



GUT REACTION | WINTER 2022

Hi All

As we get ready to wrap up what's been a very successful 2022 for the APC, I wanted to wish you all a fantastic Christmas and New Year and just to say please take time out over the break, relax and have a great time with your family and friends. After 2 years of pandemic-related restrictions, 2022 marked the APC's return to normal in-person operations and what a busy year it has been. Indeed, the theme of our annual Symposium in October was "Reconnecting" and it was great to see over 250 people in Devere Hall meeting and chatting for the first time in so long while enjoying an extravaganza of microbiome science. The Symposium culminated in the awarding of the Charles Donovan Prize in Microbiome Science to Professor Yasmin Belkaid based in the NIH in the US, a very worthy winner indeed.

2022 brought impactful success stories ranging from new strategic Industry partnerships and significant external grants to scientific breakthroughs and real stakeholder engagements. We continue

to perform very well against the ambitious SFI cost share targets, finishing the year ahead of all our targets. In this respect, I would like to sincerely thank all of you for your hard work and commitment which has lead to us achieving this to date. In particular, we have had some major EU grants successes ranging from large consortium funding, including GeneGut which we co-lead with School of Pharmacy, to prestigious individual ERC grants – of which APC has now secured 4! Likewise, APC continues to expand it's industry partnerships with major knowledge-based companies including ADM, Kerry, Kraft Heinz, Tate and Lyle, Fonterra, and Friesland Campina and importantly have several more in the pipeline.

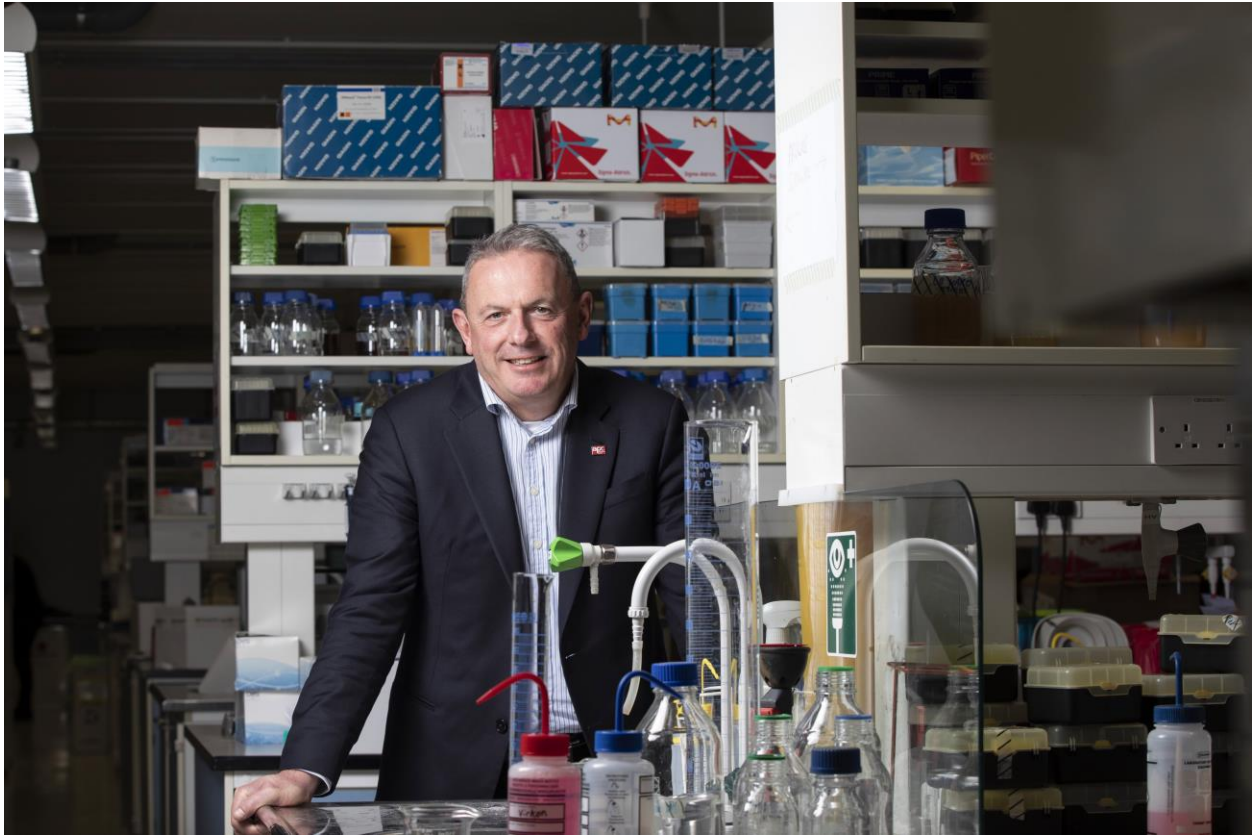
APC has had some really noteworthy scientific outputs during the year including publications in *Nature Microbiology*, *Nature Aging*, *Nature Communications*, *Nature Medicine*, *Science*, *Cell Host Microbe*, *Molecular Psychiatry*, and *Gut Microbes*. It is also remarkable that APC continues to feature heavily in the Clarivate Highly Cited Researchers list with 14 PIs listed out of a total of 35 Irish researchers listed for 2022 – up one from last year! In October, we also played host to some of the world's leading microbiome scientists as part of the EU-funded 'International Human Microbiome Coordination and Support Action' which strives to develop approaches to help define healthy microbiomes. It is hoped that this project will be influential in steering the nature of microbiome research conducted in the EU and beyond well into the future.

