

‘My experience of the SFI-HRB-Wellcome Trust Career Development Fellowship application process’

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SFI-HRB-Wellcome-Trust Career Development Fellow,

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Background Profile & Mentors



Professor Alan Keenan



- **PhD Duration:** 2002-2006
- **Thesis Title:** 'Evaluation of novel N-isopropylacrylamide/N-tert-butylacrylamide copolymer microgel/matrix systems as anti-restenotic drug delivery vehicles'
- **Main focus:** cardiovascular disease – developing novel drug-delivery vehicles to limit in-stent restenosis after angioplasty procedures
- Two papers from thesis



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Postdoctoral experience

Duration: From 2006 to 2009

Main focus:

1. Assessed the effects of inflammation on High Density Lipoprotein (HDL) function and Reverse cholesterol transport.
2. Adipocyte biology: impact of inflammatory driven signals on human adipocyte insulin sensitivity



Dr. Muredach Reilly



Dr. Daniel Rader



Senior Postdoctoral experience



Prof. Helen Roche



Duration: From 2009 to 2012

Main Focus: Led an SFI funded team assessing the contribution of IL-1 mediated signals to high-fat diet induced insulin resistance

Supervised a number of PhD students and also lectured to a number of courses

Maintained close ties with previous mentors and finished a number of manuscripts



UCD Conway Institute

Publication Record

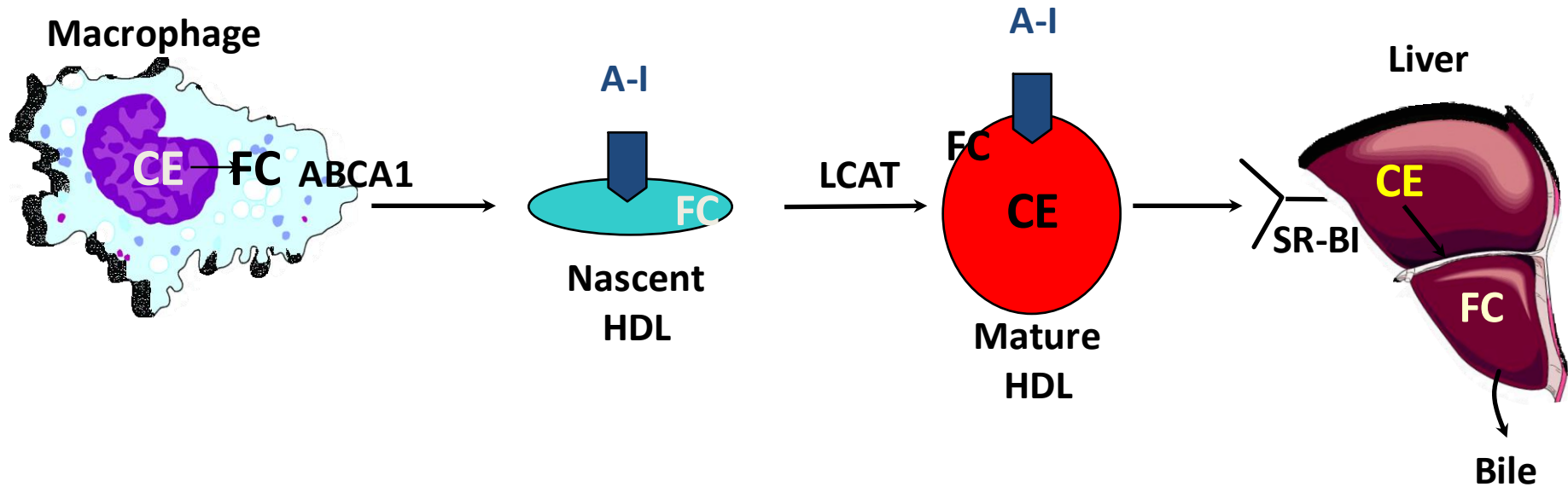
Title and Authors	Journal and impact factor	
Inflammation modulates human HDL composition and function in vivo. M de la Llera Moya*, FC McGillicuddy*, CC. Hinkle, M Byrne, MR Joshi , V Nguyen , JTabita-Martinezb,c ,ML Wolfe, K Badellino, L Pruscinob,c, NN. Mehta, BF Asztalos, MP Reilly. *equal author contribution	Atherosclerosis, 2012. Accepted	4.086
Nutritional status, genetic susceptibility and insulin resistance important precedents to atherosclerosis. FC McGillicuddy and HM Roche. Invited Review	Molecular Nutrition and Food Research, 2012. Accepted	4.713
Dietary saturated fatty acids prime the NLRP3 inflammasome via TLR4 in dendritic cellsimplications for diet-induced insulin resistance. CM Reynolds, FC McGillicuddy, KA Harford, OM Finucane, KHG Mills, HM Roche.	Molecular Nutrition and Food Research, 2012. Accepted	4.713
Adipose modulation of “good cholesterol”: implications for obesity, HDL metabolism and cardiovascular disease. FC McGillicuddy, MP Reilly and DJ Rader. Invited editorial.	Circulation, 2011 124(15):1602-5.	14.816
Fats, inflammation and insulin resistance: insights to the role of macrophage and T-cell accumulation in adipose tissue. KA Harford, CM Reynolds, FC McGillicuddy and HM Roche. Review.	Proc Nutr Soc. 2011, Nov;70(4):408-17	4.32
Lack of IL-1RI protects mice from high-fat diet induced adipose tissue inflammation coincident with improved glucose homeostasis. FC McGillicuddy, KA Harford, CM Reynolds, E Oliver, M Claessens, KHG Mills and HM Roche.	Diabetes, 2011 60(6):1688-98	8.505
Docosahexaenoic acid attenuates macrophage-induced inflammation and improves insulin sensitivity in 3T3-L1 adipocytes of an in vitro co-culture system. E Oliver, FC McGillicuddy, C Phillips, K Harford, J Ferguson, A O'Connor, HM Roche	Journal of Nutritional Biochemistry, in press	4.558
Adipocyte modulation of high-density lipoprotein cholesterol. *Y Zhang, *FC McGillicuddy, CC Hinkle, S O'Neill, JM Glick, GH Rothblat, MP Reilly, *equal author contribution.	Circulation, 2010 121(11):1347-55,	14.816

