Quadram Institute

Summer 2020

Welcome to the newsletter of the Quadram Institute.

2020 has brought the role of science to the forefront as we continue to fight the global COVID-19 pandemic.

Our scientists have moved quickly to support the frontline with diagnostic testing, genetic sequencing and work on COVID-19 therapies and tools to understand the virus. Whilst society adjusts to living alongside coronavirus, I think we can all reflect with real pride at the way all of our staff, clinicians and students in the Quadram Institute have responded to this global crisis.

As our labs now reopen, I'm delighted that we are establishing a new research group focusing on *Listeria*, to be led by Dr Matthew Gilmour. Matt joins us from Canada's National Microbiology Laboratory and brings with him a wealth of experience in microbiology and public health genomics.
bit.ly/QI20B01

I'm pleased to welcome Dr Celia Caulcott as the new chair of the Quadram Institute Bioscience Board of Trustees. Celia joined the board in 2017 and succeeds Dr Tim Brears as Chair. Tim has guided us through considerable change during his seven years' service and I would like to thank him for his invaluable contribution.

We also welcome new members to the Quadram Institute Bioscience Board of Trustees: Dr Elizabeth Robertson, Director of Research at Diabetes UK, Geoff Potter, Chairman of Avebury Public Relations Ltd, and Dr Eddie Blair, Chair of Virokine Therapeutics.
bit.ly/QI20B02

We have appointed Dr Graeme Brown as Chief Business Officer, a new role that encompasses responsibility for Business Development and Communications.
bit.ly/QI20B03

Ian Charles, Quadram Institute Director

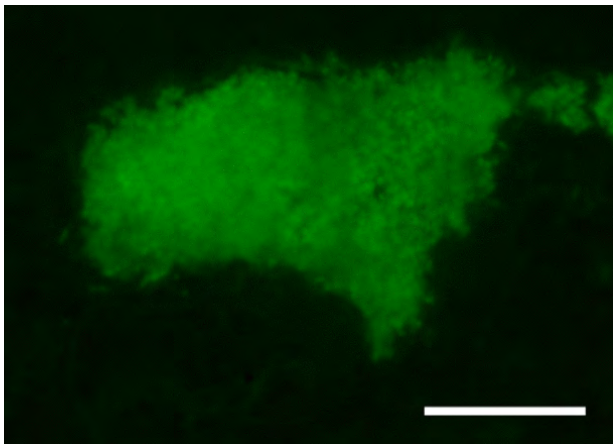
Matthew Gilmour

Celia Caulcott

Probiotics for premature babies provide microbiome boost

Probiotics can improve the microbiome in premature babies, according to the results of the BAMBI Study, led by Dr Lindsay Hall. With Prof. Paul Clarke from the Norfolk and Norwich University Hospital, they showed that specific strains of probiotic bacteria given to preterm babies along with breast milk shape their microbial populations and gut health to match those of babies born at full-term. This helps them fight potential infections and get the healthiest start in life.

bit.ly/QI20B04



Pseudomonas aeruginosa in biofilms undergo natural transformation, exacerbating the spread of antimicrobial resistance genes

Professor Cynthia Whitchurch's team from the Quadram Institute and the ithree institute at the University of Technology Sydney have discovered that *Pseudomonas aeruginosa* bacteria, which pose a serious worldwide health risk due to antimicrobial resistance (AMR), can undergo natural transformation and acquire DNA from the environment whilst in biofilms. This is a paradigm shift in our understanding of these bacteria and vital knowledge for helping stop the spread of AMR genes.

bit.ly/QI20B05

Keeping hold or sharing your sweets: Sialic acid catabolism in bacteria

To understand the microbiome's role in keeping us healthy, we need to understand what keeps it healthy, including its sources of nutrition. One source is sialic acid, a sugar-based molecule produced by the host organism in the mucus that lines the gut. Professor Nathalie Juge and her team have helped discover how bacteria scavenge sialic acid derivatives produced exclusively by a keystone member of the microbiota community.

bit.ly/QI20B06

Looking at how eating plant fibre affects your gut

Fibre is an important part of a healthy diet, but we don't fully understand how it is handled by the body. Dr Hannah Harris from Dr Fred Warren's group blogged about collaborative work that compared the effect on the gut of fibre from different sources, using lab-based experiments and MRI scanning.

bit.ly/QI20B07

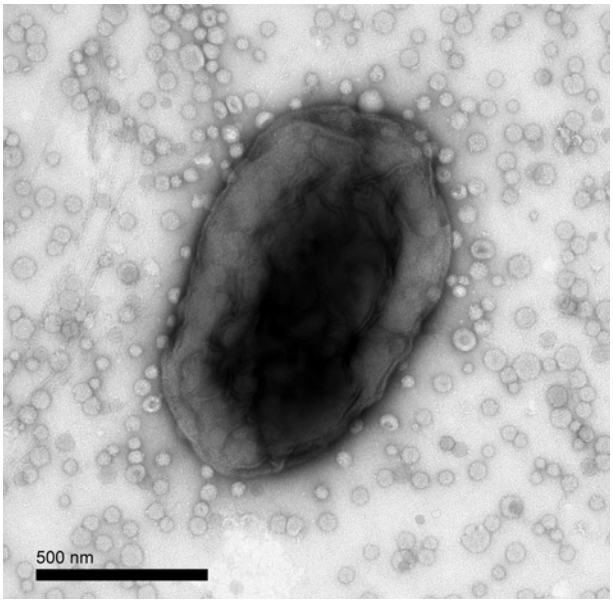
Microbiome miscommunication links to IBD

