

Press Release Oct 23nd 2018

Microbe Mom - Finding the optimal probiotics for pregnant women & healthier babies

23nd October 2018 – Minister for Agriculture, Food and the Marine, Michael Creed TD, launches **Microbe Mom**, a joint research investment of €3.4 million by Science Foundation Ireland through the SFI Spokes programme and leading Irish company Alimentary Health Group, led by the SFI Research Centre APC Microbiome Ireland.

Microbe Mom is new therapeutic research collaboration investigating:

- the most likely methods of transfer of bifidobacteria strains from mother to baby,
- the impact of the mother's diet and health on her gut bacteria and what bacteria she transfers to her baby at birth,
- the impact of specific probiotic supplements on the mother's health.

Microbe Mom is a 4-way collaboration between:

- Alimentary Health Group, an innovative Irish healthcare company pioneering the discovery and development of proprietary microbiome-based products,
- the SFI Research Centre APC Microbiome Ireland in Teagasc and University College Cork,
- the UCD Perinatal Research Centre, School of Medicine, University College Dublin, and
- National Institute of Biotechnology Research and Training (NIBRT).

Minister for Agriculture, Food and the Marine, Michael Creed TD, commented on MicrobeMom: *"I am delighted to officially launch Microbe Mom, an important collaboration between academia and industry that will generate impactful health solutions for mothers and infants in Ireland. Optimising diet and the nature of food and supplements for pregnant women and babies is crucial to ensuring their health and wellbeing throughout their lives. In addition to helping us achieve this, Microbe Mom will also further solidify Cork's reputation as a hub of excellent research."*

Welcoming the investment, Minister of State for Training, Skills, Innovation, Research and Development, John Halligan, TD, said, *"I welcome the announcement of the Microbe Mom research project today, which will focus on improving the health of mothers and babies by looking at the diet of mothers and the transfer of bacteria at birth. The wellbeing of mothers and babies is very important to the Irish Government, and so it is great to see this significant joint-investment by the Government Agency, Science Foundation Ireland (SFI), and Irish company, Alimentary Health Group. This project will build on the long-standing partnership between the company and the SFI Research Centre 'APC Microbiome Ireland' in UCC, which in and of itself is a demonstration of the great heights that Irish science can achieve."*

Healthy development and maturation of a newborn baby is dependent on more than the genes of both parents; the microbes in the infant's gut are also essential. These microbes, collectively referred to as the microbiota, are acquired primarily by mother-to-baby transfer at birth, and subsequently from the environment. While much research to date has addressed the impact of the environment on the microbiota, the **Microbe Mom** research programme

will focus on transfer of specific strains of bacteria from mother to baby, and in particular, the Bifidobacteria strains.

Bifidobacteria are the main bacteria that nature selects for the newborn gut and have been shown to play a key role in programming metabolism and the immune system. Indeed, exposure to the right microbes in this critical development window plays an important role in allergy and asthma risk as well as metabolic health in later life (1,2). In Ireland 25% of women of reproductive age have increased weight with a BMI of greater than 30 (3). Abnormal sugar control in pregnancy affects 5-15% of pregnancies. Normal sugar control is important in pregnancy as high sugars are known to increase the risk of large for dates infants (4, 5). Supplementation with probiotics has been shown to improve sugar control in men and women with type 2 diabetes (6,7) and prevent worsening insulin resistance in late pregnancy (8). Probiotics may have a role in normalising sugar in this group of women. However, each bacterial strain is unique and these studies will identify the optimum bifidobacteria for mother and baby health.

“Bifidobacteria have received significant attention due to their proven contribution to human gut health and the use of specific strains as probiotics. Advances in DNA sequencing technology allow us to develop scientifically proven and clinically supported probiotic bifidobacteria, and investigate their transfer from mom to baby,” according to Microbe Mom project leader Dr Paul Cotter, Head of Department Food Biosciences in Teagasc and Principal Investigator at APC Microbiome Ireland.

Dr Eileen Murphy, Technical Director, Alimentary Health Group said *“This research is key to understanding which bacteria make a key difference to baby. It’s also vital to understand how they can best be transferred to baby too e.g. should they be given to the mother during pregnancy or should we give them directly to baby? This knowledge will help us develop a range of probiotics with the precise qualities we need to optimise maternal and baby health”*.

Professor Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland said, *“Science Foundation Ireland is delighted to support this new research programme, which brings together excellent researchers, clinicians and Irish SME Alimentary Health Group, to drive discovery in the transfer of bacteria from women to their babies. This project demonstrates the important scientific advances and potential for new products that are being led by SFI Research Centres working with their partners in both academia and industry.”*

Fergus Shanahan, Director of APC Microbiome Ireland added *“this collaboration is further evidence of the wisdom of national research centres and APC Microbiome Ireland is delighted to be blending the expertise of the APC scientists with working such wonderful clinician-scientists at the National Maternity Hospital and bioprocessing experts at NIBRT”*.