Experimental endotoxemia induces adipose inflammation and insulin resistance in humans. NN Mehta, FC McGillicuddy, PD Anderson, CC Hinkle, R Shah, L Pruscino, J Tabita-Martinez, KF Sellers, MR Rickels, MP Reilly.	Diabetes, 2010 59(1):172-81	8.505
Adipose tissue modulation of HDL. FC McGillicuddy and MP Reilly. Invited editorial.	Clin. Lipidol. 2010 5(5), 601–606	1.46
The role of inflammation and macrophage accumulation in the development of obesity-induced type 2 diabetes mellitus and the possible therapeutic effects of long-chain n-3 PUFA. E Oliver, FC McGillicuddy, C Phillips, S Toomey, HM Roche.	Proc Nutr Soc. 2010, 69(2):232-43.	4.32
Interferon gamma attenuates insulin signaling, lipid storage and differentiation in human adipocytes via activation of the JAK/STAT pathway. FC McGillicuddy, EH Chiquoine, CC Hinkle, RJ Kim, R Shah, HM Roche, EM Smyth, MP Reilly.	J Biol Chem, 2009 284(46):31936-44	5.328
Inflammation impairs reverse cholesterol transport in vivo. FC McGillicuddy, M de la Llera Moya, CC Hinkle, MR Joshi, EH Chiquoine, JT Billheimer, GH Rothblat, MP Reilly.	Circulation, 2009 119(8):1135-45	14.816
Gene profiling of human adipose tissue during evoked inflammation in vivo. R Shah, Y Lu, CC Hinkle, FC McGillicuddy, R Kim, S Hannenhalli, TP Cappola, S Heffron, X Wang, NN Mehta, M Putt, MP Reilly.	Diabetes, 2009 58(10):2211-9	8.505
TGF- β 1 induced thrombospondin-1 expression through the p-38 MAPK pathway is abolished by fluvastatin in Human Coronary Artery Smooth Muscle Cells. FC McGillicuddy, D O'Toole, JA Hickey, WM Gallagher, KA Dawson, AK Keenan.	Vascular Pharmacology 2006 44(6):469-75	2.044
Novel “plum pudding” gels as potential drug-eluting stent coatings: controlled release of fluvastatin. FC McGillicuddy, I Lynch, M Burke, L Carrol, K Dawson, WM Gallagher and AK Keenan.	Biomedical material research A, 2006 79(4): 923-33	3.318
Extended delivery of the antimitotic agent colchicine from thermoresponsive N-isopropylacrylamide-based copolymer films to human vascular smooth muscle cells. SJ Wilson, AV Gorelov, YA Rochev, F McGillicuddy, KA Dawson, WM Gallagher and AK Keenan.	Biomedical material research A, 2003 67(2):667-73	3.318

