

medela 
mother's milk,
everyday amazing



Press Kit

**13th International Breastfeeding
and Lactation Symposium
22 – 23 March 2018, Paris, France**

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13th International Breastfeeding and Lactation Symposium

22–23 March 2018

Pavillon d'Arménonville

Allée de Longchamp, Bois de Boulogne, 75116 Paris

Programme for Journalistes

22 March

8:30h to 10:00h – Press Conference

Symposium programme, for journalistes and delegates

Press releases

- Amazing discoveries in the science of human milk and lactation to be discussed by top researchers at the 13th International Breastfeeding and Lactation Symposium
- A new global analysis calls for breast milk feeding as a “Primary Public Health Intervention”
- New evidence that mother’s milk offers unique prevention for asthma, a disease with no cure

Speaker topics summaries

Speaker graphics, biographies, and abstracts

- Prof Bruce German
- Prof Laurent Storme
- Prof Tricia Johnson
- Dr Alecia-Jane Twigger
- Asst Prof Meghan B. Azad
- Assoc Prof Donna Geddes
- Prof Jean-Charles Picaud
- Prof Thomas Hale
- Prof Paula Meier

Press Contacts

Programme

Thursday, 22 March 2018

Time	Topic	Speaker	Language
11.30	Registration and lunch		
13.00	Welcome		
The value of human milk			
13.15	Lactation and milk as a model for scientific research and innovation on diet and health	J. Bruce German (USA)	en
14.00	Breast milk and the first 1000 days of life	Laurent Storme (FRA)	fr
14.45	Break		
15.15	Leveraging the economic perspective of the value of human milk	Tricia Johnson (USA)	en
16.00	Share point and question time with the lactation experts		en
16.30	Wrap-up and agenda for next day		en
16.45	Welcome reception		

Friday, 23 March 2018

Time	Topic	Speaker	Language
08.00	Registration and coffee		
08.30	Welcome		
The unique components of human milk			
08.45	Understanding the lactating breast at the single-cell level	Alecia-Jane Twigger (GER/AUS)	en
09.30	Breastfeeding, human milk composition and the developmental origins of asthma in the CHILD cohort	Meghan B. Azad (CAN)	en
10.15	Break		
10.45	Share point and question time with the lactation experts		en
Latest recommendations for research-based practice			
11.15	All Tied Up: What does the evidence say about tongue tie?	Donna Geddes (AUS)	en
12.00	Lunch		
13.15	Close of poster presentations		en
13.30	Poster award		en
13.45	Evidence supporting the use of human milk in neonatal units	Jean-Charles Picaud (FRA)	fr
14.30	Break		
15.00	Pharmacology of marijuana and its transfer into human milk	Thomas W. Hale (USA)	en
15.45	Using evidence to design, implement and evaluate a NICU lactation programme: the Rush Mothers' Milk Club as exemplar	Paula Meier (USA)	en
16.30	Share point and question time with the research experts		en
17.00	Wrap-up and close		en
17.15	End		

Programme may be subject to change

Press Release

Amazing discoveries in the science of human milk and lactation to be discussed by top researchers at the 13th International Breastfeeding and Lactation Symposium

Headquartered in Zug, global leader Medela provides a platform for leading scientists to announce key findings on human milk, lactation, and women's and infant's healthcare.

- Nine world-class researchers discuss ground-breaking evidence for the unique nutritional, medicinal, and developmental impact of mother's milk on infants, and new findings in lactation science
- 450 doctors and clinicians from over 19 countries discuss the impact of this new scientific evidence on their national policies and clinical practices supporting mothers and infants
- Previous symposia have inspired improvements in women's and infant's healthcare in countries around the world
- New studies expected to show reductions in healthcare costs and broad economic benefits to society when breastfeeding is supported by policy makers

Baar, Switzerland/Paris, France – 19 February 2018. Nature has created only one food that perfectly matches the entire range of human biological needs: mother's milk. At the 13th International Breastfeeding and Lactation Symposium in Paris, 22–23 March, the world's foremost researchers will share new scientific evidence for the unique nutritional, medicinal, and developmental impact of mother's milk on infants. These two days represent an international milestone each year, when scientific breakthroughs are unveiled and translated into advanced women's and infant's healthcare initiatives. This year's new line of evidence should also provide reasons for society to mobilize and offer stronger support to mothers who wish to breastfeed.

Mother's milk is the keystone linking food and health

"[Mother's milk is] the product of 200 million years of symbiotic co-evolution between a mammalian mother and her infant," says Prof. Bruce German, Director of the Foods for Health Institute at the University of California, Davis. His seminal research highlights the amazing quality of mother's milk as the quintessential model linking food and health.

In fact, the evolution of mother's milk reflects the benefits of adaptation in general, as it continuously evolves specifically to support infants' needs. Those infants grow to produce milk with new traits which will further promote the health, strength and survival of the next generation. Prof. German's studiesⁱ of the human genome and human milk have reinforced that principle. His research shows the exclusive compatibility between the chemical makeup of human milk and the biological needs of infants, which makes human milk irreplaceable as the perfect food source for today's infants.

Mother's milk is a medical intervention in the first 1,000 days of life

Prof. Laurent Storme, Head of Neonatology at Lille University Hospital and Vice President of the French Society for the Developmental Origins of Health and Disease, will address the profound impact that mother's milk provides during the "First 1,000 Days of Life"ⁱⁱ. During those first 1,000 days, (starting in pregnancy and continuing through the first two years of life), an infant's body, brain, and immune system are programmed for a lifetime. It is a "critical window of vulnerability" and also of opportunity, when non-communicable diseases with lifelong impact can be prevented, and long-term health can be promoted.

Feeding mother's milk has a broad positive impact on society

From disease prevention in infants to optimal lifelong development, mother's milk ultimately has a powerful influence on the general well-being of society. Meta-studies of both full-termⁱⁱⁱ and pre-term infants^{iv} have shown that raising a national population on mother's milk reduces healthcare costs by millions and increases productivity and gross domestic product by tens of millions annually. Prof. Tricia Johnson will speak about mother's milk as the "primary public health intervention", as important to the health of infants, mothers, and the general public as vaccinations have proven to be.

“Society benefits in every way, even financially, when infants get the best possible nutrition and care, and mother’s milk is fundamental to that,” says Dr. Leon Mitoulas, Scientific Director of the symposium, “We bring together the international scientific and medical communities, in order to share a growing and extremely compelling body of scientific evidence for why mother’s milk is so important for infants, and to advocate for advanced healthcare and support for mothers. We also hope that this knowledge will spread so that family, friends, co-workers and policy makers will also make the extra effort to help, encourage and empower mothers who want to breastfeed.”

About Medela

Founded in 1961 and headquartered in Switzerland, Medela conducts basic research in partnership with leading scientists, medical professionals and universities, to develop world-leading breastfeeding products, education, and solutions. Find out more at www.medela.com.

More Information

- 2018 speaker summaries (attachment)
- [2018 symposium programme](#)
- [Journalist registration page](#)
- [Information on press conference](#), 22 March 8:30–10:00
- [Highlights and images from 2017 Symposium](#)

References

- ⁱ 21st century toolkit for optimizing population health through precision nutrition. Aifric O’Sullivan, Bethany Henrick, Bonnie Dixon, Daniela Barile, Angela Zivkovic, Jennifer Smilowitz, Danielle Lemay, William Martin, J. Bruce German & Sara Elizabeth Schaefer. Critical Reviews in Food Science and Nutrition Vol. 0, Iss. 0, 2017
- ⁱⁱ DOHaD : conséquences à long terme de la pathologie périnatale. Retard de croissance intra-utérin et prématurité. Laurent Storme¹, Dominique Luton², Latifa Abdennebi-Najar³, Isabelle Le Huërou-Luron⁴
- ⁱⁱⁱ Breastfeeding in the 21st century. Quigley, Maria A et al. The Lancet, Volume 387, Issue 10033 , 2087–2088
- ^{iv} <https://www.medela.com/breastfeeding-professionals/research/health-economics>

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Press Release

A new global analysis calls for breast milk feeding as a “Primary Public Health Intervention”

Swiss regulations require a company to offer a mother with a baby at least 90 paid minutes for breastfeeding or breast milk pumping in a working dayⁱ. Federal infant nutrition guidelinesⁱⁱ recommend exclusive breastfeeding for four to six months, as well as longer paid leave for new fathers to be able to support breastfeeding mothers. Is this too much investment? Or do current breast milk feeding support measures go far enough?

- Breast milk feeding prevents long- and short-term diseases, from bowel tissue death to diabetes
- Universal breastfeeding could add USD 300 billion to the gross national income worldwide each year
- New cost-benefit analysis shows that low-cost breast milk feeding interventions result in high returns on investment in the short- and long-term for global society.