Finally, APC has also been in the news quite a bit during the year on topics ranging from Long COVID to stress to Antimicrobial resistance and antibiotic alternatives and has continued to bring microbiome science to the public through events such as World Microbiome Day and Science Week. So to all of you, take a well deserved breather over the festive break, relax and enjoy yourselves and see you next year for more of the same!

Nollaig shona dhuit

Paul Ross

Prof Paul Ross awarded prestigious ERC Advanced Grant to tackle antimicrobial resistance



Congratulations to APC Director Paul Ross who has secured a highly prestigious ERC Advanced Grant to investigate viable alternatives to antibiotics. Prof Ross, who is the first researcher based at UCC to secure an ERC Advanced Award, has received funding of €2.3 million for a project entitled BACtheWINNER.

Professor John O'Halloran, President of UCC, said: "I wish to extend the warmest congratulations to Professor Paul Ross on this significant achievement. This award will enable Paul to advance his pioneering, impactful research in microbiome science, a key area for UCC Futures at UCC. This award will drive momentum for this initiative and provide solutions to one of the most important global challenges of our time."

Read more - <https://www.ucc.ie/en/apc/news/apc-news/apc-director-awarded-one-of-europes-most-prestigious-grants.html>

APC launches INSPIRE Fellowship programme



The APC is delighted to announce the launch of its new INSPIRE Postdoctoral Fellowship programme which seeks to tackle challenges facing global food systems and health. With total funding of €2.9 million, INSPIRE is an EU Horizon 2020 Marie Skłodowska-Curie Actions COFUND programme and will create 20 prestigious postdoctoral research fellowships. INSPIRE Fellows will undertake research projects across a variety of areas of microbiome science to address the UN SDGs and create solutions to challenges relating to food and health including antimicrobial resistance, the burden of non-communicable diseases, and the need for sustainable food systems. The INSPIRE Fellowship will provide experienced researchers with industry placement experience while benefiting from a tailor-made research and career development training plan. Read more about INSPIRE [Here](#)

Congratulations to Prof Catherine Stanton



APC PI and Senior Principal Research Officer at Teagasc Professor Catherine Stanton was recently ranked top female scientist in Ireland in an analysis by [Research.com](https://www.research.com)

Read about Catherine's research interests and career path [here](#)

Professor Stanton also secured a €1m grant from the Dept. of Agriculture, Food and Marine for a joint Ireland-New Zealand project with overall funding of €2m to develop methane-reducing bacteria in rumen. Read more about her successful award [here](#)

14 APC researchers feature on world's elite science list



We are proud that 14 APC researchers featured in the Highly Cited Researchers 2022 list from Clarivate, by far the highest number of any research grouping or University in the country (only 35 Irish-based researchers were listed in total)

The annual list features the researchers in the top 1% of the Web of Science citation index and recognises pioneers in their field whose citation records position them in the very highest strata of research influence and impact.

