

# L12- Endocrine System I

2/23

## Outcomes:

- I. Intercellular Communication
  - CC types of intercellular communication
- II. Signaling Molecules
  - CC types of signals
  - CC, SEQ water-soluble and lipid-soluble pathways
- III. Endocrine Tissues and Glands
  - CC endocrine and exocrine

## I. Intercellular Communication

### A. Introduction to **Hormones**

- Greek – “to excite”
- Chemical signaling molecule responsible for regulation
- Messenger of endocrine system

#### **Endocrine Signaling**

- Secreted into body fluids, usually blood
- Binds to target cells
- All cells exposed, only those with correct receptor respond

#### **Receptors**

- Large proteins or glycoproteins on/in target cells
- Recognize and bind to **specific** hormones
- Receptors are responsible for the specificity of the endocrine system
- Continually synthesized and degraded
  - Hormone increase for long period → receptor down regulated
  - Hormone decrease for long period → receptor up-regulated
- *Way too low – make more receptors for it – maybe we can detect it*
- *Density of receptors for that hormone*

### B. Types of Intercellular Communication

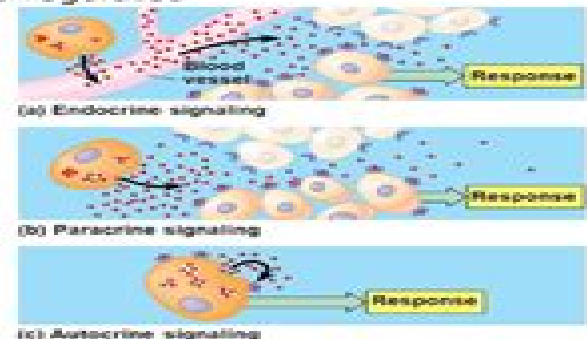
- Classified by:
  - Type of secreting cell – *what cell is sending the signal*
  - Route taken by signal to target cells

#### **Endocrine Signaling**

- Endocrine cells secrete hormones into extracellular fluid
  - *(through blood)*
- Diffuse into bloodstream → travel to target cells

#### **Paracrine & Autocrine Signaling**

- Cells produce and secrete local regulators (*instead of hormones*)
- Reach target cells by diffusion
- Short distance signaling, very quick
- **Paracrine:** Target cells near secreting cells (*in immediate vicinity*)
- **Autocrine:** Target is itself (*cell releases a signal and detects that same exact signal*)



# Raycroft Biology 12 Endocrine System

**J. Matthew Neal**



## **Raycroft Biology 12 Endocrine System:**

*Hormones and the Endocrine System* Bernhard Kleine, Winfried G. Rossmanith, 2016-02-11 This book focuses on hormones and on how they are produced in very diverse regions of the body in humans and animals But hormones can be found not only in vertebrates but also in insects shellfish spiders mollusks even at the origin of metazoan diversification and exhibit the same pathways of synthesis The book addresses the different classes of hormones protein peptides hormones steroids and juvenile hormones and hormones like catecholamines thyroid hormones and melatonin It also discusses the types of hormone receptors the majority of which are heptahelical G protein coupled receptors or nuclear receptors Particular attention is paid to the organs where hormones are created with specifics on hormonal production and release while a dedicated chapter details hormonal regulation from very simple to highly complex schemes The remarkable kinetics of hormones production are also shown before the book is rounded out by chapters on evolution in the endocrine system the genetics of endocrine diseases and doping

*The Endocrine System, Third Edition* Salvatore Blair, Lynette Rushton, 2021-11-01 Much like the nervous system the endocrine system relays important communication signals throughout the body The endocrine system uses chemical signals known as hormones which are produced and stored in special glands in the body Different glands produce specialized hormones and release them into the bloodstream From there these hormones can travel directly to the tissues and organs and help regulate bodily functions In *The Endocrine System Third Edition* learn how this chemical messaging system is vital to the body's growth metabolism and sexual development Packed with full color photographs and illustrations this absorbing book provides students with sufficient background information through references websites and a bibliography

