497
Email: martin.rowland@ucd.ie

Epidemiological studies, which provide large cohorts of well-characterised participants, are a key platform to enable the translation of new technologies and laboratory techniques into real advances in patient care. As an island nation I believe we have a unique opportunity to contribute to future advances in translational research in a number of areas. My research has focussed on long-term epidemiological studies, which seek to increase our understanding of the disease process/phenotype in the area of Cystic Fibrosis, Helicobacter pylori, and Functional Disorders in Children.

Affiliations:
- Child Health Group

Researchers Supported:
Ms Jennifer Drummond, Research Nurse
Ms Sharily George, Research Nurse

List of Grants active in 2012:
1. Title: The Natural History of Cystic Fibrosis Liver Disease
Start/End Dates: April 2014
Funder: Health Research Board
Amount: €274,216

List of Grants received in 2012:
1. Title: An Evaluation of H. Pylori prevalence and strain diversity in a unique cohort of adolescents in a developed country
Start/End Dates: November 2012
Funder: Health Research Board
Amount: 323,394.00

Dr Karen Ryan
Senior Clinical Lecturer
Location: Mater Misericordiae University Hospital, St. Francis Hospice
Contact: 087 940 2323
Email: kerylryan@hse.ie

List of Grants active in 2012:
1. Title: The International Access, Rights and Empowerment Study (IARE) An international mixed methods study to compare palliative care experiences among older people affected by cancer and non-cancer conditions
Funder: The Atlantic Philanthropies
Principle investigator: Prof Irene Higginson
Lead investigators: Dr Barb Dawson (UK), Prof Diane Meier, Prof Sean Morrison (US), Prof Charles Normand, Dr Karen Ryan, Dr Regina McQuillan (Ireland)

Start/End Dates: 2011-2013
Amount: Grant held by King’s College London

Dr Dubhglass Stattery
Clinical Lecturer
Location: Children’s University Hospital
Contact: 087 659 9417
Email: dubhglass.stattery@cuh.ie

I work as a Respiratory and General paediatrician at Children’s University Hospital, Temple St, which is a full time clinical post. I have a PhD in molecular medicine, and a Masters in education for health care professionals. I am associate dean of hospital inspections at R.C.P.I., member of the medical and scientific committees of the Cystic Fibrosis Association of Ireland (CF Privacy) and just last year completed my time as the vice dean of the Faculty of Paediatrics at RCSI. I am the president of Irish representative on the advisory board of the Congress of International Paediatric Pulmonology and a member of the European Cystic Fibrosis Working group.

List of Publications:
1. \[ \text{Fairview Family Practice} \]
Start/End Dates: 2009-2012
Amount: €120,000

List of Grants received in 2012:
Title: The Three Ps of Integrating Palliative Care and Emergency Department Care (IF Grant Scheme A)
Funder: Irish Hospice Foundation
Principle Investigators: Dr Karen Ryan (Clinical Lead), Palliative Care Programme), Dr Una Geary (Clinical Lead, Emergency Medicine Programme)
Start/End Dates: 2012-2013
Amount: €50,839

List of Grants active in 2012:
1. Title: M. Conron, M. Ryan, K. Exploring the Challenges of Implementing the Edmonton Symptom Assessment Scale in a Specialist Palliative Care Unit
Start/End Dates: July 2011-Jun2014 (reagents only)
Amount: €215,000

Title: Molecular predictors of disease severity in bronchiolitis
Funder: HRB Research Training Fellowship for Healthcare Professionals HPF/2011/17
Start/End Dates: July 2011-2014
Amount: €50,000

List of Grants active in 2012:
1. Title: Dr Karen Ryan, M. Mini Review - Challenges in Cystic Fibrosis Liver Disease
Funder: Irish Hospice Foundation
Start/End Dates: July 2011-2014 (reagents only)
Amount: €120,000

Mr Aone Sheehy
Lecturer
Location: UCD Health Science Centre
Contact: 01 716 6642
Email: aone.sheehy@ucd.ie

My main research interests are in the area of medical negligence and medico-legal issues concerning consent and data protection in healthcare settings. A specific area of research and professional interest is in the area of genetics and the law.

List of Publications:


The aim of our work is to develop new diagnostic and therapeutic approaches in atherosclerotic disease associated with myocardial infarction and stroke.

Researchers Supported:
Ms Kristina Gegenbauer, PhD
Ms Ashling Hampson, PhD
Ms Zeljka Nagc, MSc

List of Grants active in 2012:
Title: Cyclic nucleotide mediated inhibition of platelet function mechanisms and new targets for diagnosis and therapy of vascular disease
Funder: Science Foundation Ireland
Start/End Dates: 01/01/2009 – 31/12/2013
Amount: €210,500

Title: Science Foundation Ireland Technology and Innovation Development Award (TIDA), Generation and characterisation of a phospholipid site specific antibody against arterial TGF (GAPS) for application in the diagnosis of platelet reactivity
Funder: Science Foundation Ireland
Start/End Dates: 01/01/2010 – 28/02/2013
Amount: €70,300

Title: Cyclic nucleotide mediated inhibition of platelet function mechanisms and new targets for diagnosis and therapy of vascular disease
Funder: Science Foundation Ireland
Start/End Dates: 01/01/2010 – 28/02/2013
Amount: €70,300

List of Publications:
Funder: HRB
Start/End Dates: 2012-2015
Amount: €310,000

Title: Does hypoxia induced vascular dysfunction and Notch signalling alter response to anti-TNF therapy in Inflammatory Arthritis.
Funder: HRB
Start/End Dates: 2012-2015
Amount: €310,000
List of Publications:


UDC MR Researchers

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