secretion definition anatomy

secretion definition anatomy is a crucial concept within the fields of biology and medicine, reflecting the intricate processes by which cells and glands produce and release substances necessary for various physiological functions. Understanding the secretion definition anatomy encompasses the types, mechanisms, and physiological significance of secretions in the human body. This article delves into the detailed anatomy of secretion, exploring how these processes are fundamental to maintaining homeostasis, supporting metabolic functions, and facilitating communication between cells. The intricate relationship between cells, tissues, and organ systems is highlighted, providing insights into the complexity of biological regulation. The article will cover the definition of secretion, types of secretions, the anatomy involved in secretion processes, and their physiological roles.

Definition of Secretion

Secretion refers to the process by which substances are produced and released by cells or glands. This involves the synthesis of molecules from cellular components, followed by their export to the extracellular environment or to specific target sites. In the context of anatomy, secretion is a vital function performed by specialized cells and tissues that ensure the proper functioning of organ systems. The substances secreted can include hormones, enzymes, mucus, and various metabolites, each playing crucial roles in biological processes.

The definition further extends to include both the active and passive mechanisms involved in the release of these substances. Active secretion generally requires energy, often in the form of ATP, while passive secretion may involve diffusion or facilitated transport, utilizing existing concentration gradients.

Types of Secretions

Secretions can be classified into various categories based on their origin, composition, and function. Understanding these types helps illuminate the diverse roles secretions play in the body's physiology.

Endocrine Secretion

Endocrine secretion involves the release of hormones directly into the bloodstream. These hormones act as signaling molecules that regulate numerous physiological processes including metabolism, growth, and reproduction. Key endocrine glands include:

- Hypothalamus
- Pituitary gland
- Thyroid gland
- Adrenal glands
- Pancreas

Each of these glands produces specific hormones that have far-reaching effects on various target organs throughout the body.

Exocrine Secretion

Exocrine secretion refers to substances released through ducts to the external environment or into body cavities. This includes secretions such as sweat, saliva, and digestive enzymes. Major exocrine glands include:

- Salivary glands
- Sweat glands
- Pancreas (as an exocrine gland)
- Gastric glands

These secretions are essential for processes such as digestion, thermoregulation, and lubrication.

Mucous Secretion

Mucous secretion is produced by goblet cells and mucous glands, serving to protect and lubricate epithelial surfaces. Mucus is a viscous secretion composed mainly of glycoproteins, providing a barrier against pathogens and facilitating the movement of materials along mucosal surfaces.

Anatomy of Secretory Glands

The anatomy of secretory glands is complex and specialized, designed to optimize the production and release of various secretions. These glands can be broadly categorized into endocrine and exocrine glands, each with distinct structural characteristics.

Structure of Endocrine Glands

Endocrine glands are vascularized and lack ducts, allowing hormones to diffuse directly into the bloodstream. Their structure consists of:

- Secretory cells that produce hormones.
- Capillaries that facilitate hormone transport into the bloodstream.
- Connective tissue that supports the gland and provides a framework.

The arrangement of cells within these glands allows for efficient hormone synthesis and release, ensuring rapid communication within the body.

Structure of Exocrine Glands

Exocrine glands are characterized by their ductal systems that transport secretions to specific locations. They typically consist of:

- Secretory units (acinus) that produce the secretion.
- Ducts that carry the secretion to the target site.
- Connective tissue and vascular support.

The presence of ducts allows for precise control over the location and timing of secretion, which is crucial

for digestive processes and other physiological functions.

Mechanisms of Secretion

The mechanisms by which secretions are produced and released can vary widely. Understanding these mechanisms is essential for grasping how secretions are regulated in the body.

Merocrine Secretion

Merocrine secretion involves the release of secretory products through exocytosis without altering the integrity of the secretory cell. This is the most common method of secretion, utilized by salivary glands and sweat glands.

Aprocrine Secretion

Aprocrine secretion involves the budding off of a portion of the cell's cytoplasm, which contains the secretory product. This method is seen in certain sweat glands and mammary glands.

Holocrine Secretion

Holocrine secretion involves the entire cell disintegrating to release its contents. This method is exemplified by sebaceous glands, where the secretion is rich in lipids and proteins.

Physiological Roles of Secretions

Secretions play vital roles in maintaining physiological homeostasis and facilitating various bodily functions. Their importance cannot be overstated, as they contribute to numerous processes.

Regulation of Metabolism

Hormonal secretions from endocrine glands regulate metabolic processes, including glucose metabolism, lipid metabolism, and energy expenditure. Insulin and glucagon are prime examples of hormones that manage blood glucose levels.

Digestion

Exocrine secretions, particularly digestive enzymes from the pancreas and bile from the liver, are essential for the breakdown of food. These secretions facilitate nutrient absorption in the gastrointestinal tract.

Immune Function

Mucous secretions provide a physical barrier against pathogens and help to trap and eliminate microorganisms. Secretions from immune cells also include antibodies and signaling molecules that coordinate immune responses.

Pathological Changes in Secretion

Alterations in secretion can indicate or lead to various pathological conditions. Understanding these changes is crucial for diagnosing and treating diseases.

Hypersecretion

Hypersecretion occurs when glands produce excessive amounts of a substance, which can lead to conditions such as hyperthyroidism, where excessive thyroid hormone production disrupts metabolic balance.

Hyposecretion

Hyposecretion is characterized by insufficient secretion, as seen in conditions like diabetes insipidus, where inadequate levels of antidiuretic hormone lead to excessive urination and thirst.

Disordered Secretions

Disorders in secretion can lead to diseases such as cystic fibrosis, which affects mucous secretions and leads to respiratory complications. Understanding these disorders helps in developing effective treatment strategies.