*The Endocrine System* Pam Walker, Elaine Wood, 2003 Describes how the endocrine systems works and the types of diseases and disorders

**Chapter Resource 42 Hormones/Endocrine Biology**

Holt Rinehart & Winston, Holt, Rinehart and Winston Staff, 2004

Hormones Martin Luck, 2014-07-24 Hormones play an integral part in the balance and workings of the body While many people are broadly aware of their existence there are many misconceptions and few are aware of the nature and importance of the endocrine system In this Very Short Introduction Martin Luck explains what hormones are what they do where they come from and how they work He explains how the endocrine system operates highlighting the importance of hormones in the regulation of water and salt in the body how they affect reproduction and our appetites and how they help us adjust to different environments such as travel across time zones In this fresh and modern treatment Luck also touches on the ethical and moral issues surrounding research methods testing on animals and hormone misuse

ABOUT THE SERIES The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area These pocket sized books are the perfect way to get ahead in a new subject quickly Our expert authors combine facts analysis perspective new ideas and enthusiasm to make interesting and challenging topics highly readable

**Metabolic and Endocrine Physiology, Third Edition** Larry Engelking, Alan H.

Rebar,2012-08-15 This book is intended to give readers a quick look at metabolic and endocrine physiology Emphasis is placed on instructional figures flow diagrams and tables while text material has been held to a minimum In general the endocrine system is first defined and described and then each endocrine gland is discussed separately Where appropriate common endocrine disorders have also been included This text concisely elucidates the endocrine mechanisms responsible for maintaining homeostatic control of important physiologic variables and to assist the reader in understanding common pathophysiologic deviations from normal Over 360 multiple choice questions gauge the reader s capacity to effectively understand the subject material This new edition contains six new chapters covering hormone disposition measurement and secretion bovine equine and rodent estrus cycles primate menstrual cycle male reproductive system testosterone estrogen and progesterone comparative aspects of endocrinology Learning objectives have been added at the beginning of each chapter and all of the questions are new      **The Endocrine System** Joy P. Hinson Raven,Peter Raven,Shern L.

Chew,2013-07-19 This is an integrated textbook on the endocrine system covering the anatomy physiology and biochemistry of the system all presented in a clinically relevant context appropriate for the first two years of the medical student course One of the seven volumes in the Systems of the Body series Concise text covers the core anatomy physiology and biochemistry in an integrated manner as required by system and problem based medical courses The basic science is presented in the clinical context in a way appropriate for the early part of the medical course There is a linked website providing self assessment material ideal for examination preparation      How the Endocrine System Works J. Matthew Neal,2016-01-22 How the Endocrine System Works is not another standard introduction to endocrinology but an innovative and fun way to learn about the importance of the key glands in the human body and the hormones they control It is explained in 9 easy to understand lectures with additional material on the treatment and management of endocrine disorders How the Endocrine System Works Is designed for those in need of a concise introduction to this fascinating area of medicine Has been rigorously updated to reflect today s endocrinology teaching Includes more focus on the treatment and management of endocrine disorders Features more on evidence based medicine obesity epidemiology and biostatistics Includes summaries of key research which affects diagnostic criteria Includes brand new case based review questions at the end of each chapter Features full color diagrams throughout How the Endocrine System Works is the perfect introduction for all medical students as well as for students of bioscience and other healthcare disciplines      Endocrine System Lorrie Klosterman,2009 Introduces readers to the human endocrine system and its parts Discusses the illnesses and diseases that affect it and how to stay healthy      **The Endocrine System** The Open The Open Courses Library,2019-10-23 The Endocrine System Biology You may never have thought of it this way but when you send a text message to two friends to meet you at the dining hall at six you re sending digital signals that you hope will affect their behavior even though they are some distance away Similarly certain cells send chemical signals to other cells in the body that influence their behavior This long distance intercellular

communication coordination and control is critical for homeostasis and it is the fundamental function of the endocrine system

