

Press Release 17 January 2017

Breast feeding is particularly important for babies born by C-section

- Cork scientists have found that breast feeding is particularly important for babies born by Caesarean section, and especially those born early (<35 weeks), as it helps to develop a more “normal” gut microbiota (bacterial community).
- The microbiota of babies born by Caesarean section can be optimised to be similar to that of vaginally-born babies by breastfeeding
- Full-term babies born by C-section who were breast-fed for at least 4 weeks were found to have similar gut bacteria to vaginally born babies, by 8 weeks of age
- All infants, whether preterm or full-term and born vaginally or by C-section, had similar gut microbiota compositions at 24 weeks of age.

In this in-depth study, scientists at the APC Microbiome Institute led by Prof Catherine Stanton at Teagasc and Prof Anthony Ryan at University College Cork and Cork University Maternity Hospital, compared development of the gut microbiota of 199 infants from 1 to 24 weeks of age. The infants in the study were initially breast fed following vaginal or Caesarean section delivery and included both full-term and pre-term (<35 weeks gestation) births.

The population of gut bacteria develops over the first 2-3 years of a baby’s life and is known to play a key role in human health. At birth, the population of bacteria found on babies resembles that of the mother’s vagina if born vaginally, or that of skin, if born by C-section.

“We found that babies born vaginally at full-term had a relatively stable microbiota throughout the first 24 weeks with good bacteria such as Bifidobacteria predominating” said Dr Cian Hill, lead author on the paper. “Bifidobacteria are known to break down the complex sugars called Human Milk Oligosaccharides (HMOs) in breast milk and so infants with more Bifidobacteria are thought to extract more nutrition from milk digestion helping them to thrive.”

Dr Hill continued “Full-term babies born by C-section who were breast-fed for at least 4 weeks were found to have a similar gut bacteria composition to vaginally born babies by 8 weeks of age. At 24 weeks all infants, whether preterm or full-term and born vaginally or by C-section, had similar gut microbiota compositions. ”

“This study clearly shows that mode of delivery and gestational age at birth are the strong influencers of early gut microbiota populations following birth” said Prof Catherine Stanton, leader of the research at Teagasc. “We have shown that infants that were naturally delivered through the birth canal have a much more established and mature microbiota at just one week of age, which remains relatively stable over the first 6 months compared to infants born by C-section, whose initial microbiota is very different to naturally delivered.”

“These results highlight the importance of breastfeeding particularly for infants born by Caesarean section” added Prof Anthony Ryan at University College Cork and Cork University Maternity Hospital. “The long-term implications of an altered gut microbiota composition in the first weeks of life, as a result of C-section and preterm delivery, are currently unknown.

But this study shows that breast feeding these babies helps to move the microbiota composition towards that of full-term, vaginally delivered babies.”

This research was funded by the Department of Agriculture, Food and Marine, the Health Research Board and Science Foundation Ireland.

The research is published this week in the journal *Microbiome*.

ENDS

Original reference: *Evolution of gut microbiota composition from birth to 24 weeks in the INFANTEMET Cohort* Cian J. Hill, Denise B. Lynch, Kiera Murphy, Marynka Ulaszewska, Ian B. Jeffery, Carol Anne O’Shea, Claire Watkins, Gene Dempsey, Fulvio Mattivi, Kieran Tuohy, Paul Ross, C. Anthony Ryan, Paul W. O’Toole and Catherine Stanton **Microbiome**
<http://microbiomejournal.biomedcentral.com/articles/10.1186/s40168-016-0213-y>

<http://dx.doi.org/10.1186/s40168-016-0213-y>

For further information please contact Prof Catherine Stanton +353 25 42606; email Catherine.stanton@teagasc.ie or Prof. Anthony Ryan tel + 353 214920525; email tony.ryan@ucc.ie or Dr Catherine Buckley, Communications & Outreach Manager, APC Microbiome Institute, tel +353 21 4903362; mobile +353 86 8554744; email c.buckley@ucc.ie

About the APC Microbiome Institute

The APC Microbiome Institute (APC; <http://apc.ucc.ie>) 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, Teagasc (the Irish Agriculture and Food Development Authority) and Cork Institute of Technology. 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 1000 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 postgraduates students.