Baar, Switzerland/Paris, France – 26 February 2018. Who stands to gain when babies get mother’s milk? According to the most recent meta-studies of both full-term and premature babies: Everyone. At the 13th International Breastfeeding and Lactation Symposium in Paris, March 22–23, Prof. Tricia Johnson, Economist in the Department of Health Systems Management at Rush University, presents overwhelming new evidence for making breast milk feeding a primary public health intervention, as fundamental to a nation’s health and prosperity as vaccinations.

Nobel Prize for Medicine and Economics

In his 2016 article in *The Lancet*ⁱⁱⁱ, World Bank Vice President for Human Development, Keith Hansen, placed breastfeeding at the top of the global economic agenda by stating, “If breastfeeding did not already exist, someone who invented it today would deserve a dual Nobel Prize in medicine and economics.” He went on to cite that universal breastfeeding could save over 800,000 children’s lives and 20,000 mothers’ lives every year. The average IQ increase of three points for breastfed babies could raise productivity, adding USD 300 billion to annual gross national income worldwide. Preventing diseases from diarrhoea to diabetes, breastfeeding could also reduce global healthcare costs by hundreds of millions of dollars each year.

For premature babies, breast milk is a risk-free vaccine

Also in 2016, the York Health Economics Consortium conducted the world’s first economic model for premature babies and human milk^{iv}. Feeding breast milk to a single, annual UK population of premature babies could reduce direct healthcare costs by £30.1 million in the first year alone by preventing diseases like necrotising enterocolitis, sepsis, leukaemia, and otitis media. Prof. Johnson affirms that the York study “proves beyond a shadow of a doubt that breast milk is a vaccine, with no side effects, against an array of devastating illnesses.”

Why is breast milk feeding still not a “primary public health intervention”?

Despite this growing body of evidence, policy makers are slow to act. At the 13th International Breastfeeding and Lactation Symposium, Prof. Johnson will present, for the first time, a new cost-benefit analysis showing the remarkably low economic investment required to feed human milk to babies, and the high return on investment for society in both the short- and long-term. The question becomes: With nothing to lose and everything to gain, is society doing enough to support mothers and families in breast milk feeding?

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More Information

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- [2018 symposium programme](#)
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- ⁱ Verordnung 1 zum Arbeitsgesetz (ArGV 1); 1. Juni 2014 5. Kapitel: Sonderschutz von Frauen; 1. Abschnitt: Beschäftigung bei Mutterschaft; Art. 60 Arbeitszeit und Stillzeit bei Schwangerschaft und Mutterschaft; (Art. 35 und 35a ArG)
- ⁱⁱ <https://www.eek.admin.ch/eek/de/home/pub/ernaehrung-in-den-ersten-1000-lebenstagen-.html>
- ⁱⁱⁱ Breastfeeding: a smart investment in people and in economies. Hansen, Keith. The Lancet , Volume 387 , Issue 10017, 416
- ^{iv} Modelling the cost-effectiveness of human milk and breastfeeding in preterm infants in the United Kingdom. Mahon et al. Health Economics Review (2016) 6:54 DOI 10.1186/s13561-016-0136-0

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Press Release

New evidence that mother's milk offers unique prevention for asthma, a disease with no cure

In Switzerland, one in 10 children and one in 14 adults suffer from asthmaⁱ, a disease with no known cure. New scientific evidence shows that breast milk can prevent asthma. Now, a pioneering, multidisciplinary study offers new scientific evidence that breast milk can prevent asthma.

- 235 million people suffer from asthma worldwide, and 250,000 die prematurely each year
- No known cure exists for the disease
- New, one-of-a-kind scientific study shows that breast milk offers unique early asthma prevention

Baar, Switzerland/Paris, France – 26 February 2018. No cure exists for asthma, a disease that causes 250,000 deaths each year and affects 235 million people worldwide, according to the World Health Organization (WHO).ⁱⁱ March 22–23, at the 13th International Breastfeeding and Lactation Symposium in Paris, Asst. Prof. Meghan Azad will discuss new evidence from a first-of-its-kind, multidisciplinary study, which shows that mother's milk can prevent asthma.

Hospitalisation, missed school, a lifetime of reduced activity, and even death

Asthma "attacks" squeeze the airways and cause difficulty breathing. In the film Hitch, quirky romantic lead Kevin James throws his asthma inhaler to the curb, before kissing the woman of his dreams. In reality, inhalers are more than psychological crutches, and asthma sufferers depend on those and other daily treatments to help them breathe another day. Lifelong asthma sufferers get less sleep, experience more daytime exhaustion, are less active, and miss more work than people without the disease.ⁱⁱⁱ

Parents of children with asthma must be particularly vigilant, especially at night. Asthma is the most common chronic childhood disease, according to the WHO. It is the primary reason for school absences, and a major cause of childhood hospitalisation.

New, pioneering study shows breast milk offers unique, early asthma prevention

In Canada, where one in seven children suffers from asthma^{iv}, the latest research offers new hope, with conclusive evidence that universal exclusive breastfeeding can reduce asthma rates in children by as much as 40%.^v It is the first study of its kind, employing scientists across 20 different disciplines, and measuring an exhaustive list of symptoms and attributes in children ages zero to five, their mothers, and their environments prospectively (rather than retrospectively, which would rely on someone's memory of prior years). Meghan B. Azad, Assistant Professor of Paediatrics and Child Health at the University of Manitoba (Canada), leads the asthma research group as part of the Canadian Healthy Infant Longitudinal Development (CHILD) study.

Asst. Prof. Azad acknowledges the critical role of expressed breast milk for working mothers. At the 13th International Breastfeeding and Lactation Symposium, she will present her latest findings on the bioactive components in breast milk which prevent asthma, on the way to preserving them even better when breast milk is expressed and stored. She comments, "Our hope is that this study will guide future research on the best ways to store and feed expressed milk, and that it will inform societal policies to protect, promote and support breastfeeding."

Improved education for families with a history of asthma

For a disease with no cure, prevention is the best medicine. Right now, mother's milk may offer the only prevention against asthma. At the 13th International Breastfeeding and Lactation Symposium, researchers and healthcare professionals will discuss whether or not it is time for a new educational program to help families with genetic histories of asthma, especially, to understand the amazing potential of mother's milk for preventing this lifelong disease.

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More Information

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- iv <https://doi.org/10.1016/j.jpeds.2017.07.012>

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Speaker Summaries

13th International Breastfeeding and Lactation Symposium

Prof. Bruce German

[Mother's milk, the model for dietary personalisation](#)

Prof. Bruce German, Director of the Foods for Health Institute at the University of California, Davis, is the world's foremost expert on the unique biocompatibility of human milk for human infants, as the result of the "symbiotic co-evolution between a mammalian mother and her infant". He discusses human milk and its unparalleled benefits as the model for dietary personalisation.

Prof. Laurent Storme

[Breastfeeding as a medical intervention in the first two years of life](#)

As Vice President of the French Society for the Developmental Origins of Health and Disease, Prof. Storme focuses on the first 1,000 days, from development in the womb to two years after birth, as the main window of disease-prevention opportunity. He will show that mother's milk represents not merely nutrition, but a medical intervention, capable of preventing multiple lifelong diseases.

Prof. Tricia Johnson

[Short-term investment in mother's milk for exponentially greater long-term economic gains](#)

Prof. Johnson offers powerful new evidence for mother's milk as the "primary public intervention", as important to the health of infants, mothers, and the general public as vaccinations have proven to be. Her cost-benefit analysis shows that the short-term investment to promote the feeding of mother's own milk reaps exponentially greater long-term economic benefits for society.

Dr. Alecia-Jane Twigger

[Revealing the growth patterns of milk cells](#)

A fast-rising star in the field of lactation, Dr. Twigger is a postdoctoral fellow at the Institute of Stem Cell Research at the Helmholtz Center Munich. She uses the latest scientific techniques to uncover exciting new evidence for the functional differences between activated milk cells and resting breast cells, providing never before seen ways to understand and treat abnormal mammary gland growth which can result in low-milk production and/or breast cancer.

Ass. Prof. Meghan Azad

[More breastfeeding for less asthma](#)

As a member of the Executive Council for the International Society for Research in Human Milk and Lactation and an internationally recognised researcher, Asst. Prof. Azad is well placed to discuss the new evidence for the correlation between breastfeeding and reduced childhood asthma, and a new national campaign to educate mothers and the medical community on breastfeeding for asthma prevention.

Assoc. Prof. Donna Geddes

[New scientific evidence for better treatment of tongue-tie](#)

Chief Investigator of the prestigious Hartmann Human Lactation Research Group, Assoc. Prof. Geddes examines the controversial treatment of tongue-tied infants, and the impact this has on breastfeeding. Although the stark rise in tongue-tie diagnosis has led to widespread scientific discussion, treatment to date been founded on less than robust clinical evidence. Assoc. Prof. Geddes' latest studies offer precise new measurements which clarify the complex interplay between the mother's and infant's physiologies, and provide a foundation for more effective tongue-tie treatments.