Further information on our global research leaders [here](#)

APC News

UCC Futures - Food, Microbiome and Health



APC welcomes the recent launch of the UCC Food, Microbiome & Health Futures initiative. UCC Futures is an ambitious new programme of research prioritisation coupled with an innovative academic recruitment strategy across ten indicative areas of strategic importance that will build a foundation for economic, societal and cultural resilience and prosperity. Read more [here](#)

2022 Charles Donovan Microbiome Prize awarded to Professor Yasmine Belkaid



World-leading microbiome researcher Prof Yasmine Belkaid was awarded the prestigious 2022 Charles Donovan Microbiome Prize on 7th October by the APC. As part of the prizegiving Prof Belkaid delivered the 'Distinguished International Lecture' at the annual APC symposium, which took place at Devere Hall, UCC.

Read more - <https://www.ucc.ie/en/apc/news/apc-news/prof-yasmine-belkaid-awarded-the-prestigious-2022-charles-donovan-microbiome-prize.html>

The 'Human Microbiome Action' project



Leading figures in microbiome science gathered in Ireland recently to plan the future of microbiome research as part of the 'Human Microbiome Action' project - a pivotal EU Horizon 2020 project

Dr Sally Cudmore appointed Director of UCC Innovation



Our congratulations and well wishes to former APC General Manager, Dr Sally Cudmore, who has been appointed Director of UCC Innovation. Under Sally's leadership, UCC's research community will advance its efforts to deliver breakthroughs, expertise, and technologies to enhance society and economy. Sally

held the position of Interim Director since June 2021, and is the first female to be appointed Director of UCC Innovation.

Prof Ruth Massey delivers Inaugural SEFS Professorship lecture



SEFS inaugural professorial lecture series kicked off recently with Ruth Massey SALI Professor for Microbiome & Health Sciences at UCC, and APC PI, taking the stage for an engaging and informative lecture tracing her career journey and current research. Watch now:

<https://ucc.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=a57d0012-8a01-4f68-a51a-af3b00aaa1a8>

2022 APC Annual Symposium



What a fabulous day out at Devere Hall we had in October with over 250 in attendance, including some of our industry partners. It was the first in-person symposium in 3 years and gave many new APC researchers and staff the opportunity to meet and mingle with the broader community. Congratulations to all who delivered excellent oral / poster presentations and lightning talks. The evening's entertainment at the Kingsley was a lot of fun with excellent food and a nail-biting table quiz - rumour has it that after leading all the way, Colin Hill's team lost out at the death when he failed to recognise himself as a baby in the 'Guess the PI' round!

Well done to all our worthy annual APC award winners pictured below!



Thomaz Bastiaanssen

Katie Guzzetta

Marcus Böhme

APC Scientific Excellence '21/'22



Ms Michelle O'Connor

APC Student Award '21/'22





Dr Piotr Kowalski
APC Future leaders Award '21/'22



Dr. Harriët Schellekens
APC Industry & Entrepreneurship Award '21/'22





Ms Eva McArdle
APC Team Member Award '21/'22



Ms Cara Hueston
**APC Excellence through
Collaboration Award '21/'22**



Industry News



Congrats to APC spin-out company Atlantia Clinical Trials on achieving 10 years in business this year. With over 70 staff between its Cork and Chicago offices, Atlantia have run over 160 studies with sponsors around the globe across multiple health areas, many of which have been published in peer-reviewed and high impact journals.

Follow Atlantia's Story [here](#)



Congratulations to industry partner Adiso Therapeutics on being shortlisted for the Commercialisation Impact award at the recent KTI Impact Awards 2022. It has been a significant year for Adiso with the progression of clinical development of ADS024, the company's live biotherapeutic compound for recurrent *C. difficile* infection.