“Pregnancy and early life present a unique time in the life course, where mother and baby health can be significantly improved. This innovative research programme holds considerable potential to improve mother’s health in pregnancy, in terms of sugars and blood lipids and to enhance baby’s health in the long-term by ensuring a healthy gut

microbiome. We are delighted to provide the clinical expertise for this national research collaboration. The Microbe Mom research will contribute to our overall aim of enabling women to have the healthiest pregnancies and the healthiest babies they can” said Professor Fionnuala McAuliffe, Professor of Obstetrics & Gynaecology at University College Dublin & National Maternity Hospital, and Director of UCD Perinatal Research Centre

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Additional information can also be found on <http://apc.ucc.ie/MicrobeMom/>

About APC Microbiome Ireland

The SFI Research Centre APC Microbiome Ireland (APC; <http://apc.ucc.ie>) is a world leading research institute which was formed in 2003 with funding from Science Foundation Ireland and in conjunction with key industry partners. It represents a seamless collaboration between University College Cork and Teagasc (the Irish Agriculture and Food Development Authority). It is widely recognised that the gut microbiota plays an important role in human health and has become one of the most dynamic, complex and exciting areas of research in both food and pharmaceutical arenas. Over the last decade the APC has established itself as one of the leading global centres in gut microbiota research. The APC has made several landmark discoveries and has published over 1,700 research articles in peer-reviewed journals, generating many journal covers and associated editorials. The APC comprises over 300 individuals, from the scientific PI’s (the APC Faculty) funded by the partner Institutions, the management team, and a dedicated group of research scientists, research assistants and postgraduate students.

About Alimentary Health

The [Alimentary Health Group](#) (AH) is a world leader in harnessing the power of the microbiome, discovering and developing probiotics that are recognized globally as best in class. For over 17 years AH has collaborated with leading centres of microbiome excellence, and developed a unique portfolio of cultures that are native to the human microbiome and naturally at home there. The quality of this work has been recognized, with AH’s *Bifidobacterium longum* 35624 culture, now the No 1 recommended culture by US Gastroenterologists and Doctors for IBS (12).

About UCD Perinatal Research Centre

UCD Perinatal Research Centre, (<http://www.ucd.ie/medicine/perinatal/>), based at the National Maternity Hospital, Dublin, coordinates national and international collaborative research in maternal health and its impact on maternal and infant outcomes. Led by Centre Director Professor Fionnuala McAuliffe, UCD Perinatal Research Centre is internationally recognised for its research in maternal and fetal health, diabetes and nutrition in pregnancy, and impact of maternal health on long-term health of Mum and infant.

The Centre comprises researchers with backgrounds ranging from clinical obstetrics, paediatrics, nutrition, exercise physiology, behaviour and marketing, public health to health economics. The research is funded by grants valued at more than €10m from Health Research Board Ireland, Science Foundation Ireland, the European Union, and the National Maternity Hospital Medical Fund. Antenatal intervention studies include the ROLO study (a follow-up study looking at maternal nutrition and low GI diet in pregnancy impacts on maternal and child health in the longer term), PROPS (probiotics in obese and diabetic pregnancy) and PEARS pregnancy, exercise and nutrition with smart phone app), and a pilot to increase breastfeeding rates in Ireland, all aiming to improve maternal and fetal health.

About NIBRT

The National Institute for Bioprocessing Research and Training (NIBRT; <https://www.nibrt.ie/>) is a global centre of excellence for training and research in bioprocessing. **The NIBRT GlycoScience Group** is a world leading group specialising in the application of ultra-performance liquid chromatography (UPLC), high-performance liquid chromatography (HPLC), exoglycosidase sequencing, mass spectrometry (MS) and coupled LC-MS technologies for analysis of release *N*- and *O*-glycans, glycolipid head groups as well as site-specific glycosylation. Dr Radka Fahey (Saldova) is the Principal Investigator coordinating the NIBRT role in Microbe Mom.

Key facts and figures

- Bifidobacteria are the main bacteria that nature selects for the newborn gut and have been shown to play a key role in programming metabolism and the immune system.
- Infant-associated strains of Bifidobacteria are adapted to use carbohydrates found in human breast milk
- Certain strains of Bifidobacteria have been transmitted between father and child, husband and wife, and even across three generations (9).
- 25% of women of reproductive age have increased weight with a BMI of greater than 30 (3).
- Abnormal sugar control in pregnancy affects 5-15% of pregnancies.
- Alimentory Health's probiotic *Bifidobacterium longum* 35624 strain is the number one culture recommended by gastroenterologists and doctors who recommended a brand of probiotic for IBS in AlphaImpactRx 2008–2017 surveys.

- APC Microbiome Ireland has been ranked based on citations in the top 5 microbiome centres worldwide and ranked #1 in Europe. APC has been ranked number 1 in the world for both “Probiotics” and “Infection & Antimicrobials” and 5th in the world for “gut-related disease”(10). APC scientists John Cryan, Paul Ross, Catherine Stanton, Elke Arendt have all been ranked as “highly cited” researchers in the top 1% in their field in 2017 by Clarivate Analytics (11) .

References

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10. Four APC Researchers Feature in 2017 World's Most Highly Cited List

<http://apc.ucc.ie/look-brightest-stars/>

11. APC at the Forefront of Microbiome Research <http://apc.ucc.ie/apc-at-the-forefront-of-microbiome-research-2/>

12. Among gastroenterologists who recommended a brand of probiotic in AlphaImpactRx 2008–2017 surveys. Among doctors who recommended a brand of probiotic in AlphaImpactRx 2017 survey.