Stem Cells in Breastmilk – theory becomes reality

The theory developed in 2007 by scientists at the University of Western Australia (UWA) that breastmilk contains stem cells has been taken to a higher level with the latest discovery by one of the team’s newer members: UWA PhD student Foteini Hassiotou has proven that stem cells from breastmilk can now be directed to become other body cell types such as bone, fat, liver and brain cells. Could this finally be the answer to ethically and easily obtaining pluripotent stem cells in a non-invasive manner? And what does this mean with regard to the unique power of breastmilk for the growth and development of babies?

Following her recent win of the 2011 AusBiotech-GSK Student Excellence Award for her research into breastmilk stem cells (17th October 2011), Medela is proud to announce Dr Hassiotou’s first presentation of her findings of stem cells in breastmilk in Europe early next year. She will share her findings during Medela’s 7th International Breastfeeding and Lactation Symposium to be held in Vienna Austria on 20-21 April 2012.

This discovery by Hassiotou, who is part of the Human Lactation Research Group under the direction of Professor Peter Hartmann at the University of Western Australia, may well be the answer to ethically and easily obtaining stem cells in a non-invasive manner. The value in harvesting stem cells from breastmilk lies in their incredible potential to develop into many different cell types in the body during early life and growth. They have the ability to act as a type of ‘internal repair system.’ With both types of stem cells (embryonic and adult), however, well documented hurdles exist both from an ethical as well as from a practical harvesting perspective.

Medela has been working with the Hartmann Human Lactation Research Group since the mid-1990’s resulting in numerous scientific breakthroughs including overturning a 160-year old anatomical model of the lactating human breast, and a unique insight into the sucking, swallowing and breathing mechanism that babies must master to feed properly. The Group has been working on the subject of stem cells for over five years.

Speaking after receiving her award, Hassiotou said: “It is great to see the biology of breastmilk stem cells unfold and to be able to demonstrate new findings that take our knowledge a step further. Through the financial support of Medela it has been possible for me to conduct this research, which shows for yet another reason why breastmilk is so much more than nutrition for the baby. In addition, it is becoming clear that breastmilk can serve as an ethical, non-invasive and plentiful source for human stem cells - but a lot of questions still remain unanswered, especially about the function of these cells in the breastfed baby. I feel proud to be part of this exciting journey of discovery, and I plan to continue this research at The University of Western Australia.”

Medela is committed to supporting research into the unique composition and value of human milk. Renate Schreiber, CEO of Medela said, “We are proud that Medela can support scientists in their work to uncover the power and promise of human milk. The existence of stem cells in human milk is very exciting and we are curious to better understand the contribution that these cells can make to the health of the baby.”

Medela’s 7th International Breastfeeding and Lactation Symposium to be held in Vienna Austria (20-21 April 2012) will focus on the unique components of human milk, the value of
human milk in NICU, as well as latest recommendations for research based practice. Hassiotou will be joined by several international experts who will share their latest findings on a number of related topics including the presence of oligosaccharides in human milk, the value of donor milk in NICU, medication in mother’s milk etc. This annual event is attended by paediatricians, neonatologists, midwives and lactation consultants, all of whom have a special interest in learning more about breastmilk composition.

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Information for the Media

About Medela

Medela provides the most technologically advanced, superior-quality breastpumps and breastfeeding accessories to nursing mothers around the world. A longtime champion of breastfeeding, Medela is the only company to develop products based on research by the world's leading lactation experts. As a result, Medela's breastpumps are the number one choice of healthcare professionals and healthcare facilities worldwide.

Medela has developed an extensive line of products to meet the diverse needs of nursing mothers. These products include hospital-grade, double and single electric and manual breastpumps; breastfeeding accessories such as pump cleaning products, breast care products and specialty feeding devices; and maternity and nursing intimate apparel.

Founded in 1961 by Olle Larsson in Zug, Switzerland, Medela continues to grow under the ownership of the Larsson family. Medela serves customers through a worldwide network of distribution partners in more than 90 countries and its 15 subsidiaries in Australia, Benelux (Belgium and the Netherlands), Canada, China, France, Germany (Austria), Italy, Japan, Poland, Russia, Spain (Portugal), Sweden (Norway and Denmark), Switzerland, the United Kingdom and the United States.

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About Dr Foteini Hassiotou

Foteini Hassiotou graduated from the Aristotle University of Greece in 2005 with a B.Sc. in Biology and First Class Honours in Microbiology and Physiology. She started a PhD in Physiology at the University of Western Australia, which she completed in 2009. She then joined the Hartmann Human Lactation Research Group of the University of Western Australia conducting research into the physiology of breastfeeding and breastmilk stem cells. Foteini’s research has a dual focus, concentrating on (a) the properties of the maternal stem cells that are present in breastmilk and their biological role, and (b) mammary stem cells in health and disease. She aims at understanding the role of these cells for the breastfed infant and in the lactating breast, as well as using them as models in breast cancer research to elucidate how these cells are subjected to malignant transformation that leads to cancer.

About the Hartmann Human Lactation Research Group, University of Western Australia

The Hartmann Human Lactation Research Group which is led by Professor Peter Hartmann who is the pre-eminent breastfeeding researcher active today aims to gain a greater understanding of the synthesis and secretion of breastmilk as well as the mechanisms for removing milk from the breast by either a suckling infant or by expressing it with an electric breast pump. Understanding these mechanisms will facilitate more successful breastfeeding and the clinical management of human lactation.

About the GSK Excellence Awards

This is an Australian National award from Glaxo Smith Kline to encourage bio-science student researchers to present outstanding findings. A key challenge for the biosciences sector is to keep its best research graduates in science and in Australia. The national student awards recognise and encourage promising research students and raise awareness of biosciences research translation and applications. The national prize of the AusBiotech—GSK Student Excellence Awards, was presented in the morning of October 17th at the official opening of AusBiotech 2011 by Dr Camilla Chong, Medical Director of GlaxoSmithKline (GSK) Australia.

The winner of the prize, Foteini Hassiotou of the University of Western Australia, was the recipient of research into breastmilk stem cells and potential use in novel stem cell therapies - a promising and rapidly developing field which forms the foundation of numerous treatments and new hope for curing previously fatal diseases.

About Medela’s 7th international Breastfeeding and Lactation Symposium, Vienna:

Medela’s 7th International Breastfeeding and Lactation Symposium will be held on the 20th and 21st of April 2012 in Vienna Austria. Renowned speakers from all over the world - including also Dr. Foteini Hassiotou - will present findings related to NICU, value of human milk and latest recommendations for research based practice.

A specific media programme is being developed in parallel to the Symposium giving media the opportunity to meet and exchange views and information with international researchers.

For further information please visit www.medela.com/congresses