Contents

PART I. BASICS

1 **Introduction** *1*
Goals and Objectives • *Biosynthesis of Hormones* • *Storage and Secretion* • *Hormones in Blood* • *Hormone Degradation* • *Mechanisms of Hormone Action* • *Regulation of Hormone Secretion*

2 **Pituitary Gland** *27*
Morphology • *Physiology of the Anterior Pituitary Gland* • *Regulation of Anterior Pituitary Function* • *Physiology of the Posterior Pituitary Gland*

3 **Thyroid Gland** *45*
Morphology • *Thyroid Hormones* • *Regulation of Thyroid Function* • *Thyroid Hormones in Blood* • *Metabolism of Thyroid Hormones* • *Physiological Effects in Thyroid Hormones* • *Thyroid and Temperature Regulation* • *Mechanism of Thyroid Hormone Action* • *Regulation of Secretion*

4 **Adrenal Glands** *71*
Morphology • *Adrenal Cortex* • *Adrenal Steroid Hormones in Blood* • *Metabolism and Excretion of Adrenal Cortical Hormones* • *Physiological Actions of Adrenal Cortical Hormones* • *Adrenal Medulla*

5 **Islets of Langerhans** *115*
Morphology of the Endocrine Pancreas • *Glucagon* • *Insulin* • *Mechanism of Insulin Action* • *Regulation of Insulin Secretion* • *Somatostatin*

Ústav vědeckých lékařských informací
STÁTNÍ LÉKAŘSKÁ KNIHOVNA V PRAZE

PART II. INTEGRATION OF HORMONE FUNCTIONS

6 **Principles of Hormonal Integration** 143
Redundancy • Reinforcement • Push–Pull Mechanisms • Modulation of Responding Systems

7 **Regulation of Sodium and Water Balance** 153
H. Maurice Goodman and John C. S. Fray
General Considerations • Salt and Water Balance • Antidiuretic Hormone • Aldosterone • Angiotensin II • Atrial Natriuretic Peptide • Integrated Compensatory Responses to Changes in Salt and Water Balance

8 **Hormonal Regulation of Calcium Homeostasis** 175
General Features of Calcium Balance • Parathyroid Hormone • Calcitonin • Vitamin D Endocrine System • Integrated Actions of Calcitropic Hormone • Other Hormones that Affect Calcium Balance • Concluding Comments

9 **Hormonal Regulation of Fuel Metabolism** 203
General Features of Energy Metabolism • The Glucose–Fatty Acid Cycle • Overall Regulation of Blood Glucose Concentration • Integrated Actions of Metabolic Hormones • Regulation of Metabolism During Feeding and Fasting • Hormonal Interactions During Exercise

PART III. REPRODUCTION, GROWTH, AND DEVELOPMENT

10 **Hormonal Control of Growth** 225
Growth Hormone • Thyroid Hormones • Insulin • Gonadal Hormones • Glucocorticoids • Other Hormones and Growth Factors

11 **Hormonal Control of Reproduction in Men** 253
Male Reproductive Tract • Control of Testicular Function • Leydig Cells • Testosterone • Regulation of Testicular Function

12 **Hormonal Control of Reproduction in Women. I. Menstrual Cycle** 277
Female Reproductive Tract • Ovarian Hormones • Control of Ovarian Function • Physiological Actions of Ovarian Steroid Hormones • Regulation of the Reproductive Cycle

13 **Hormonal Control of Reproduction in Women. II. Pregnancy and Lactation** 303
Fertilization and Implantation • The Placenta • Parturition • Lactation

Subject Index 327