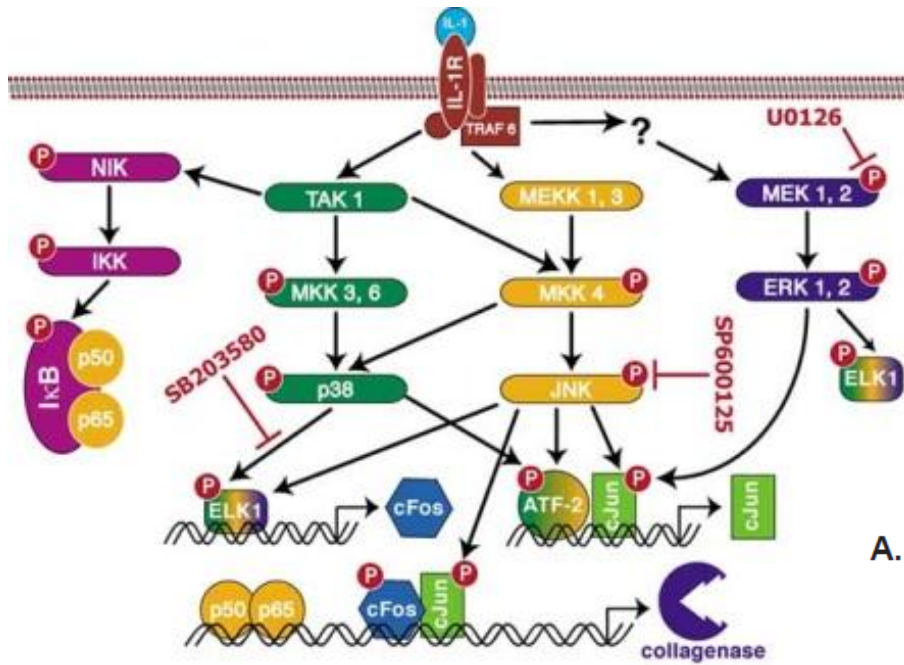
The SFI-HRB-Wellcome Trust Grant Process

- **Step 1: Coming up with a good idea that is a separate entity from your mentor!**
 - Tricky balance to come up with an idea that is different enough so you're not over-lapping but not something you have no experience in
 - Advantage of doing two post-docs in two separate but complementary areas!

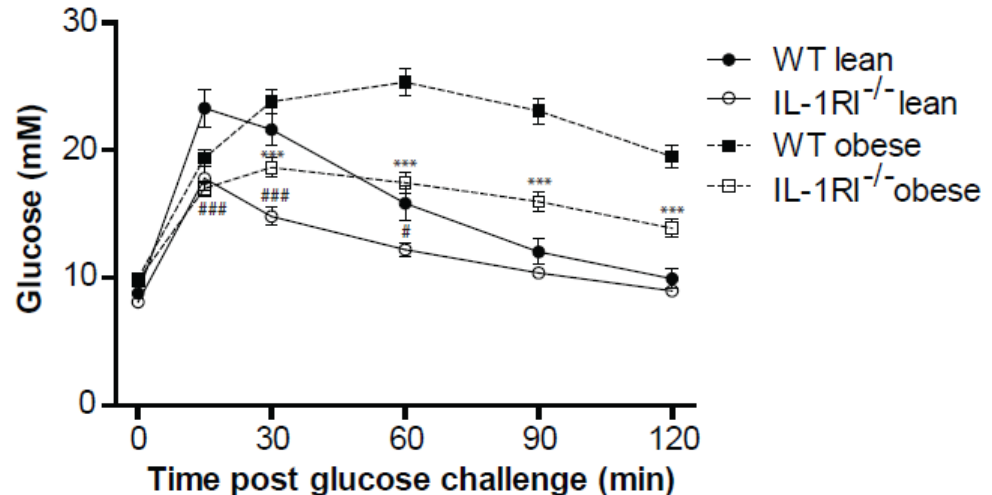
Post-doctoral position 1: HDL function and Reverse Cholesterol Transport (RCT)



