

Preface

Physiology is one of the basic subjects of both veterinary and animal science. It covers knowledge of normal body functions at different levels. This includes the function of organ systems, individual organs, and detailed molecular processes of cells. A good understanding of physiology is the foundation for all clinical and para-clinical disciplines. While human physiology deals with only one species, comparative physiology of veterinary and animal science is a comprehensively demanding and challenging discipline.

This textbook is the first English version of the 6th edition (2022) of a German textbook, first published in 2000, by W. v. Engelhardt and G. Breves. Spanish, Polish and Turkish editions have been published in 2004, 2011 and 2019, respectively. Its main objective is to encompass the current state of knowledge of all aspects of physiology. In many chapters, the close relationship with pathophysiology is highlighted by including aspects of disturbed physiological functions. It is intended to offer students of veterinary medicine and related disciplines the opportunity to acquire a good understanding of physiology while at the same time indicating that physiology is not an isolated ba-

sic subject but is an indispensable basis for understanding the clinical disciplines. Thus, this book is not only addressed to veterinary and animal science students but is also intended as an aid in professional training and continued education for veterinarians working in clinics, industry or in the public health sector. In order to facilitate reading and understanding of this textbook, each chapter is introduced with "ESSENTIALS", smaller parts are summarized with "IN A NUTSHELL" and data for further in-depth knowledge is given under "MORE DETAILS". At the end of each chapter, you will find publications under "SUGGESTED READING".

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Vitae



Prof. Dr. med. vet. Gerhard Breves graduated from the University of Veterinary Medicine Hannover, Germany and did his PhD (habilitation) in Physiology and Nutrition Physiology at the Institute of Physiology, Hannover. From 1987 to 1990 he was employed as a research assistant at the Institute of Animal Nutrition, Federal Agricultural Research Station, Braunschweig, Germany.

In 1990 he was appointed as a Professor of Veterinary Physiology at the University of Giessen, Germany and in 1997 as a Professor of Physiology at the University of Veterinary Medicine, Hannover. His main research areas are epithelial transport processes and mechanisms and regulation of gastrointestinal metabolism.



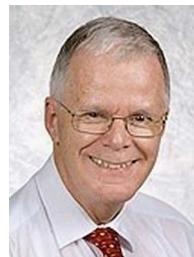
Prof. Dr. med. vet. Gotthold Gäbel studied veterinary medicine in Hannover, Germany. 1989, PhD (habilitation) in physiology at the School of Veterinary Medicine Hannover, Germany. After that, senior assistant at the Institute of Veterinary Physiology at the Free University of Berlin, Germany. Since

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Prof. Dr. med. Martin Diener is professor of physiology at the institute of veterinary physiology and biochemistry of the Justus Liebig University Giessen, Germany. He studied human medicine and obtained his M.D. and PhD (habilitation) in pharmacology and toxicology at the University of Saarland,

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Professor David R. Fraser is Emeritus Professor of Animal Science in the Sydney School of Veterinary Science at the University of Sydney, Australia. He graduated with the Bachelor of Veterinary Science degree from that University and was then a Teaching Fellow in the Department of Biochemistry. He

undertook a PhD at the University of Cambridge in the field of nutritional biochemistry. From 1967 to 1986 he was a scientific staff member of the Medical Research Council, Dunn Nutritional Laboratory, University of Cambridge, UK. He was then appointed as Professor of Animal Science in Veterinary Science at the University of Sydney and was Dean of Veterinary Science from 1994 to 1998. His main research interests are the function and metabolism of vitamin D and the special nutritional requirements of domestic animals.