Outer Membrane Vesicles (OMVs) produced by certain gut bacteria have a key role in regulating the immune system that's altered in Inflammatory Bowel Disease (IBD), according to a new research study from Professor Simon Carding and his team in collaboration with Imperial College London and London North West Healthcare NHS

bit.ly/QI20B08

OMVs are also of interest as the basis of a new approach for vaccine delivery, leading to a patent for an OMV-based delivery mechanism to the respiratory tract. A project funded by a BBSRC China Partnering Award allowed an early-stage career scientist from Lanzhou Veterinary Research Institute (LVRI) to exchange knowledge and evaluate the potential of OMVs to deliver vaccines against livestock viruses of global concern. Further work is ongoing exploring the use of OMVs to combat the COVID-19 pandemic.

bit.ly/QI20B09



Bacteroides thetaiotaomicron surrounded by OMVs.
Image from Martin Warren's group.

New study into COVID-19 persistence in the gut is recruiting participants in Norwich

The CoPS Study is looking to recruit participants who have tested positive for COVID-19, to help understand more about the virus and its ability to persist in the gastrointestinal tract.
bit.ly/QI20B10

CoronaHiT boosts genome sequencing efforts

David Baker, Dr Justin O'Grady, Dr Andrew Page and colleagues have developed a new protocol to increase throughput and decrease cost of sequencing SARS-CoV-2 genomes. CoronaHiT is easily adapted onto the ARTIC protocol that's being used across the UK & globally and can sequence up to 94 samples on a single MinION flowcell. Listen to the Micro Binfie podcast to learn more
https://soundcloud.com/microbinfie/23-coronahit-nanopore

Mass testing pilot paves way for weekly COVID checks

Weekly COVID testing has moved a step closer in Norwich thanks to the success of a pilot project on Norwich Research Park.
bit.ly/QI20B11

How to share knowledge in a pandemic

Quadram Institute Bioscience bioinformaticians created a dynamic virtual conference that brought together researchers from more than 80 research institutes, public health agencies, and universities globally.
bit.ly/QI20B12

New tool to translate communications between the microbiome and the body

MicrobioLink is a new tool developed by scientists at the Quadram Institute and Earlham Institute to translate the complex communication between the microbiome and the body. The team are already deploying it to understand the SARS-CoV-2 virus behind the COVID-19 pandemic.
bit.ly/QI20B13

Quadram researchers working on COVID-19 vaccine join WHO expert groups

Prof. Simon Carding and Dr Simon Funnell have joined World Health Organization (WHO expert advisory groups tackling the coronavirus.
bit.ly/QI20B14

The Quadram Institute is a partner in the COVID-19 Genomics UK Consortium. Samples from patients with confirmed cases of COVID-19 are sequenced, providing valuable information on the spread of the virus and helping guide interventions at a local and national level.

UK Charity Invest in ME Research Pledges £625,000 for Research into ME in Norwich Research Park

This major investment is an increase of the charity's previous pledge of £500,000 and will cover the required funding for a clinical trial of Faecal Microbiota Transplantation (FMT) being performed alongside other high-quality biomedical research at the Quadram Institute.
bit.ly/QI20B15

Quadram Institute spin-out company The Smarter Food Company raises capital to help reduce risk of diabetes

The Smarter Food Company, a spin-out company from Quadram Institute Bioscience, has raised £1m in funding to accelerate the development of food products with health benefits. Its first product will be a vegetable-based soup containing glucoraphanin, a naturally occurring compound found in broccoli.
bit.ly/QI20B16

THE SMARTER FOOD COMPANY

New teaching resource launched to explain the microbiome as the Guardians of the Gut go online

Teachers looking for online teaching resources can now sign up to access the Guardians of the Gut classroom activities, videos and quizzes to help introduce children to the microbiome.
bit.ly/QI20B17

€1.5m EU grant to investigate the role of elusive microbes in the human gut

Dr Falk Hildebrand has won a €1.5 million grant from the European Research Council (ERC) to research the role elusive microbes may play in the gut microbiome and human health.
bit.ly/QI20B18

New online course launched to demystify the microbiome

Quadram Institute researchers have contributed their expertise to a free, three-week online course on "The Human Microbiome". Starting on 30th November 2020 the course will explain how the microbes that live in our body affect our health, how the composition of the microbiome changes as we age, and also how we can use diet to modulate the microbiome to combat diseases.
bit.ly/QI20B19

Starts Nov 30th

The Human Microbiome

This activity has received funding from EIT Food, the innovation community on Food of the European Institute of Innovation and Technology (EIT), a body of the EU, under the Horizon 2020, the EU Framework Programme for Research and Innovation

Rosalind Franklin Road

In July, the road on which the Quadram Institute is located was renamed Rosalind Franklin Road, marking the 100th anniversary of her birth.

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