

*Zum Geleit
Lass die Moleküle rasen,
was sie auch zusammenhobeln
Lass das Tüfteln, lass das Knobeln!
Heilig halte die Ekstasen!
(Christian Morgenstern, *Galgenlieder*)¹*

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Why? Endocrinology is the study of the mechanisms that regulate essential body functions such as reproduction, metabolism, water balance, feeding, and growth. Research in these fields is fascinating and has widened our view of human physiology. New drugs for the control of feeding and food uptake or sexual activity have reached the medical practice but have also resulted in a gray market for substances of doubtful efficiency. E-mail folders choke on pseudomedical spam. Neuropeptide Y, a nerve cell product which is involved in the generation of hunger, has been the focus of some 2,000 articles since the beginning of the millennium.

Since the introduction of molecular biological techniques into biomedical research, many old questions have been answered, and new questions have arisen.

¹Preface
Let the molecules race free,
however much they dash and spring!
Stop your meddling, stop your modeling
save this sacred ecstasy!
(translation by K. Moorwood)

Today, the regulation of a cell is discussed on the level of gene activity and signal transduction from the surface to the nucleus. Endocrinologists have engaged in this new method and have thus acquired many new and sophisticated tools. Without these advances in molecular biological tools, could we have imagined, for example, that variants of the leptin receptor missing the part for signal transduction might still serve as a vehicle for leptin uptake through the blood–brain barrier? In this book, we aim to integrate such new results into an enhanced understanding of endocrinology.

For Whom? If you like science, if you do not regard biology and chemistry as of satanic provenience, if you do not painfully avoid modern genetics, then you are the one for whom we wrote this book. If you are willing to delve into cell biology, the better. Basic knowledge of DNA, RNA, and proteins is very helpful. Any student of biology, medicine, or related areas is a potential reader. Anyone working in this field might consult this book for reference.

About What? After briefly looking into the history of hormones, we will dive into the basics of endocrinology: hormones and their receptors, not only from *Homo sapiens* and its close relatives, but also from invertebrate species such as flies and crayfish. Later we will deal with regulatory circuits fundamental for controlling blood pressure, water balance, digestion, or reproduction, all controlled by hormones. In the final chapters, we will present the endocrine system by its failures and look at the origins of endocrine-related diseases. A brief look at the use of hormones and their derivatives to boost performance in sport by means of doping completes the book.

1.1 Whom To Thank

We thank all the readers of our book in Germany who have helped by their critique to enhance the content and the design of our book. To all colleagues who have freely provided articles and manuscripts to expand individual chapters, thank you very much. Several friends read large parts of the manuscript and provided valuable comments. Thanks to all of you. A special thank you goes to Radivoj Krstić, who let us use the anatomical plates in his book *Human Microscopic Anatomy* for the anatomy of the endocrine active organs.