Recent Research Highlights



Nearly 90% of those living with Long COVID have not returned to their pre-COVID level of health, a recent APC study found. A high proportion of Long COVID patients reported that they still have a moderate to severe limitation in their ability to carry out their usual daily activities. For more information on the study, which featured on national and global media, read [here](#)

Critical Windows of Early-life Microbiota Disruption on Behaviour, Neuroimmune Function, and Neurodevelopment

Caoimhe M.K. Lynch ^{a, b, #}, Caitlin S.M. Cowan ^a, , Thomaz F.S. Bastiaanssen ^{a, b}, Gerard M. Moloney ^b, Nigel Theune ^a, Marcel van de Wouw ^a, Eva Florensa Zanuy ^a, Ana Paula Ventura-Silva ^a, Martin G. Codagnone ^a, Francisca Villalobos-Manriquez ^a, Matilde Segalla ^a, Fatma Koc ^{a, d}, Catherine Stanton ^{a, d}, Paul Ross ^{a, d}, Timothy G. Dinan ^{a, c}, Gerard Clarke ^{a, c}, John F. Cryan ^{a, b} , 

A hot-off-the-press APC study investigated the role of the early-life gut microbiota in determining neurodevelopmental outcomes. The study used an antibiotic cocktail in a mouse model to evaluate the long-term impact of gut microbial disruption during the critical windows of development. Read about the findings of this study [here](#)




Dealing with stress through your dinner plate may be an effective approach according to new research from the APC. The concept that “we are what we eat” goes back millennia but now APC researchers led by Prof. John Cryan have shown that by changing diet for just four weeks this adage can be extended to influencing perceived stress levels.

For more information on this study, [here](#)

Toward an improved definition of a healthy microbiome for healthy aging

Received: 30 July 2021

Tarini Shankar Ghosh^{1,2,4}, Fergus Shanahan^{1,3} & Paul W. O'Toole^{1,2,3} 

Accepted: 4 October 2022

Published online: 17 November 2022

 Check for updates

The gut microbiome is a modifier of disease risk because it interacts with nutrition, metabolism, immunity and infection. Aging-related health loss has been correlated with transition to different microbiome states. Microbiome summary indices including alpha diversity are apparently useful to describe these states but belie taxonomic differences that determine biological importance. We analyzed 21,000 fecal microbiomes from seven data repositories, across five continents spanning participant ages 18–107 years, revealing that microbiome diversity and uniqueness correlate with aging, but not healthy aging. Among summary statistics tested, only Kendall uniqueness accurately reflects loss of the core microbiome and the abundance and ranking of disease-associated and health-associated taxa. Increased abundance of these disease-associated taxa and depletion of a coabundant subset of health-associated taxa are a generic feature of aging. These alterations are stronger correlates of unhealthy aging than most microbiome summary statistics and thus help identify better targets for therapeutic modulation of the microbiome.

The gut microbiome is a modifier of disease risk because it interacts with nutrition, metabolism, immunity and infection. Aging-related health loss has been correlated with transition to different microbiome states. Read recent research published in *Nature Aging* from Tarini Shankar Ghosh, Fergus Shanahan and Paul O'Toole [here](#)

Staff Profile: Dr. Thomaz Bastiaanssen



Dr. Thomaz Bastiaanssen is the lead bioinformatician in Prof. John Cryan's group at APC, where he studies the microbiome-gut-brain axis. He is particularly interested in the temporal dynamics and volatility of the gut microbiome in health and disease, as well as its metabolic potential for host-microbiome communication.

Besides providing bioinformatic and statistical support, Thomaz's research focuses on developing frameworks and tools to more precisely interrogate temporal microbiome data and measure interactions between multiple types of 'omics data sets. In particular, he is interested in developing tools to facilitate developing new hypotheses from complex data sets.

Thomaz completed his BSc (Biology) and MSc (Molecular and Cellular Life Sciences) at the University of Utrecht in the Netherlands. During his MSc, he did a six-month bioinformatics internship in Prof. Cryan's group at APC. After finishing his MSc in 2017, he moved to Cork in 2018 to pursue a PhD in the Cryan lab. He successfully defended his thesis entitled 'Mining the microbiome for markers of microbiota-gut brain communication and mental health' in 2021 and continues working in Prof. Cryan's lab as a postdoctoral researcher to this day.

Thomaz has a preschooler and a corgi at home who keep things lively. He is interested in the liberal arts and enjoys tabletop games, folk stories and watching pulp horror movies with his wife. He tries to keep somewhat fit by running and weightlifting.

APC Awards



Our Operations Manager, Susan Rafferty-McArdle recently received her award for 25 years of service in UCC. The awards ceremony took place in November in Devere Hall and was a great celebration for the 25 year cohort. Susan has been with the APC since 2013 and leads the APC's human studies platform and drives our EDI strategy amongst many other tasks.