Chapter Outline An Overview of the Endocrine System Hormones The Pituitary Gland and Hypothalamus The Thyroid Gland The Parathyroid Glands The Adrenal Glands The Pineal Gland Gonadal and Placental Hormones The Endocrine Pancreas Organs with Secondary Endocrine Functions Development and Aging of the Endocrine System The Open Courses Library introduces you to the best Open Source Courses

**The Endocrine System** Michael R. Wilson, 2009-01-15 The endocrine system which controls the secretion of hormones in the body plays a major role in sexual health In this book readers will learn all about endocrine glands the hormones they secrete and what happens when the endocrine system fails to do its job

*Endocrine System* Vivian Brooks, AI, 2025-03-17 Endocrine System offers a comprehensive exploration of hormonal regulation crucial for understanding overall health and the body's complex functions like metabolism and reproduction This book examines the major endocrine glands such as the pituitary thyroid adrenal and pancreas detailing how hormones act as chemical messengers Readers will discover how these hormones influence everything from energy levels and weight to mood and reproductive capability highlighting the critical role of the endocrine system in maintaining homeostasis The book emphasizes the delicate interplay between hormones and their target tissues illustrating how disruptions in this balance can lead to disease Its unique value lies in its balanced perspective advocating for early detection and proactive management of hormonal imbalances Beginning with an introduction to hormone synthesis and action the book progresses through individual glands reproductive functions clinical aspects and emerging therapies This accessible guide uses scientific literature clinical studies and case examples to support its findings By bridging biology with health and fitness it reveals connections to neuroscience immunology and metabolism showcasing the endocrine system's pivotal role in responding to environmental challenges and maintaining well being

**Textbook of Endocrine Physiology** William J. Kovacs, Sergio R. Ojeda, 2011-11-11 The sixth edition of this highly popular text retains its comprehensive coverage of endocrine basics from previous editions while featuring entirely new chapters on several topics including the assessment of endocrine function sexual differentiation growth regulation the thyroid the adrenals and calcium homeostasis Chapters have been updated and reorganized to make information easily accessible in concise form and new figures and tables have been added to enhance the presentation of complex concepts Fundamental principles of endocrine physiology are reinforced with illustrative examples from clinical observation and the limitations of current knowledge are properly identified The ideal resource for students entering the field the Textbook of Endocrine Physiology aims to provide for all a solid basis in fundamentals of endocrinology and for some inspiration for the pursuit of advanced medical or graduate studies in the field

Endocrine Physiology Susan P. Porterfield, 1997 The new edition of Endocrine Physiology offers Clear accurate coverage of the physiology of the endocrine system focusing on the needs of the student Pathophysiology content throughout that serves as a bridge between normal function and disease Integrated student friendly tools including chapter summaries and study

questions key words and concepts a comprehensive exam and two extensive tables on normal hormone values and commonly used abbreviations and symbols Book jacket

**Endocrine Physiology** Susan P. Porterfield, Bruce Alan White, 2007 This volume in the Mosby Physiology Monograph Series explains the fundamentals of endocrine physiology in a clear and concise manner It provides you with a basic understanding of how the endocrine system functions in health and disease Attractively illustrated with clear 2 color diagrams this volume also facilitates study with learning objectives overview boxes chapter summaries and clinical cases with questions and explained answers Stay current with clear accurate and up to the minute coverage of the physiology of the endocrine system focusing on the needs of the student Bridge the gap between normal function and disease with pathophysiology content throughout the book Master the material more easily with learning objectives overview boxes key words and concepts chapter summaries and clinical cases with questions and explained answers Understand complex concepts by examining more than 200 clear 2 color diagrams Apply what you ve learned to real life clinical situations using featured clinical commentaries