Post-doctoral position 2: Contribution of IL-1 mediated signals to high-fat diet induced insulin resistance



A.



Grant Title: 'Functional consequences of obesity-induced adipose tissue inflammation on high-density lipoprotein (HDL) acceptor capacity and reverse cholesterol transport (RCT)'

This proposal took my experiences from Upenn and UCD and merged them to create a unique research niche

Step 2: The preliminary application

- Hardest hurdle is to be shortlisted
- Two-page application
- Choose your mentor wisely
- Host institution important – do your research goals fit in with their research strategy?
- CV updated – include publications
- One page review of scientific career to date
- Future career goals

Two-page proposal

- First page – aim and scientific background and importance of project
- Page two – started with main hypothesis followed by four objectives and brief overview of scientific experiments.
- Justify Choice of Research Location (was a main focus in interview too).
- Budget outline needs to be passed by the University's Research Office so give them plenty of time!
- Get somebody to read and trouble-shoot your proposal; keep refining until it's right.

Step 3: Full application process

- Have concise and achievable aims
- Don't over-stretch yourself – be realistic in what you can do
- Make sure you can do techniques and if not you have a plan to learn to do them
- Use diagrams where you can
- Give your referees plenty of time to write references
- My project incorporated in vitro, in vivo, ex vivo and human translational studies - strength
- Included a clinical importance section at end of my four WPs
- Project Risks – highlight any potential risks and ways to overcome/alternative strategies



"Stop staring at me!!!"

Career Development Potential

- The application has two main parts
 - The scientific programme
 - Your career development potential (online)
- Personally found writing the career development potential section harder
- Previously helped writing scientific programme on other PI programmes - experience was a big advantage
- Give yourself plenty of time to fill out the additional information online...just as important as scientific programme

