



Emeritus Professor Peter Edwin Hartmann AM, 1941-2021

Scientist; Innovator; Mentor. Peter Edwin Hartmann was one of the world's leading research experts in human milk and lactation. With a career spanning over 50 years, Peter Hartmann's legacy is immense and his reach and influence will continue to be felt for many years to come.

Peter was born and raised in rural New South Wales, Australia, where he began his education journey in a small, country, single-teacher primary school. Progressing through to secondary school and then university, a gifted student, he won a postgraduate scholarship to undertake his PhD studies at the prestigious Sydney University from 1963-66. At Sydney he would study in the W.G Whittlestone research unit under the supervision of Alick Lascelles, two names that would be familiar to most lactation scientists and an indication as to the level of research and academic rigor that Peter was introduced to and that he, himself, would become synonymous with.

The PhD studies with Lascelles and Whittlestone provided Peter with a strong foundation in mammary gland function, in particular in relation to fat synthesis in the cow. This groundwork led to postdoctoral positions in John Folley's laboratory at Reading, in the UK, where he worked closely with Alfred Cowie, again two names of pioneering lactation scientists. Following this work he moved to the USA to undertake research at the University of Pennsylvania, working with David Kronfeld, where he further honed his research skills. Upon the completion of these international postdoctoral positions, Peter returned to the University of Sydney in 1968 and continued his research on mammary gland function and milk synthesis. In particular, focusing on the early stages of lactation and metabolic steps required for the successful initiation of lactation in sheep.

This academic groundwork in mammary gland function of dairy animals proved invaluable when in 1972 he would take a position at The University of Western Australia (UWA) and turn his attention and considerable skills towards investigating breastfeeding and human lactation. Indeed, Peter would always recount how incredulous some other researchers were with his decision, wondering why he would choose to work with such unusual women. Fortunately for the human lactation research community Peter would make human lactation his research passion for the remainder of his career, almost 50 years.

As Peter's research at UWA progressed through the 70s and 80s he made more and more advances in our understanding of the metabolic function of the mammary gland. In particular, understanding the metabolic cascades driving lactogenesis I and II and the synthesis and secretion of the macronutrients in

human milk. Peter's research would always employ the latest, cutting edge equipment and techniques, from developing sensitive bioluminometric assays to an innovative 3D structured light measurement technique to measure short term changes in breast volume. This innovation streak and an ability to bring seemingly disparate methods and techniques together would become a hallmark of Peter's research style and an attribute that would set him apart from many others.

Peter's findings on the triggers of lactogenesis II and the role of milk removal and short term rates of milk synthesis have helped our understanding of both the initiation of lactation as well as the maintenance of milk production in women. Indeed, this research was also noticed on the other side of the world by those at Medela AG, a Swiss based company most well known for the manufacture of breast pumps and other products used to support breastfeeding mothers and their babies. From Medela, Michael Larsson, the future Chairman of the Board, visited Peter and his research team at UWA in the mid-1990s and an immediate connection was made. Michael and Medela were keen to understand more about milk synthesis and removal and Peter, being the constant innovator was keen to pursue a new direction.

The relationship with Medela and the research conducted in collaboration would become defining for both. For Peter it led to ground breaking research that revised mammary gland anatomy, as well as uncovering stem cell-like cells in human milk. In addition, there were advances in the understanding both milk removal from the breast and infant sucking. Importantly, these findings also fueled strong collaborations with clinicians and physicians, especially those working in the neonatal intensive care unit, where it helped to support the increased usage of human milk for the vulnerable infant. Tellingly, the collaboration with Medela generated over 200 publications, covering peer reviewed original research and review articles as well as book chapters, spanning a wide range of themes from mammary gland anatomy to milk composition to clinical support of breastfeeding. In addition, the contribution of this literature to the broader lactation research community was substantial and has established the UWA as one of the recognized centers for human milk and lactation research in the world. For Medela, Peter's influence has been significant and has led to the development of 2-Phase Technology, a platform technology that runs throughout the entire Medela breast pump range as well as the development of a novel infant feeding device.

Peter, over the course of his distinguished career has held many academic positions, from Head of the Department of Biochemistry to Dean of the Faculty of Science at UWA, in addition there was also his tireless work for numerous academic societies, from President of the Nutrition Society of Australia (1993-1996) and President of the International Society for Research in Human Milk and Lactation (ISRHML; 2010-12). In addition, Peter has been bestowed many awards and distinctions, most notable being the Macy-Gyorgy Award 2006 (ISRHML), the Rank Prize for Nutrition, 2010. In 2012 he was made a Member of the Order of Australia.

Perhaps, however, Peter's greatest achievement and his most long lasting legacy will be his passion for teaching and mentorship. Peter graduated over 60 PhD students as well as countless Masters and Honours students. This far exceeds the mean number of supervised students for the average academic career and shows how important it was for Peter to teach and mentor the next generation of scientist. Peter's ability to achieve this feat comes down to three key attributes: care; passion and integrity. He cared for his students, their welfare and their success. He was passionate about the research and this was infectious. He lived by his values and culture and he taught those under his supervision to do likewise.

From humble origins in rural Australia, Peter Hartmann has left an indelible mark, both academically in the field of human milk and lactation science and for millions of mothers and babies via the translation of his research into product. His reach and influence continues with those who studied under his guidance and with those he collaborated with. He will be missed.