Prof. Jean-Charles Picaud

[Evidence supporting the use of human milk in neonatal units](#)

Head of Department of the Neonatal Intensive Care Unit at Croix Rousse University Hospital in Lyon, France, Prof. Picaud spearheaded the national initiative to feed human milk to premature infants. Prof. Picaud will present a new standard of care for preterm infants, which centres on supporting mothers in activating lactation and providing enough human milk for preterm infants.

Prof. Thomas Hale

[Can a breastfeeding mother safely smoke marijuana?](#)

Founder and Executive Director of the national Infant Risk Centre in the USA, Prof. Hale is recognised as the world's leading authority on drugs and mother's milk. Confronting the growing trend of marijuana usage worldwide, Prof. Hale presents new and exhaustive evidence of the presence of chemicals in the milk of mothers consuming marijuana.

Prof. Paula Meier

[Using evidence to design, implement and evaluate a NICU based lactation programme.](#)

An internationally renowned authority and leader amongst human milk researchers, Prof. Meier is Professor of Paediatrics and Nursing and Director of NICU Lactation Services in the Neonatal Intensive Care Unit (NICU) at Rush University Medical Center. At this symposium, Prof. Meier will chronicle the evidence, policies and procedures developed to date, in order to outline a roadmap for institutions worldwide to ensure that NICU infants receive the highest possible dose of mothers' own milk for superior healing and development.

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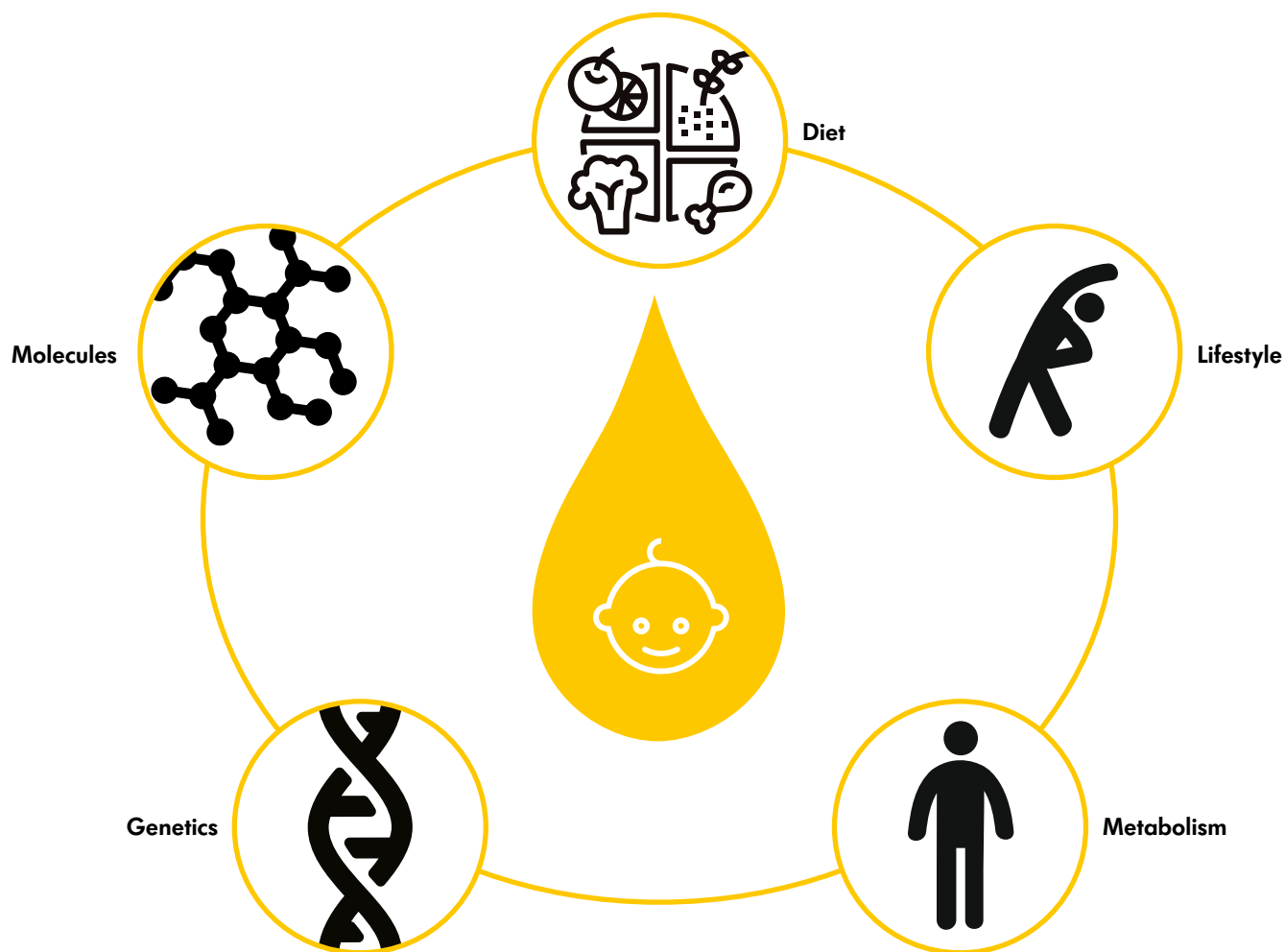
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Mother's Milk: The only perfect food for infants and the model for the study of food and health

Prof. Bruce German
Director, Foods for Health Institute
Professor of Food Science and Technology
University of California, Davis



Lactation and milk as a model for scientific research and innovation on diet and health

Prof J. Bruce German

Foods for Health Institute

University of California, Davis, CA, USA

Solving the problems of food production, food safety, nourishment and sustainability will require a much more detailed understanding of the complex interplay between human health and food. In effect agriculture must move from the simplifying reductionist principles of chemistry to the integrative principles of biology. Fortunately, many of biology's valuable principles learned under the relentless pressure of Evolutionary selection are encoded in life's genomes. As life sciences interrogate organisms in genomic detail, lactation and its remarkable product, milk provide unique insight into the evolution of animals and their food. Most organisms evolved in part to avoid being eaten. Agriculture's success has been to select and process commodities into safe, stable and delicious foods.

Agriculture's challenge now is to enhance their nutritional quality and the question is how? The Rosetta stone of food and nourishment is mammalian lactation and milk. Milk as a complete and comprehensive diet is the product of 200 million years of symbiotic co-evolution between a mammalian mother and her infant. All of the tools of modern science from genomics to molecular anthropology can now be leveraged to understand this remarkable process

Molecular insights from sugars to oligosaccharides, proteins to encrypted peptides, structures from globules to micelles, intact cells from stem cells to immune cells represent just the first wave of discoveries of how complex and functional components can be in the diet. In parallel with discoveries of nutritional targets and component bioactivities are new insights into principles of sustainability. The complex competition between maternal cost and infant benefit for milk's resources are a vivid model for cost versus benefit v. Mothers literally recruit a unique group of bacteria to populate their baby's intestine and provide them a selective food source, complex oligosaccharides, to keep them and their baby 'happy'.

Bruce German



Bruce German received his PhD from Cornell University, joined the faculty at the University of California, Davis in 1988, and in 1997, he was named the first John E. Kinsella Endowed Chair in Food, Nutrition and Health. He is currently Director of the Foods for Health Institute and Professor of Food Science and Technology at the University of California, Davis. His research interests include the structure and function of dietary lipids, the role of milk components in food and health, and the application of metabolic assessment to personalizing diet and health.