Congratulations to APC Postdoc Dr Miguel Fernandez de Ullivarri who represented APC and UCC at the recent Falling Walls Lab Science summit in Berlin, where a total of 80 winners – students & early-career professionals from 54 countries– pitched their innovative ideas.



Earlier this year, IFF, an industry leader in the food, beverage and health sector, presented four leading scientists including APC's Prof Paul Ross with Danisco Foundation awards for their work in advancing the future of food, nutrition and health. Prof Ross received the 2021 Danisco Foundation Microbiome Science Award in recognition for his work on the human microbiome, notably his pioneering research aimed at developing microbiome editing tools for applications including food biopreservation and alternatives to antibiotics for animal and human health improvement

APC Funding Success



- **Congrats to APC researchers who secured HRB Investigator-Led Project funding (2022)**

Dr Beth Brint (UCC): Developing the IL-36 receptor antagonist as a therapy for colon cancer

Dr Harriett Schellekens / Prof John Cryan (UCC): A probiotic strategy for antipsychotic-induced metabolic dysfunction

- **Congrats to Dr Orla O'Sullivan and APC colleagues in Teagasc who had recent EU grant success**

DOMINO is an €11.9 million H2020 project co-led by INRAE and Teagasc. DOMINO will identify health benefits of milk kefir in a healthy cohort and also sustainably produce novel health-promoting fermented foods (co-PIs: Orla O'Sullivan, Paul Cotter, John Kenny and Mark Fenelon)

CODiet is an €11.7 million H2020 project led by Imperial College London with Teagasc as a partner. CoDiet strives to identify dietary biomarkers of disease risk in non-communicable disease and elucidate the health benefits of personalised nutrition over standard dietary guidelines (co-PIs Orla O'Sullivan and Paul Cotter)

EPE - Education & Public Engagement



We have just about recovered after a busy Science Week! It was great to see a return to in-person school visits, workshops and evening events again. A special thank-you to all the volunteers who helped out across the week and allowed APC to deliver a packed programme full of engaging events.

Highlights included:

Celebrate Science Family Fun Day - over 5,000 people (mainly families with young kids) attended the event at the Western Gateway Building. Did you spot us on the RTE News?!

SKIN DEEP - APC researchers Dr Julie O' Sullivan and Dr Nonhlanhla Lunjani along with others participated in an event at Hayfield Manor exploring the ground-breaking world of the skin microbiome.

Dept. of Agriculture, Food and the Marine Webinar - Prof Paul Ross joined other colleagues for a discussion on strengthening the monitoring and mitigation of greenhouse gases from agriculture.

Native Scientist - well done to Florence, Asma, Gaston and Maria who ran another successful workshop giving French speaking children the opportunity to explore science in their native language.



1 - APC Researchers feature on RTE science show

APC researchers Prof John Cryan and Dr Jatin Nagpal featured on RTE One's flagship science show **10 Things to Know About** this week. Presenter Kathriona Devereux alongside a film crew were on site in October to meet with John, Jatin and our resident zebrafish to explore whether the microbiome can affect hormones like oxytocin and identify mechanisms which could lead to better understanding and management of mental health illness.



Well done to Victoria Spillane who was awarded the *APC Public Engagement with Research Award 2021-22* at our recent APC Symposium. The award recognizes an individual at APC who has communicated and engaged with non-scientists in creative and effective ways or involved stakeholders to increase the impact of our research. Victoria was instrumental in establishing our first PPI panel at APC alongside PhD student, Naomi Hanrahan.

APC Postgraduate Committee

In recent months, PhD students in APC have come together to form an APC Postgraduate committee. This committee is made up of PhD students Ellen Murray, Lauren Walsh, Michelle O'Connor, Daria Nikolaeva, Rie Matsuzaki, David Hourigan, Cian O' Mahony, Hiba Shareefdeen and Emilene Da Silva Morais. The aim of the committee is to create a community for postgraduate students across the APC, and organise events where these students can network and connect. So far, the committee have organised a postgraduate coffee morning and are planning a cultural appreciation night for all APC members to attend in the new year.

Contact Us



APC Microbiome Ireland is a world leading SFI research centre is a community of over 300 researchers, clinicians, managers and support staff based in University College Cork and Teagasc as well as partner institutions MTU, NUIG, UCD, NIBRT, UL and TCD.

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