Recipient of the IETS 2026 Pioneer Award

Professor Poul Hyttel

Poul Hyttel, DVM, PhD, DVSc, Dhc, R1, was born September 19, 1954, in Noerresundby, Denmark, to Inger and Bent Lis Hyttel. After the birth of his sister, Lene Hyttel, in September 1957, the family moved to Skagen, Denmark, the northernmost town of Jutland, the mainland of Denmark. Situated on a peninsula where the waters from the seas of Skagerak and Kattegat meet, Skagen is world renowned, especially by artists, for its magical evening light and beautiful scenery. Growing up in this remote coastal idyll, Hyttel developed an early fascination with animals, particularly wildlife, which endures today.

He began his scientific career in 1973 at the Royal Veterinary and Agricultural University (RVAU) in Copenhagen, Denmark, where he earned his doctor of veterinary medicine degree in 1979, and first developed his interest in embryology and reproduction. This was swiftly followed by a PhD in 1982, for which his thesis was entitled "Repeat Breeding and Early Embryology in Cattle," under the supervision of Professor Torben Greve, the 2011 recipient of the IETS Distinguished Service Award. During his PhD studies, Hyttel developed his electron microscopy skills and passion for ultrastructural analysis and ultra-fine morphological detail, which he initially applied to bovine blastocysts. This was followed by his ground-breaking ultrastructural analysis of oocyte maturation, fertilization, and embryonic development in cattle for his doctor of veterinary sciences degree in 1988 from RVAU. Two very special arrivals highlighted this time of Hyttel's life: the birth of his adored son, Mads, in 1985, and the birth of the first IVF calf in Europe in 1987, with himself and Henrik Callesen as members of Torben Greve's research team (Greve et al., 1989).

During this period, Hyttel established collaborations with leading international scientists in the field of assisted reproductive technology, extending his studies on gamete development, fertilization, and embryogenesis to many species, including horses, pigs, sheep, foxes, mice, tigers, and humans. Hyttel was one of the first scientists to describe the ultrastructural features of matured bovine oocytes following superovulation (Hyttel et al., 1986a), and in vitro maturation (Hyttel et al., 1986b) and the differences between in vivo– and in vitro–derived bovine embryos (Hyttel et al., 1988, 1989).

Hyttel was appointed professor of veterinary anatomy in the Department of Anatomy and Physiology at RVAU in 1990. Together with his lifelong friend and mentor, Torben Greve, the Reproduction Group at RVAU was established as an exciting hub for excellent research. Hyttel and Greve created a wonderful atmosphere where scientists from around the world came for long or short sabbaticals, and where basic and applied research on cattle, pigs, and horses was undertaken simultaneously. Leading by example, a strong collaborative ethos, and great fun were at the centre of the Reproduction Group. All students were supported to participate at international conferences, where they were introduced to renowned scientists and encouraged to participate in scientific discussions and debate. This environment, together with Hyttel's infectious curiosity and attention to detail, inspired many young researchers to continue working in the field of reproductive biology. It was also the starting point of many enduring friendships.

Hyttel remained professor of anatomy in the Department of Veterinary and Animal Sciences in the retitled Faculty of Health and Medical Sciences within the University of Copenhagen until his retirement in 2022. During his career, Hyttel secured more than €18 million in funding from the European Union, National Institutes of Health, and Danish Funding Instruments for research projects. His scientific remit has kept pace with the evolving funding landscape and rapidly developing omic technologies, expanding to include the fields of biomedicine, animal and human stem cells, and early embryonic development. In 2015, Hyttel founded the transnational Stem Cell Centre of Excellence in Neurology, BrainStem, supported by Innovation Fund Denmark. His contributions to the field of stem cell research are notable for their applications in both human disease modelling and veterinary medicine. Hyttel led several projects focused on the use of induced pluripotent stem cells (iPSCs) to model human diseases such as Parkinson's disease and Alzheimer's disease. By generating patient-specific cell lines from iPSCs, Hyttel and his team were able to study the pathology and progression of these diseases in vitro, leading to insights into early disease mechanisms and potential new drug targets (Okarmus et al., 2021; Stoklund Dittlau et al., 2023).

Hyttel's work in stem cell research also extended to veterinary applications, where he explored the use of canine and porcine models for studying diseases similar to those seen in humans. His studies on canine cognitive dysfunction syndrome, a condition that mirrors Alzheimer's disease in dogs, provided insights into how neurodegeneration can be modeled in nonhuman species. The use of porcine stem cells for regenerative therapies also brought Hyttel closer to applying stem cell technologies for tissue repair and regenerative medicine in veterinary practice.

Hyttel's early work on embryonic development in livestock, especially in cattle, brought him back to bovine embryology and to cofounding the EliteOva project in 2017, which he led until retirement. The EliteOva project, a landmark initiative supported by Innovation Fund Denmark, sought to optimize IVF technologies and incorporate genomics into the process of embryo production for elite cattle breeding. After three years of retirement, Hyttel has gradually returned to science; he has taken on a part-time role as a scientific advisor for Stroebech Media and ArtsMedia, where he contributes to staff training, conference exhibitions, and scientific input. This year, he also resumed teaching anatomy at the newly established veterinary university in Foulum, Denmark.

Throughout his career, Hyttel has made significant strides in genomic selection, embryo development, and disease modeling. He has been instrumental in merging the fields of genomics, embryology, and stem cell research, advancing both animal breeding and human health. Hyttel has always emphasized the importance of collaboration, and many of his most successful projects have involved partnerships with scientists from across the world. His sharp intellect, encyclopedic memory, infectious curiosity, and warm personality have enabled him to integrate different disciplines, ranging from embryology and genetics to stem cell biology and disease research, and more.

Hyttel's influence extended through teaching, mentorship, and leadership in scientific societies. He has held notable leadership positions, including president of IETS from 1997 to 1998, and served as a founding diplomate of the European College of Animal Reproduction. Hyttel has chaired and contributed to numerous scientific conferences, seminars, and summer schools, and played a key role in the European Union Horizon 2020 Twinning project, SEARMET (Scientific Excellence in Animal Reproductive Medicine and Embryo Technology). He is a prolific author, having published more than 280 refereed international articles; according to Google Scholar, his h-index is 69, based on nearly 16,000 citations. More than 40 PhD students and postdoctoral fellows have had the good fortune to be supervised by Hyttel. He was honored with Doctor Honoris Causa from the University of Antwerp (Antwerp, Belgium) in 2011, and the Estonian University of Life Sciences (Tartu, Estonia) recognized his contributions to veterinary and embryological sciences across Europe in 2018. In 2015, he was knighted first class, Order of Dannebrog, for his scientific and academic service to Denmark.

In the 1870s, Skagen became a renowned artists' colony; many of us who have worked with Hyttel will have had our theses and research papers enhanced by his wonderful drawings of oocyte and embryo development. His enduring curiosity, creativity, and passion for research have established a legacy of scientific revelations, making him a true pioneer in the fields of reproductive biotechnology and genomic research.

Hyttel is married to Inge, and they live in the coastal village of Hundested in the north of Sjaelland, Denmark. They have five wonderful grandchildren and are eagerly awaiting the arrival of their sixth. Lately, in addition to painting beautiful landscapes of Skagen and Hundested, Hyttel has revisited his library of electron micrographs and started to recolor them, ensuring their appeal for generations to come.

Tillykke Poul, en værdig modtager af IETS Pioneer Award 2026.

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