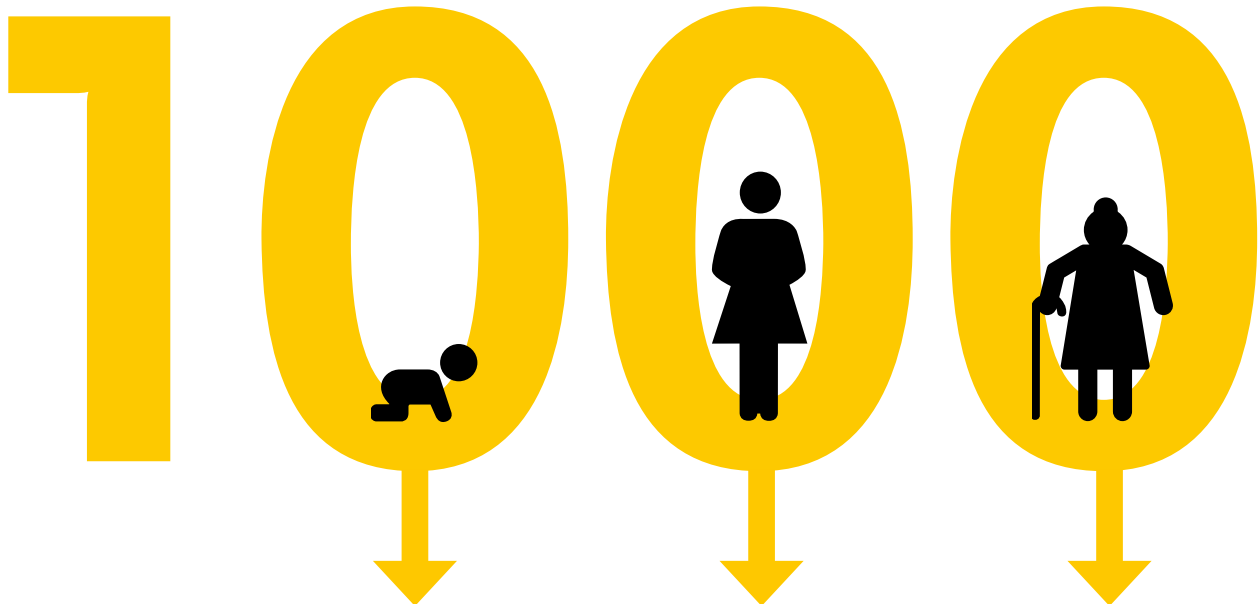
The goal of his research is to build the knowledge necessary to improve human health through personalized health measurements and foods. To that end, his research focuses on how individual human lipid metabolism responds to the chemical composition and structural organization of foods. Each person has a slightly different response to diet, based on their genetics, their life stage and lifestyle, their metabolism and their nutritional status. Prof. German's research seeks to understand the molecular basis of these differences and to learn how to measure them. Based on that, food strategies are designed, including analytical tools for individuals to monitor how their body reacts to various foods, so that they can modify their consumption to foster good health. With those health targets established, it is the equally important task of the researchers to understand how to provide superior food choices, which integrate the optimal compositional, structural and nutritional functionalities of biomaterials.

Human milk represents the perfect model for such research. As a product of millennia of constant Darwinian selective pressure, milk is the only bio-material which has evolved as a food which nourishes, sustains and promotes healthy infant mammals to grow and be healthier. As in all evolutionary processes, survival of the strongest offspring exerted powerful selective pressure on the biochemical evolution of lactation. New traits continued to appear in human milk to promote that strength, health, and ultimately survival. This evolutionary logic is the basis of Prof. German's research program to discover physical, functional and nutritional properties of milk components, and to apply these properties as principles to foods.

Prof. German and colleagues have published more than 400 papers on lipids and food, metabolism and metabolite measurements and food functions, and they have patented numerous technologies and applications of bioactive agents.

1,000 days for a lifetime of optimal health and well-being

Prof. Laurent Storme
Professor of Paediatrics
Head Neonatology
Lille University Hospital



- Facilitates Immune development
- Eye development
- Prevents ear infections
- Decreased respiratory infection
- Decreased intestinal infection
- Optimal brain development

- Higher IQ – higher productivity
- Prevents ovarian cancer
- Prevents breast cancer
- Prevents obesity
- Prevents diabetes

- Prevents heart attacks
- Circulation
- Prevents diabetes
- Bone density

Breast milk and the first 1000 days of life

Prof Laurent Storme

Lille University Hospital
Lille, France

Noncommunicable diseases (NCDs) underlie almost two-thirds of all global deaths worldwide¹. NCDs are chronic diseases of major public health importance such as cardiovascular diseases, obesity, cancer, type 2 diabetes, degenerative and mental disorders, and allergies, that are mainly attributable to environmental factors. There is an urgent need to implement effective prevention strategies, because the future costs of diagnosis and treatment are likely to be unaffordable. Converging direct and indirect evidence nowadays supports the hypothesis that the perinatal environment plays a major role in determining health conditions later in life².

Exposure to adverse environmental conditions during development triggers adaptations that have short- and/or long-term consequences for health and disease risk³, and a suboptimal intrauterine or neonatal environment impairs the development of organs and functions, and may play an important role in programming chronic diseases in infancy and adulthood. For instance, advances in neuroscience and the physiology of stress are revealing the biological mechanisms underlying well-established associations between adverse conditions in early childhood and suboptimal life-course trajectories⁴.

It is now widely accepted that the perinatal and early childhood periods – the so-called “First 1000 Days of Life” – represent a critical window of vulnerability to the environment, because the main fundamental biological and physiological processes are programmed for a lifetime during this period^{5,6}. The early-life origin of NCDs is mediated through various mechanisms including developmental plasticity, programming and epigenetics. During development, epigenetic marks, such as DNA methylation, histone modifications and the expression of non-coding RNAs, undergo substantial changes.

The knowledge that in-utero and early childhood experiences affect the risk of NCD development provides a key opportunity to target interventions to the time windows in which they will have the most important effect. Breastfeeding perfectly fits the concept that early-life interventions may have a significant impact on future health⁷. Breastfeeding is associated with fewer NCDs such as allergic diseases⁸, obesity⁹ and inflammatory bowel disease as well as with lower systemic arterial pressure. In premature newborn infants and/or under conditions of psycho-social vulnerability, breastfeeding is associated with better long-term neurodevelopmental outcome¹⁰. Furthermore, breastfeeding promotes the health and wellbeing of the mother-baby dyad, and has analgesic effects in infants exposed to painful stimuli¹¹. The breastfeeding promotion program is therefore the spearhead of this new paradigm highlighting the developmental origin of health and disease. In this presentation, we will discuss the potential mechanisms by which breastfeeding – a brief nutritional intervention within the first 1000 days of life – may promote future health.

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Laurent Storme



Laurent Storme has been Professor of Paediatrics since 1999. Trained at the School of Medicine in Lille, France, (Université de Lille II), he has served as Head of the Department of Neonatology of Lille University Hospital (CHRU de Lille) since 2010.

Prof. Storme's experimental and clinical research focuses on the developmental origins of health and diseases (DOHaD), particularly on physiopathology and the treatment of pulmonary hypertension. The author of more than 150 scientific publications. He also serves as Vice-President of the Francophone DOHaD Society and is the training coordinator for neonatology in the Northwest of France.

Prof. Storme's interest in the programming of non-communicable diseases during the first thousand days of life has led him to coordinate the Hospital-University Federative Project "1000 Days for Health", since 2015. The project studies environmental factors of risk or resilience for future health, and trains caregivers with a view of implementing

disease-prevention and health-promotion programmes. Breastfeeding is a major focus, as it is an early-life intervention which may have a significant impact on the long-term development of a child.

Good economics: At least a 1:31 return on investment for each infant that receives human milk in a single hospital

Prof. Tricia Johnson
Professor and Economist
Department of Health Systems Management
Rush University, Chicago

Keith Hansen of the World Bank and the Lancet in 2016 said: "If breastfeeding did not already exist, someone who invented it today would deserve a dual Nobel prize in medicine and economics."

▶ Lactation support program
approx. 1000 USD/NICU



- ▶ 1 additional ml/kg/day saves 534 USD
- ▶ 10 ml/kg/day increase
19% sepsis reduction
0.35 CI increase
- ▶ Sepsis 31,000 USD

Leveraging the economic perspective of the value of human milk

Prof Tricia Johnson

Department of Health Systems Management
College of Health Sciences, Rush University, Chicago, IL, USA

Human milk is one of the most effective and low cost preventive health measures with short and long-term benefits for the infant and mother, yet it is often not viewed as a primary public health intervention. Should we view human milk as a primary prevention measure, similar to how childhood vaccinations and smoking prevention programs are viewed from the public health perspective? What is the economic investment needed to support the acquisition of human milk, and what is the return on investment of these efforts?

A substantial body of research has shown that infants receiving higher doses of human milk for longer durations are less likely to experience childhood diseases including gastrointestinal infections,¹ upper and lower respiratory infections,¹ acute otitis media,² acute lymphoblastic leukemia,³ and Sudden Infant Death syndrome.⁴ Additionally, research has demonstrated a dose-response relationship between lifetime amount and duration of breastfeeding and maternal outcomes, including a reduced risk of type 2 diabetes,⁵ breast and ovarian cancers,⁵ and cardiovascular disease.⁶ Reducing the incidence of these childhood and maternal diseases thereby reduces costs by reducing the need for expensive medical care to treat the diseases. Additionally, the short-term health benefits of human milk for very low birth weight (<1500 g birth weight) infants are well-documented,⁷⁻¹⁰ and there is growing evidence that human milk also improves neurodevelopment,¹¹⁻¹⁶ thereby reducing the need for special education services. Recent research has demonstrated that the investment needed by a hospital to acquire mother's own milk is relatively small, particularly when compared to the cost of hospital-based interventions for other patients.¹⁴

This presentation will summarise the current state of knowledge regarding the short- and long-term health benefits of human milk, cost of acquiring mother's own milk¹⁷ and cost savings^{18,19} associated with human milk from a global perspective.