*The Endocrine System* Thomas Braem, 1994

**Textbook of Endocrine Physiology** Professor of Internal Medicine James E. Griffin M.D. Diana and Richard C. Strauss Professor of Biomedical Research, and Chief of Clinical Endocrinology in the Department of Internal Medicine University of Texas Southwestern Medical Center at Dallas, Division of Neuroscience Oregon Regional Primate Research Center/Oregon Health Sciences University Sergio R. Ojeda M.D. Head, 2004-04-08 This widely used text provides a thoroughly updated account of current knowledge in the endocrine sciences Each chapter is structured to cover both established concepts and recent developments The chapters are not only written at a consistent level and well integrated with one another but they also blend basic science with essential elements of clinical knowledge in order to give students an appreciation of the consequences of deranged endocrine function The Fifth Edition features completely new versions of the chapters on Cytokines and Immune Endocrine Interactions The Adrenal Glands and Calcium Homeostasis Many of the illustrations throughout the book are new or have been significantly revised to complement the text Fresh examples have also been included so that each chapter continues to show clearly the clinical consequences of deranged endocrine function Much new scientific information has been added on such topics as the nongenomic actions of steroid hormones relaxin receptors inhibin B steroid regulating element binding proteins IGF binding proteins transcriptional regulation of the developing adipocyte and the regulation of food intake and body weight

Vertebrate Endocrinology David O. Norris, James A. Carr, 2020-10-10 Vertebrate Endocrinology Sixth Edition provides a comprehensive up to date treatment of the endocrine system for college and university students as well as researchers This book is logically arranged easily comprehended and well illustrated It covers traditional hormone based systems and introduces all forms of chemical communication their implications for the health of humans domesticated and wild vertebrates Written by two experts who have completed extensive research in comparative vertebrate endocrinology with an emphasis on natural and anthropogenic environmental factors influencing endocrine

systems Collectively the authors have taught courses in endocrinology at the undergraduate and graduate level for more than 60 years After first publishing in 1985 Vertebrate Endocrinology Sixth Edition continues to serve as an important resource for graduate students and advanced undergraduates in the biological sciences animal sciences and veterinary sciences Endocrine researchers will also benefit from the book s relevance in the areas of comparative veterinary and mammalian endocrinology Addresses the endocrinology of all vertebrate and non vertebrate chordates The only endocrinology textbook that deals with evolutionary aspects of endocrine systems Includes biochemical cellular tissue organismic behavioral and environmental aspects of chemical communication **The Endocrine System** Ian Peate,2025-01-31 PEATE S BODY

SYSTEMS THE ENDOCRINE SYSTEM A CONCISE ILLUSTRATED AND ACCESSIBLE GUIDE TO THE ENDOCRINE SYSTEM Each of the twelve volumes in Peate s Body Systems series is rooted in the belief that a deep and thorough understanding of the human body is essential for providing the highest standard of care Offering clear accessible and up to date information on different body systems this series bridges the gap between complex scientific concepts and practical everyday applications in health and care settings This series makes for an invaluable resource for those committed to understanding the intricacies of human biology physiology and the various systems that sustain life The Endocrine System is the perfect companion for students and newly registered practitioners across nursing and allied health fields with an interest in endocrinology providing a comprehensive yet easy to digest guide for both academic and clinical application Equips healthcare students and practitioners with the necessary information to provide safe and competent care Features colourful illustrations to aid comprehension clarify complicated concepts and render content more engaging and accessible Empowers readers to adapt to a rapidly evolving healthcare landscape preparing them for the future of healthcare delivery Contains information necessary for effective patient care of those with hyper and hypothyroidism diabetes and other diseases and conditions affecting the endocrine system **The Physiology of the Endocrine System** Olga Smirnova,2019-03-26

Existing textbooks on endocrinology do not link theory to the practical world and thus lead to students asking themselves What should I do with all this knowledge This volume reduces the gap between theoretical knowledge and its practical applications through clinical references that reflect current trends in the management of endocrine disorders Clinical problems included at the end of some chapters will help medical students to practice diagnosing and treating common hormonal disorders Each topic also ends with a list of suggested reading that will allow the reader to gain further insights

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