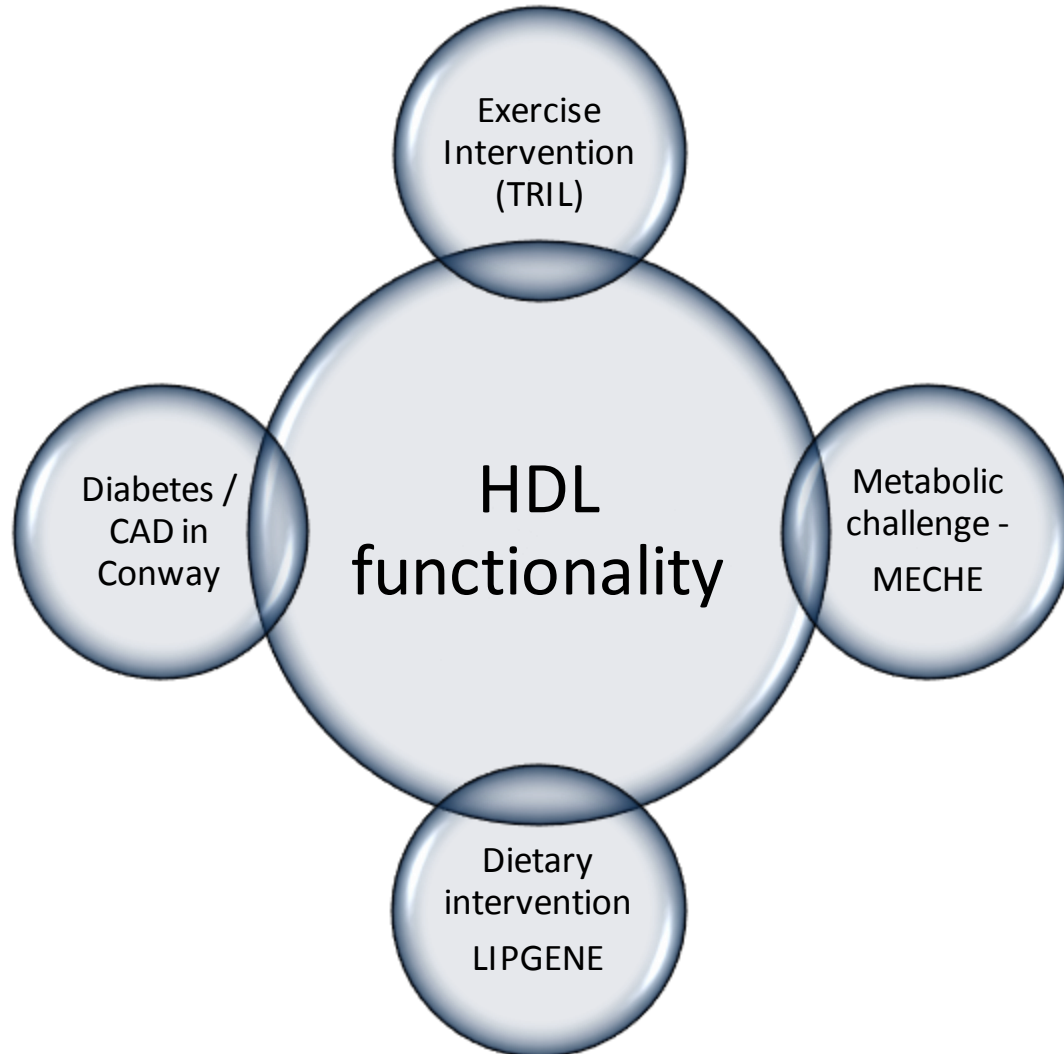
Additional information required

- Relationship of current application to other work in the sponsor's laboratory
- Recommendation by sponsor
- Information on collaborators
- Details of research project – questions addresses – why is it important?
- Summary of key goals – separate one for lay audience and scientific audience
- **How will the fellowship further the applicants career?**
- **What scientific considerations led you to choose this laboratory and sponsor for your research?**
- **Have you been based in this laboratory for a year or more?**
- Ethics/ i.p. information and budget breakdown
- Outline of public engagement plans

Host laboratory and mentor

- Take time to choose these carefully
- You are strongly advised not to stay with current mentor
- I stayed with my current mentor Prof. Helen Roche – experience abroad and bringing new technologies to UCD helped me here
- Previous mentors at UPenn are collaborators – will travel yearly to states to keep up to date with new technologies and present my findings
- UCD was a strategic choice - prioritized food&health and diabetes research so it was an ideal fit.
- Human translational component to grant – access to samples in UCD through mentor (strength on application)

Collaborative potential within UCD



Stage 4: Interview Stage

- Prepare, prepare and prepare some more!
- Ask everyone who has done one of these interviews about their experience. Don't be afraid to ask!
- Panel was about 15 professors around the room...they were very nice but hard not to be intimidated!
- Tear apart your own proposal – most of the interview was based on the reviewer's critiques of the proposal (5 external reviewers and you don't get to see reviewers comments before interview!)
- A portion of the interview was based on choice of location and mentor
- If you get this far it's 'yours to lose'. Quite the achievement to get this far!



Interview – SWOT analysis

- Mock interviews – get panels set up for you
- Know your proposal inside out – do a SWOT analysis on it
- Do a SWOT analysis on yourself and host institutions
- Threats – know your competitors
- Keep up to date with literature in the area since submitting proposal
- What will you do if you're scooped?
- What's your 5-10yr plan?

www.marketingteacher.com



SWOT Analysis

Impact of SFI-HRB-Wellcome partnership grant on my career to date

- Important first step to independence – very little other opportunities of this kind
- Very prestigious award – well recognized!
- Will allow me address questions that I feel are highly pertinent in the field of cardiovascular disease
- Project/budget and human resource management
- Will provide an important bridge between my postdoctoral training and establishing myself as an independent Principal Investigator
- Independent but still have security of having a mentor
- Great publicity and exposure – has already enabled new collaborations
- Scientific security for 5yr – protected time to maintain scientific excellence
- Principal Investigator on grant – last author publications

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Testosterone makes us less cooperative and more egocentric

First award under Irish partnership examines links between obesity, diet and heart disease

Feature: A delicate balance - investigating intestinal inflammation

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UCD scientist wins SFI-HRB Wellcome Trust Biomedical Partnership Award

Contributed by Niamh Hynes on Sunday, 19 February 2012

No Comment

UCD's Conway Institute's Dr Fiona McGillicuddy has won the first award to be given out under the SFI-HRB Wellcome Trust Biomedical Partnership.