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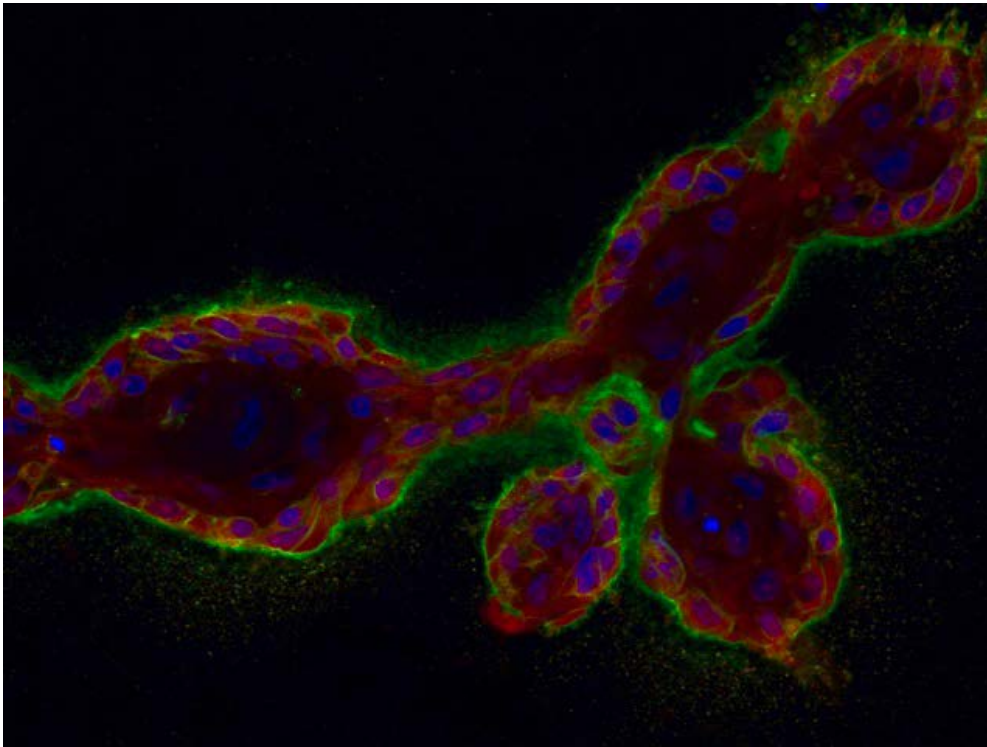
Tricia Johnson



Tricia Johnson, PhD, is Professor and Economist in the Department of Health Systems Management at Rush University. Her primary scientific focus is on the economics and cost effectiveness of feeding human milk to premature infants. She also leads the economic evaluation of multiple studies with a goal of identifying novel, low-cost strategies that simultaneously improve health outcomes and reduce long-term healthcare costs. She is Associate Chair of Education and Research for the Graduate Program in Health Systems Management, where she teaches health economics and research methods. In 2009, she was selected as a Fulbright Scholar to Austria, where she worked with the Vienna University for Economics and Business. She is a member of the International Society for Research in Human Milk and Lactation. Dr. Johnson has a PhD in economics from Arizona State University and a Master of Arts from the University of Iowa, located in the United States.

The single-cell difference between lactating and resting breast cells, the path to understanding abnormal breast cell development

Dr Alecia-Jane Twigger
Institute of Stem Cell Research
Helmholtz Center Munich



Resting mammary cell organoid (mini-breast)

Understanding the lactating breast at the single-cell level

Dr Alecia-Jane Twigger

Helmholtz Center Munich

Munich, Germany

In order for lactation to occur, the adult mammary gland must undergo dramatic changes to transform the normal resting breast into a functional organ able to fulfill its purpose of milk production. Human milk provides distinctive benefits for the suckling infant and contains a uniquely formulated set of components that contribute to human development. Given that lactation is such an important evolutionary adaptation, it is surprising that the cell signals driving breast maturation and essential for milk production remain unknown. Cells contained in human milk are one of the most dynamic and heterogeneous components which offer a unique non-invasive insight into the cells of the lactating mammary gland. To understand the mechanisms governing breast maturation and milk production, we sought to comprehensively characterise human milk cells and compare them with resting mammary epithelial cells (isolated from esthetic breast mammoplasties). Using single-cell RNA-sequencing and fluorescence-activated cell sorting, we find that single human milk cells display different gene expression profiles and cell surface markers compared to resting breast cells. Interestingly, when human milk cells are cultured under floating collagen gel conditions they generate mammary gland organoids similar to those derived from resting breast cells, albeit at a lower frequency. Preliminary findings from this study suggest that human milk cells are different to those isolated from the resting breast, however they do share some similar functional characteristics such as organoid generation in culture. Further analysis will enable us to determine the cell types and signaling pathways leading to breast maturation and milk production. This will provide comparative data for future studies on abnormal mammary gland growth such as in case of low milk production or breast cancer. For the future, we aim to render the milk cell organoids functional to dissect mechanisms of normal human mammary gland plasticity and lactation.

Alecia-Jane Twigger

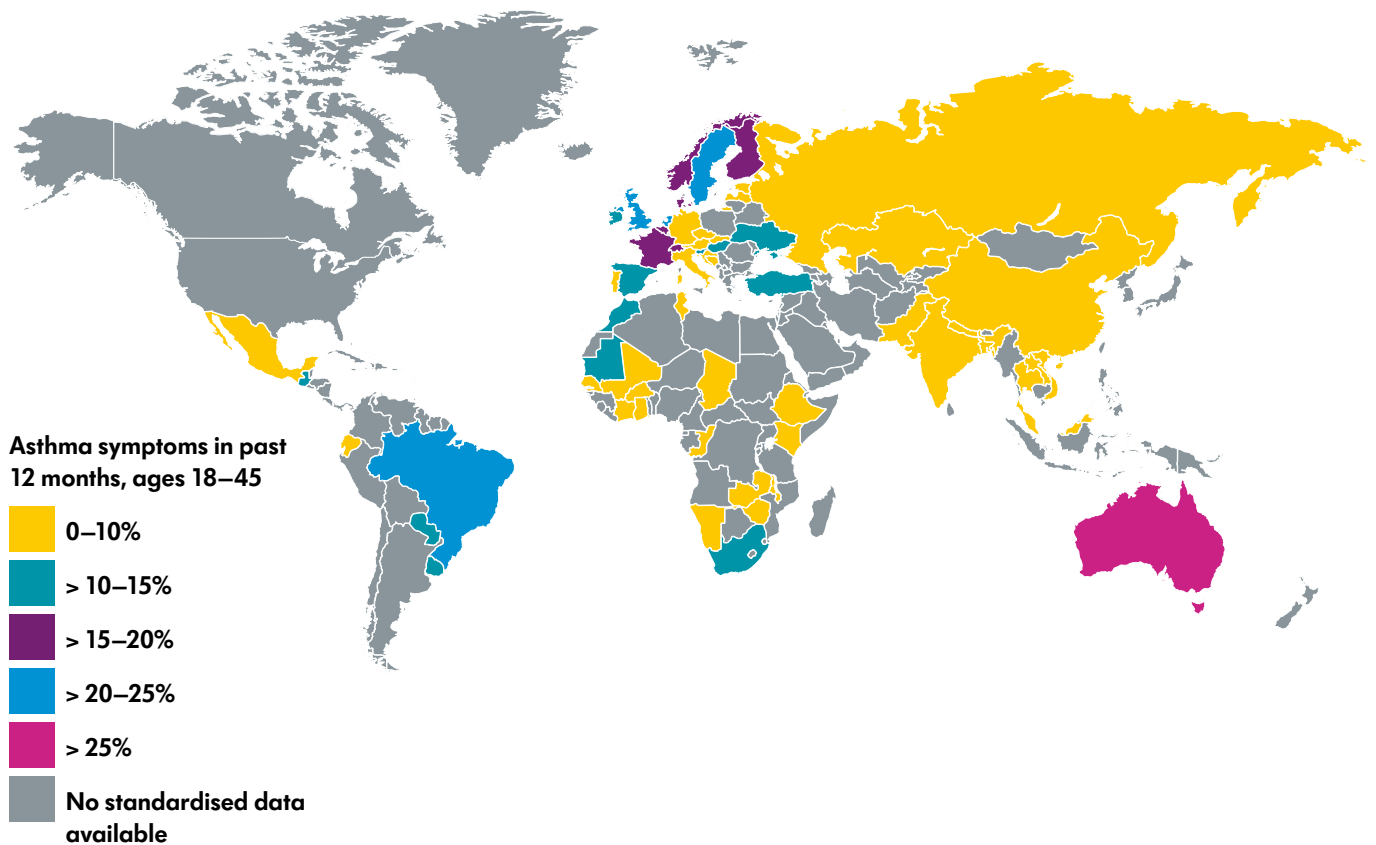


Alecia-Jane Twigger is a postdoctoral fellow at the Institute of Stem Cell Research at the Helmholtz Center Munich. Beginning her research career in the prestigious Hartmann Human Lactation Research Group at the University of Western Australia, she completed a PhD in human milk cell characterization under the supervision of Assistant Prof Donna Geddes, Dr. Foteini Kakulas and Emeritus Professor Peter Hartmann.

