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CURRICULUM VITAE PAPER

# Docent Birgitta Essen-Gustavsson

*S.J. Valberg*[1], *W. Bayly*[2], *A. Jansson*[3] *and K.H. McKeever*[4]*

[1]McPhail Equine Performance Center, College of Veterinary Medicine, Michigan State University, East Lansing, MI 48824, USA; [2]Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Washington State University, Pullman, WA 99164, USA; [3]Department of Anatomy, Physiology and Biochemistry (AFB), Faculty of Veterinary Medicine and Animal Sciences, Swedish University of Agricultural Sciences, Uppsala, Sweden; [4]Equine Science Center, Department of Animal Science, Rutgers, the State University of New Jersey, 84 Lipman Drive, New Brunswick, NJ 08901, USA;
*mckeever@sebs.rutgers.edu

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Birgitta Essen-Gustavsson, a renowned expert in exercise physiology, fittingly provided a state-of-the-art lecture on equine skeletal muscle at the 2022 International Conference on Equine Exercise Physiology (ICEEP) in Uppsala, Sweden. Her excellent presentation to a new generation of exercise physiologists was befitting a pioneer of the first ICEEP meeting in Cambridge, England in 1982. Essen-Gustavsson served as an editor for the Proceedings of ICEEP7 (Equine Veterinary Journal Supplement 36, 2006) and her trainees have been prolific contributors to ICEEP meetings since its inception. After a productive 38-year career Birgitta Essen Gustavsson has now retired from her faculty position at the Department of Clinical Sciences, Faculty of Veterinary Medicine and Animal Sciences, Swedish University of Agricultural Sciences.

Birgitta's career began in 1964 when she was offered an opportunity to travel abroad and work as a laboratory technician at Harvard University in Cambridge, Massachusetts. After a year, Birgitta moved to a laboratory at the University of California in San Francisco. She returned to Sweden in 1966 to continue her studies at Stockholm University and simultaneously work as a laboratory assistant for Bengt Saltin, a world-renowned expert in human exercise physiology. Saltin soon saw that Birgitta was meant for bigger things. After Birgitta completed her BSc, Saltin supervised her PhD which she obtained from the famous Karolinska Institute in 1978. Early in these studies she also interacted closely with Philip Gollnick, who was already one of the world's leaders in the exercise physiology of muscle and was on sabbatical leave at the Karolinska, and they and Bengt wrote several papers together. Birgitta's thesis, entitled 'Studies in the regulation of metabolism in skeletal muscle using intermittent exercise as an experimental model', focused on her lifelong interest in understanding the contribution of individual skeletal muscle fibres to the metabolic response to exercise of various types and duration.

Bengt Saltin shared an interest in orienteering with Arne Lindholm, and the two began a collaboration performing muscle biopsies on horses. The pair encouraged Birgitta to apply for a position as research director at the Swedish University of Agricultural Sciences, School of Veterinary Medicine in Uppsala. There, she and Lindholm joined Professor Sune Persson in the Department of Clinical Sciences in a new facility that included a first-of-its-kind high-speed equine treadmill. Essen-Gustavsson's laboratory comprised an entire wing

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within the large animal clinic, providing assays for muscle histochemistry, biochemistry and single fibre analyses. Birgitta's formidable research expertise combined with the skills of Professors Sune Persson and Arne Lindholm soon made Uppsala the Mecca for equine exercise physiology in the 1980's and 90's, and the group drew many visiting scholars over the years. Essen-Gustavsson's endless scientific curiosity and powerful analytical and laboratory skills were the cornerstone of the department's success.

Essen-Gustavsson's research focused on exercise studies in horses, pigs, cattle, reindeer, lab animal species, and humans. Birgitta brought to light the importance of considering muscle fibre type composition in conjunction with biochemical analyses and showed how studies of whole muscle can mask profound metabolic stress and ATP depletion in individual muscle fibres after maximal exercise. Over her career, Essen-Gustavsson was a prolific researcher with over 150 refereed publications and numerous international presentations including at the Biochemistry of Exercise meetings held every three years.

Many graduate students came to work with the trio of Persson, Lindholm and Essen-Gustavsson in Uppsala. It was Birgitta, however, who was the glue that enabled graduate and post-doctoral students to stay and thrive. Her enthusiasm for research was infectious and she invested in her students' well-being and success. Birgitta's joy in a good scientific argument was infectious, and she revelled in her students' discoveries. 'I want to know what is happening in those bloody fibres' was her frequent refrain. She was an expert at helping students understand how their discoveries fit with recent research findings and at challenging them to see where they might lead in the future. Birgitta's door was always open, and she was often the first to read a draft of students' papers and always provided insights on how to improve their paper. Essen-Gustavsson imbued her students with the ability to make concise, clear research presentations by listening to presentations repeatedly until they were just right. It was hard to find anything Birgitta didn't know about skeletal muscle, and at night, there always was, and probably still is, a stack of research articles to read at her bedside table. In all, Essen-Gustavsson supervised 16 graduate students including equine students Stephanie Valberg, Merike Ronéus, Nils Ronéus, Katarina Nostell (nee Schuback), Kristina Karlström, Johan Bröjer, Peter Kallings, Anna Edner and Tobias Revold as well as post-doctoral fellow Joe Pagan. Her PhD students working in other species included Marianne Jensen-Waern, Lena Håglin, Elin Spangenberg, Anna Granlund, Robert Jonasson and Octavia Borges. Birgitta was, and remains, an academic mother to many of us and we proudly returned to Sweden with a new crop of her 'academic grandchildren' to collaborate in research projects.

Birgitta's lab hosted and shared muscle histochemistry and biochemistry analytical methods with many international scholars including Rita Pöso from Finland, David Hodgson and John Thornton from Australia, and Tertius Kohn from South Africa. Throughout her career, Birgitta maintained an active interest in human exercise physiology collaborating with Professor Eva Blomstrand at the Swedish School of Sport and Health Sciences (GIH) in Stockholm and Professor Kathy Myburg at Stellenbosch University in South Africa. Essen-Gustavsson served as an opponent or on the examining board of PhD students at the Karolinska Institute, Uppsala University, Örebro University, Swedish University of Agricultural Sciences, and Helsinki University, Finland.

Birgitta's deep engagement with the Swedish University of Agricultural Sciences led her to leadership positions within her department and at the Veterinary School later in her career. While this may not have been her first choice, her ability to bring people together to focus on the most important issues made her an integral player in University leadership.

In 2010, after a long and productive career, Birgitta retired from academia. She lives with her husband Ralf, in Stockholm, and spends most of her time at her summer house in her beloved Östernäs in the Stockholm archipelago. She enjoys competitive bridge and frequent visits from her son Fredrik. Many of us owe a debt of gratitude to Birgitta for lighting the fire of scientific curiosity and supporting us through all the ups and downs of our careers.

We raise a glass of cheer to Birgitta Essen-Gustavsson and celebrate her long-standing and productive career.

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