

EDITORIAL

1 **Endocrine Reviews: Can We Make a Better Best?**

E. Chester Ridgway

REVIEWS

3 **The Calcium-Sensing Receptor: A Molecular Perspective**

Aaron L. Magno, Bryan K. Ward, and Thomas Ratajczak

Since the discovery of the calcium-sensing receptor, studies reveal that it can detect not only calcium but a host of extracellular signals and that besides its key role in calcium homeostasis the receptor is involved in a myriad of unrelated biological processes. This review provides a comprehensive exploration of the receptor, including its structure, stimuli, signaling pathways, interacting protein partners and tissue expression patterns, and relates the impact of these different aspects of the calcium-sensing receptor to its functionality from a molecular perspective.

31 **Osteoclast Activity and Subtypes as a Function of Physiology and Pathology—Implications for Future Treatments of Osteoporosis**

K. Henriksen, J. Bollerslev, V. Everts, and M. A. Karsdal

Osteoclasts are the sole cells capable of resorbing bone, and thus traditional strategies for osteoporosis have focused on eliminating these cells. However, recent data have indicated that osteoclasts may also play an important role in the stimulation of bone formation. Therefore, this review aims to describe osteoclastic activities under normal, pathological and drug-induced conditions, while emphasizing the potential secondary stimulation of bone formation.

64 **Thyronamines—Past, Present, and Future**

S. Piehl, C. S. Hoefig, T. S. Scanlan, and J. Köhrle

After their initial discovery in the early 1950's, thyronamines (TAM), a class of endogenous signalling compounds exhibiting structural similarity to the thyroid hormone L-thyroxine, are now back in the focus of basic and clinical research. Numerous prompt pharmacological effects, such as metabolic depression, hypothermia, negative chronotropy, negative inotropy, hyperglycemia, reduction of the respiratory quotient, ketonuria and reduction of fat mass as well as promising therapeutic potential in the experimental prophylaxis and treatment of stroke have already been demonstrated in rodent experimental models. This review article summarizes the currently still somewhat scattered data on TAM, trying to yield a complete and updated picture of the current state of TAM research, which addresses issues on TAM biosynthesis, receptors, signalling and therapeutically relevant targets such as energy metabolism and the cardiovascular system.

81 The Molecular Biology, Biochemistry, and Physiology of Human Steroidogenesis and Its Disorders

Walter L. Miller and Richard J. Auchus

Steroidogenesis, the processes by which cholesterol is converted to steroid hormones, involves transport proteins, enzymes, redox partners and cofactors. Most steroidogenic enzymes are either forms of cytochrome P450 or are hydroxysteroid dehydrogenases. The P450s may be either Type 1, in mitochondria, or Type 2, in the endoplasmic reticulum; these two types differ in their electron-transfer redox partners as well as in their cellular locations. Hydroxysteroid dehydrogenases may be either short-chain dehydrogenases or aldo-keto reductases, which differ in their structures and catalytic mechanisms. Recent work has identified new enzymes, co-factors and protein modifications, and has described new pathways of steroidogenesis and new sites of steroid synthesis. Thus steroidogenesis is not confined to the adrenals and gonads, and involves more than the production of aldosterone, cortisol and sex steroids. We review the enzymes, factors and pathways of human steroidogenesis and the diseases resulting from their mutations.

TRANSLATIONAL HIGHLIGHTS

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