Dr. Twigger was awarded the inaugural International Society for Research in Human Milk and Lactation Postdoctoral Fellowship, and joined Dr. Christina Scheel's laboratory at the Helmholtz Center Munich with the intention of adapting their patented mammary organoid model to investigate human milk cell regenerative capacity and function. Since then, she has been accepted into the Helmholtz Postdoctoral Fellowship Program and will continue to pursue her passion of further understanding mammary gland plasticity and function through the study of human milk cells.

New evidence that mother's milk offers unique prevention for asthma, a disease with no cure

Asst Prof Meghan B. Azad
Assistant Professor of Paediatrics and Child Health
University of Manitoba, Canada
Breastfeeding Committee of Canada



Source: World Health Survey 2002-2003

Breastfeeding, human milk composition and the developmental origins of asthma in the CHILD cohort

Asst. Prof. Meghan B. Azad

Children's Hospital Research Institute of Manitoba, Department of Pediatrics and Child Health
University of Manitoba, Canada

Asthma is the most common chronic disease affecting children in developed countries. Pediatric asthma is a major cause of hospitalization, and is the most common reason for children to miss school. While treatments are available, there is no cure for asthma. Some research shows that breastfeeding may reduce the risk of developing asthma, but not all studies have confirmed this association.

In collaboration with the Canadian Healthy Infant Longitudinal Development (CHILD) study (www.childstudy.ca), my team is studying how breastfeeding influences respiratory health during infancy and childhood. In this cohort of 3500 children, we have observed an inverse association between breastfeeding and wheezing in the first year of life.¹ The association is dose-dependent (stronger with longer or more exclusive breastfeeding) and is especially evident among infants born to mothers with asthma (i.e. those at highest risk for developing asthma themselves). We observe a similar inverse and dose-dependent association for possible or probable asthma diagnosis by 3 years of age.

To understand the mechanisms underlying these associations, we are analysing breast milk samples collected in the CHILD Study to measure multiple bioactive components and determine their role in asthma development and prevention. Components of interest include fatty acids,² cytokines, hormones, prebiotic oligosaccharides³ and probiotic bacteria.

Finally, we are evaluating additional health outcomes (e.g. allergies, growth, and early childhood obesity) and investigating the fixed and modifiable maternal and environmental factors that influence milk composition and feeding practices. Ultimately, this research aims to inform nutrition-based strategies for optimising infant health and development.

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Meghan Azad



Dr. Meghan Azad is Assistant Professor of Paediatrics and Child Health at the University of Manitoba, Canada. She serves on the Breastfeeding Committee of Canada and is an Executive Councillor for the International Society for Research in Human Milk and Lactation. Dr. Azad co-leads the Manitoba site of the Canadian Healthy Infant Longitudinal Development (CHILD) Study, a national pregnancy cohort following 3500 children to understand how early life experiences and gene-environment interactions shape lifelong health (www.childstudy.ca). She co-leads the Population Health Pillar for the Manitoba Developmental Origins of Chronic Disease Network (DEVOTION), and the Maternal, Fetal and Child Health Working Group for the new Canadian Urban Environmental Health Research Consortium (CANUE). She also leads collaborative projects examining perceptions of breastfeeding on social media and developing school-based educational methods to improve societal support for breastfeeding.

With dual expertise in basic science (biochemistry and genetics) and clinical research (epidemiology and paediatrics), Dr. Azad is especially concerned with translational (interdisciplinary) research on the developmental origins of chronic disease. In fact, for her study on breastfeeding and the infant gut microbiome, she received the Canadian Medical Association Journal Bruce Squires Award for research «most likely to impact clinical practice». Dr. Azad's research is supported by the Canadian Institutes of Health Research (CIHR), the Canadian Lung Association, and the Heart and Stroke Foundation of Canada. She holds a Tier 2 Canada Research Chair in the Developmental Origins of Chronic Disease, and is a recipient of the Canadian Institutes of Health Research (CIHR) Banting Fellowship, the CIHR Lindau Prize, the Parker B. Francis Fellowship in Pulmonary Research, and the American Society for Nutrition Knowledge Translation Award.

At the symposium, Dr. Azad will present her most recent study on maternal nutrition, breastfeeding, and breast milk composition in the development and prevention of childhood obesity, asthma and allergic disease.

How much does tongue-tie affect breastfeeding?

Assoc. Prof. Donna Geddes
Chief Investigator
Hartmann Human Lactation Research Group
University of Western Australia



All Tied Up: What does the evidence say about tongue tie?

Associate Prof Donna Geddes

Faculty of Science, The University of Western Australia,
Crawley, Western Australia

“The treatment of tongue tie is controversial” is probably the understatement of the year! The intense focus of tongue-tie as a contributor to breastfeeding problems is reflected in the drastic increase in diagnoses and treatment. This trend is mirrored by the exponential rise in the number of published articles on tongue-tie in the past 5 years. Unfortunately, two thirds of these publications are considered low impact, in that they are reviews, editorials and opinions.¹ This somewhat reflects the conundrum of the clinician where few strong research studies have been carried out that can be translated into practice.

Whilst some randomised controlled trials (RCT) have been carried out they suffer numerous issues such as ethical considerations resulting control groups being offered or requesting frenotomy, making them less robust according to scientific requirements.² It is also widely acknowledged that it is difficult to accurately and reliably measure, grade or assess the functional impact of tongue-tie in breastfeeding infants making the interpretation of the RCTs difficult. Indeed, our initial study of the effectiveness of frenotomy in tongue-tied babies, nearly all babies would be classified as having an anterior or classical tongue-tie.³ Both prospective and retrospective audits have great value in monitoring practice however we must recognise they are biased to the clinician’s skill and expertise in diagnosis and treatment, so unfortunately do not represent clinical practice in the whole population.

Breastfeeding is a complex relationship that is influenced by both maternal and infant physiology and behaviour. At the University of Western Australia, in our research programme, we endeavour to measure as many aspects of these areas as possible.³ For example, we measure breastfeeding behaviour and milk production with 24-hour test weighing⁴ in the mother’s home. This allows us to determine if the mother already suffers low production and whether the infant is effective or efficient at removing milk from the breast. We also incorporate validated pain scores,⁵ breastfeeding self-efficacy and extensive demographic questionnaires into the assessment to objectively measure outcomes.

During monitoring at the lab we measure sucking pressure and use real time ultrasound simultaneously⁶ to image movement of the tongue. Most recently we have embarked upon a study that also measures the tongue-tied infant’s suck-swallow-breathe patterns pre- and post-frenotomy, which is then compared, to a prospective control group. Using a multifaceted research approach, we are endeavouring to unravel the complexity of the tongue-tie and determine the impact on breastfeeding.

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Donna Geddes



Donna Geddes, DMU, PostGrad Dip (Sci), PhD, is Associate Professor in the School of Molecular Sciences at the University of Western Australia. She is Senior Research Fellow, directing one of the most prestigious human lactation research groups in the world, founded by Emeritus Professor Peter Hartmann.

Assoc Prof Geddes is internationally renowned for her novel work with ultrasound imaging, which has revolutionized our understanding of: the anatomy of the lactating breast; milk ejection and blood flow in the breast; infant sucking technique; infant suck-swallow-breathe co-ordination; infant gastric emptying; and the body composition of both the term and preterm infant. Her current research also delves into the composition of human milk and its impact on the growth and body composition of breastfed infants, the investigation of human milk metabolites, and the effect of storage conditions on milk. She has published 98

peer-reviewed papers and 11 book chapters and is currently supervising four Post-Doctoral Fellows, five PhD students and two Masters Students.

Donna has received several awards, including the Healthy Children Faculty Award (2007), the Early Career Research award from the International Society for Research in Human Milk and Lactation (2008) and the Certificate of Distinction for Innovative Research from the Raine Medical Research Foundation, Perth (2008) in recognition of her contribution to scientific research. She is a member of the Editorial Board for Breastfeeding Review and Secretary for the International Society for Research in Human Milk and Lactation.