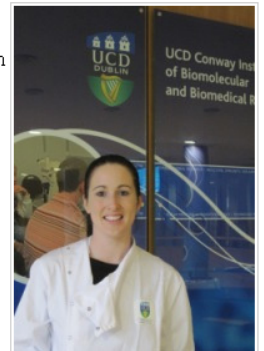
The €750,000 award will be shared out over a five-year period, covering the length of Dr McGillicuddy's research project, during which time she will examine the links between obesity, "good and bad" cholesterol, diet and coronary artery disease.

"The whole proposal is around the area of obesity, and adipose, particularly fat health," she explains, "basically what I wanted to do was see if the health of your fat tissue dictates your risk of cardiovascular disease. There are people who are obese but they're healthy, and there are obese people who are unhealthy and tend to develop Type II diabetes, insulin resistance, and are at a really high risk of heart disease – I think the core component to all this is the fat tissue."

Dr McGillicuddy spent time in the US researching the role of "good" cholesterol, or High Density Lipoprotein particles (HDL's), "their job is to move cholesterol from your body and eliminate it. It's a very important function; if your HDL particles aren't working properly, then you're pre-disposed to have cholesterol deposited around your body, including in your arteries, where you have coronary arteries, and that would pre-dispose you to a heart attack. My hypothesis is that the function of these particles is reduced by obesity, and therefore clearance of cholesterol from the body is also reduced. That's what's increasing cardio-vascular risk."

Investigation of the project will range from in-vitro work to a human translational component. Taking HDL particles from both lean healthy individuals and obese individuals, Dr McGillicuddy will see how functional they are by monitoring the movement of cholesterol.

The Wellcome Trust, in partnership with Science Foundation Ireland (SFI) and



Cuthfield is involved in a particularly interesting project, which involves analysing the movements and collisions experienced by professional rugby players during a game.

Having already worked with the Irish Rugby Football Union, he and post doc Dan

launches into a tackle) or sharp decelerations (when the tackle is under way).

The key to the system, which will be used to monitor an entire 15-man squad, is a computer that can learn, crunching the vast data streams to interpret what is happening on the pitch.

WELLCOME TRUST

The UK-based Wellcome Trust is the world's largest private medical research charity and has a long record of providing financial support for scientists here. Now the Trust, SFI and the Health Research Board have created a new vehicle for funding: the SFI-HRB Wellcome Trust Biomedical Partnership.

The first award made under this scheme was for a five-year Research Career Development Fellowship worth €750,000, given to Dr Fiona McGillicuddy from the Conway Institute at University College Dublin.

Dr McGillicuddy is studying obesity and heart disease, looking at whether the health of a person's fat dictates their resultant cardiovascular risk. She is looking at "good cholesterol", a substance called HDL that helps to control overall cholesterol levels.

"First we want to determine whether being obese affects HDL's ability to eliminate cholesterol," says Dr McGillicuddy, who is part of the Nutrigenomics Research Group at the Conway.



Research with a heavy heart. Matt Morton/PA

Wellcome collaboration on heart disease

She will then study whether the diet that caused the obesity also elevates the risk of coronary artery disease. Some

people become obese by eating a high-carbohydrate diet, others from eating a high saturated fat diet. Dr

McGillicuddy wants to see how these very different diets affect HDL function and, consequently, the risk of heart disease.

Acknowledgements

- Prof. Helen Roche
- Dr. Muredach Reilly & Dr. Daniel Rader
- SFI-HRB-Wellcome partnership

SFI-HRB-Wellcome Trust
Biomedical Research Partnership



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