Mother's own milk is the right milk for preterm infants; improving breastfeeding support for mothers of preterm infants

Prof. Jean-Charles Picaud
 Professor of Pediatrics
 Head, Neonatal Intensive Care Unit
 Croix Rousse University Hospital, Lyon

Nutrient (U/L)	Preterm transitional 6–10 days	Preterm mature 22–30 days	Preterm mature 150 mL/kg/d	Term mature ≥ 30 days	Term mature 150 mL/kg/d	ESPGHAN 2010
Energy, kcal	660 ± 60	690 ± 50	104 kcal/kg	640 ± 80	96 kcal/kg	110–135
Total protein, g	19 ± 0.5	15 ± 1	2.3 g/kg	12 ± 1.5	1.8 g/kg	< 1 kg 4.0–4.5 1–1.8 kg 3.5–4.0
Fat, g	34 ± 6	36 ± 4	47%	34 ± 4	48%	
CHO, g	63 ± 5	67 ± 4	39%	67 ± 5	42%	
Calcium, mmol	8.0 ± 1.8	7.2 ± 1.3	1.1 mmol/kg	6.5 ± 1.5	1.0 mmol/kg	3.0–3.5
Phosphorous, mmol	4.9 ± 1.4	3.0 ± 0.8	0.5 mmol/kg	4.8 ± 0.8	0.7 mmol/kg	1.9–2.9
Sodium, mmol	11.6 ± 6.0	8.8 ± 2.0	1.3 mmol/kg	9.0 ± 4.1	1.4 mmol/kg	3.0–5.0

Source: Schanler, Atkinson in Tsang

Evidence supporting the use of human milk in neonatal units

Prof Jean-Charles Picaud,
Neonatal Intensive Care Unit, Hopital Croix Rousse
Lyon, France

Breastfeeding/human milk (HM) has specific health benefits in preterm infants. Prematurity is associated with specific complications and breastfeeding/HM can help to reduce neonatal and long term morbidity in these patients.^{1,2} Human milk can be mother's own milk (MOM) or donor human milk (DHM) when MOM is not available.³ Preterm infants consume significant amounts of HM during hospitalisation. We calculated that the median consumption of HM (MOM or DHM) in preterm infants born below 32 weeks gestational age was 18 L. Feeding very immature patients with HM raises the questions of 1) Providing them with enough HM, 2) Nutritional and microbiological safety.

Efficient strategies to support breastfeeding in mothers who delivered before term are well-known, but not always well-applied. Indeed, it requires appropriate training of professionals, so that they can reach a high level of knowledge on this topic. The training should concern professionals not only in Neonatology but also in Maternity. Organisation, structure and professionals should support early and frequent pumping. In Neonatology, we observed that an e-learning based on the Preterm Infant Breastfeeding Assessment Scale,⁴ was able to support quasi-simultaneous training of more than 1000 professionals. It should be included in global care individualised and centred on the family. This new standard of care includes skin-to-skin contact and kangaroo mother care, which has been shown to favour breastfeeding. It also consists of protecting oral feeding performance by avoiding dysstimulations of oral sphere, early oral stimulation and non-nutritive suckling.

As good postnatal growth has been associated with reduced risk of retinopathy of prematurity and better cognitive development, HM should provide enough nutrients to support growth. Therefore, it requires an appropriate fortification during hospitalisation. Although there is no consensus, it seems that adjustable fortification based on regular assessment of weight gain and serum urea is able to reach this objective. It takes in account the nutrient content of HM and the way each infant uses available nutrients. Presently, it is well-known that the composition of HM varies widely according to gestational age at delivery, lactation stage, etc. Protein content is significantly higher in HM from mothers who delivered preterm when compared to those who delivered at term. Therefore, it is crucial to support breastfeeding in mothers who delivered preterm so that they are able to cover the needs of their own infant.

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Jean-Charles Picaud



Jean-Charles Picaud is full Professor of Pediatrics, since 2001. Trained at the School of Medicine in Lyon, France (Claude Bernard University Lyon 1), he served as Head of Department of the Neonatal and Pediatric Intensive Care Unit in Montpellier, France until 2008. Since then, he has been Head of Department of the Neonatal Intensive Care Unit at Croix Rousse University Hospital in Lyon, France.

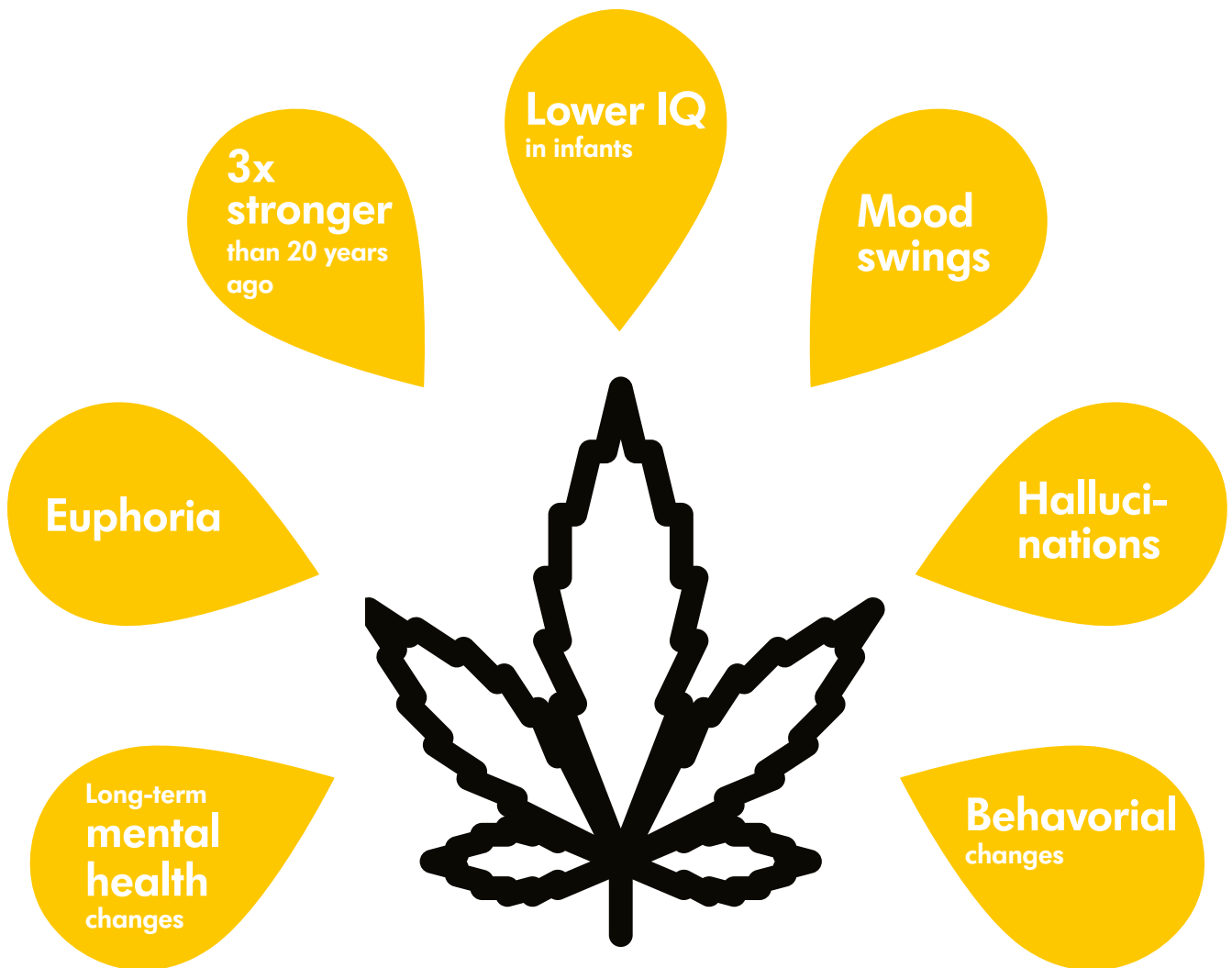
Prof. Picaud's clinical research focuses on the field of neonatal and infant Nutrition, particularly optimization of parenteral and enteral nutrition for very premature infants. His research has included: validation of dual-energy x-ray absorptiometry (measuring bone mineral density) in neonates; evaluation of nutrient utilization and nutrient balancing; evolution of gut flora in extremely premature infants and effects of probiotic supplementation. He has published studies on the nutrition of full-term neonates and infants.

Most notable was his study of the impact of low-protein intake on the increased risk of infant obesity.

Human milk for preterm infants is a major focus of Prof. Picaud's research: specifically, measurement of human milk composition, optimization of its fortification, and the best ways to pasteurize it, in order to preserve its quality. He is the President of European Milk Bank Association (EMBA) and French Human Milk Bank Association (ADLF). He is also a member of the council of the French Neonatal Society, working on the Committee on Nutrition.

How much THC does the infant drink in breast milk?

Prof. Thomas Hale
Professor of Paediatrics
Texas Tech University School of Medicine
Founder, Executive Director, Infant Risk Centre



Pharmacology of marijuana and its transfer into human milk

Prof Thomas W. Hale

Texas Tech University School of Medicine
Amarillo, Texas, USA

The transfer of various components from marijuana into human milk have been poorly reported in the past, leaving us with limited knowledge to advise mothers as to the risk to their infant from ingesting marijuana products. Recent changes in the active content in marijuana have shown a massive increase in the content of Delta-9-THC from 3% 20 years ago to 23% today. New pharmacokinetic studies are required to determine what the actual risks of exposure to marijuana may be. This lecture will describe in some detail the types of exposure (oral, inhaled, and transcutaneous), the relative bioavailability of THC in various exposures, the active and inactive metabolites following marijuana exposure, the metabolism, and rates of excretion of Delta-9-THC.

This lecture will also include new data on the dose of Delta-9-THC found in human milk following a carefully designed study in breastfeeding mothers consuming marijuana. This lecture will compare the phytocannabinoid Cannabis Sativa to the endocannabinoid system naturally found in humans and describe some new evidence from our laboratories on the endocannabinoids present in human milk.

Thomas Hale

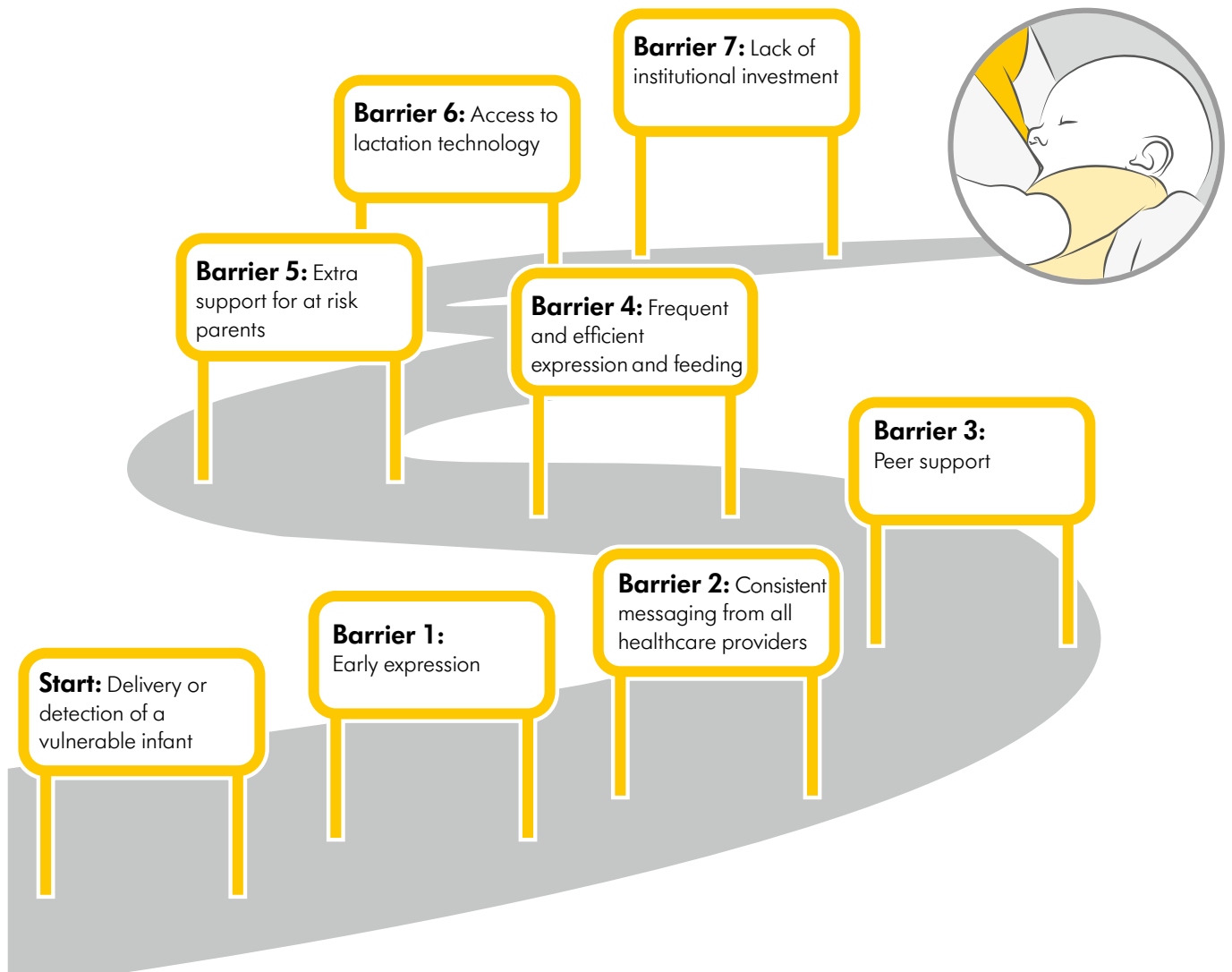


Thomas Hale is Professor of Paediatrics and Assistant Dean of Research at Texas Tech University School of Medicine. He is also founder and Executive Director of the Infant Risk Centre, a national research and call centre advising pregnant and breastfeeding mothers on medication safety. He holds a Ph.D. in Pharmacology and Toxicology and is widely experienced in Paediatric and Breastfeeding Clinical Pharmacology.

A renowned expert in the field of perinatal pharmacology, Dr. Hale lectures extensively around the world on the pharmacology of lactation. He has authored several books, including the world's best-selling drug reference manual: Medications and Mothers' Milk. His other books include Textbook of Human Lactation; Clinical Therapy in Breastfeeding Women; and Drug Therapy and Breastfeeding.

Using Evidence to Design, Implement and Evaluate a NICU Lactation Program: The Rush Mothers' Milk Club as Exemplar

Prof. Paula Meier
Professor of Pediatrics
Director of Lactation Services, NICURush University Medical Center



Using evidence to design, implement and evaluate a NICU lactation programme: The Rush Mothers' Milk Club as exemplar

Prof Paula P. Meier

Rush University Medical Center
Chicago, IL, USA

An abundance of evidence supports the feeding of high-dose, long-exposure mothers' own milk (MOM, excludes donor human milk) for premature and immunologically compromised infants that are cared for in the neonatal intensive care unit (NICU).¹⁻⁵ However, less well-known is how to translate this evidence into actionable policies and procedures that inform NICU best practices so that infants and mothers benefit from this evidence. The Rush Mothers' Milk Club, an evidence-based lactation/MOM feeding program in the 72-bed, level III NICU at Rush University in Chicago, was established in 1996 with a baseline lactation initiation rate of 17% of infants' mothers.⁶ This presentation chronicles the integration of evidence, interventions and translational research (study and evaluation of interventions) that resulted in the current 98% lactation initiation rate and citations of excellence from multiple governmental and philanthropic organizations.⁷ Special emphasis throughout will be on the use of a framework that identifies barriers to integration of evidence and then designing translational research and/or quality improvement initiatives to modify these barriers.

Included in this presentation will be examining barriers to:

- 1) the initiation of lactation in NICU mothers, including physician messaging;^{8,9}
- 2) mothers' receiving consistent evidence-based information from all NICU care providers;^{6,10-14}
- 3) NICU-specific peer support for MOM provision;¹⁵⁻¹⁸
- 4) effective, efficient, comfortable and convenient MOM expression and provision;¹⁹⁻²⁴
- 5) achieving comparable lactation outcomes in primarily African American mothers who are 4 times more likely than Caucasian mothers to deliver very low birthweight (VLBW; <1500 g birthweight) infants but less likely to initiate and maintain lactation;^{14,25-27}
- 6) high-dose, long-exposure MOM feedings that are modifiable with lactation technologies such as test-weighing, creamatocrit and nipple shields;²⁸⁻³⁴
- 7) mothers' receiving institutional support for lactation due to lack of economic investment in a MOM acquisition infrastructure in the NICU.^{1-5,35-38}

This information will be applicable to global initiatives focused on improving the use of MOM in the NICU population.

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Paula Meier



Paula Meier, PhD, RN, is Professor of Pediatrics and Nursing, and Director of NICU Lactation Services in the Neonatal Intensive Care Unit (NICU) at Rush University Medical Center. Since 1975, she has worked as a practitioner, researcher and educator in the field of human milk, lactation and breastfeeding for premature infants and their mothers. She is former President of the International Society for Research in Human Milk and Lactation, and is an active member of the Health Advisory Council for La Leche League, International. The recipient of multiple Distinguished Alumna Awards from the University of Illinois and Rush University, in 2013, she received the Audrey Hepburn Award for Contributions to the Health and Welfare of Children from Sigma Theta Tau, International. She has published over 150 peer-reviewed manuscripts and parent educational materials, and has mentored graduate students from a multitude of disciplines.

Dr. Meier's lifetime research focus has been concentrated in understanding and improving the initiation and maintenance of lactation in breast pump-dependent mothers of NICU infants. She has also focused on developing clinical techniques which optimize the impact of human milk on health and cost outcomes for NICU infants. She currently leads the multidisciplinary Rush University NICU Human Milk Research Team, whose numerous externally-funded translational research and demonstration projects aim to remove barriers to high-dose, long-exposure feeding of mothers' own milk to NICU infants.

At the symposium, Prof. Meier will offer new evidence on the powerful, medicinal effect of mother's own milk feedings on infants in the NICU.

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