In summary, the anatomy and definition of secretion are integral to understanding how the human body functions. Secretions are multifaceted, with their diverse types and complex mechanisms reflecting the intricacies of biological regulation. From metabolic control to immune defense, the roles of secretions are fundamental to health and disease. By studying secretion definition anatomy, we can better appreciate the delicate balance maintained by our bodies and the potential consequences when this balance is disrupted.

Q: What is the secretion definition anatomy?

A: Secretion definition anatomy refers to the biological processes and structures involved in the production and release of substances by cells and glands in the body, which play vital roles in various physiological functions.

Q: What are the different types of secretions?

A: The main types of secretions include endocrine secretions (hormones released into the bloodstream), exocrine secretions (substances released through ducts), and mucous secretions (produced to lubricate and protect surfaces).

Q: How do endocrine glands differ from exocrine glands?

A: Endocrine glands release their secretions (hormones) directly into the bloodstream without using ducts, while exocrine glands release their secretions through ducts to specific locations.

Q: What mechanisms are involved in secretion?

A: The main mechanisms of secretion include merocrine (exocytosis), aprocrine (budding off of the cell), and holocrine (entire cell disintegration) secretion.

Q: What physiological roles do secretions play in the body?

A: Secretions are crucial for regulating metabolism, facilitating digestion, providing immune defense, and maintaining homeostasis in the body.

Q: What can cause pathological changes in secretion?

A: Pathological changes in secretion can result from various factors, including hormonal imbalances, genetic disorders, infections, or inflammation, leading to conditions such as hypersecretion or hyposecretion.

Q: Why is mucus secretion important?

A: Mucus secretion is important for protecting epithelial surfaces, trapping pathogens, and facilitating the movement of materials in various systems, such as the respiratory and digestive tracts.

Q: What is the role of secretions in digestion?

A: Secretions such as digestive enzymes from the pancreas and bile from the liver are essential for breaking down food, aiding in nutrient absorption, and regulating digestive processes.

Q: How does secretion impact metabolic processes?

A: Hormonal secretions from endocrine glands regulate key metabolic processes, including glucose and lipid metabolism, influencing energy balance and overall metabolic health.

Q: What are the consequences of altered secretions?

A: Altered secretions, whether due to hypersecretion or hyposecretion, can lead to various health conditions, disrupting normal physiological functions and necessitating medical intervention.

Secretion Definition Anatomy

secretion definition anatomy: A Practical Treatise on Medical Jurisprudence, with so much of anatomy, physiology, pathology and the practice of medicine and surgery as are essential to be known ... And all the laws relating to medical practitioners, with explanatory notes Joseph CHITTY (the Elder, Barrister-at-Law.), 1834

secretion definition anatomy: Basic Medical Endocrinology Elizabeth H. Holt, Harry E. Peery, 2003-03-14 Basic Medical Endocrinology, Third Edition provides up-to-date coverage of rapidly unfolding advances in the understanding of hormones involved in regulating most aspects of bodily functions. The discussion focuses on molecular and cellular aspects of hormone production and action firmly rooted in the context of integrative physiology. Topics are approached from the perspective of a physiologist with four decades of teaching experience. This book is richly illustrated with both descriptive schematic diagrams and laboratory findings obtained in clinical studies. Each of the thirteen in-depth chapters starts with an 'Overview' of the topic and ends with a 'Suggested Reading' list. * Single authorship provides continuity and consistency between chapters * Richly illustrated with over 200 illustrations * IThirteen in-depth chapters incorporating the latest insights gleaned from rapidly expanding genetic studies of humans and rodents * Author has taught subject for over 40 years

secretion definition anatomy: *Anatomy & Physiology - E-Book* Kevin T. Patton, Gary A. Thibodeau, 2014-08-29 There's no other A&P text that equals Anatomy & Physiology for its student-friendly writing, visually engaging content, and wide range of learning support. Focusing on the unifying themes of structure and function in homeostasis, this dynamic text helps you easily

master difficult material with consistent, thorough, and non-intimidating explanations. You can also connect with the textbook through a number of free electronic resources, including Netter's 3D Interactive Anatomy, the engaging A&P Online course, an electronic coloring book, online tutoring, and more! Creative, dynamic design with over 1400 full-color photographs and drawings, plus a comprehensive color key, illustrates the most current scientific knowledge and makes the information more accessible. UNIQUE! Consistent, unifying themes in each chapter such as the Big Picture and Cycle of Life sections tie your learning together and make anatomical concepts relevant. UNIQUE! The Clear View of the Human Body is a full-color, semi-transparent, 22-page model of the body that lets you virtually dissect the male and female human bodies along several planes of the body. UNIQUE! Body system chapters have been broken down into separate chapters to help you learn material in smaller pieces. UNIQUE! A&P Connect guides you to the Evolve site where you can learn more about related topics such as disease states, health professions, and more. Quick Guide to the Language of Science and Medicine contains medical terminology, scientific terms, pronunciations, definitions, and word part breakdowns for key concepts. Brief Atlas of the Human of the Human Body contains more than 100 full-color supplemental photographs of the human body, including surface and internal anatomy. Free 1-year access to Netter's 3D Interactive Anatomy, powered by Cyber Anatomy, a state-of-the-art software program that uses advanced gaming technology and interactive 3D anatomy models to learn, review, and teach anatomy. Smaller, separate chapters for Cell Reproduction, Autonomic Nervous System, Endocrine Regulation, and Endocrine Glands. Expansion of A&P Connect includes Protective Strategies of the Respiratory Tract, Meth Mouth, Chromosome Territories, Using Gene Therapy, and Amazing Amino Acids. Art and content updates include new dynamic art and the most current information available.

secretion definition anatomy: Anthony's Textbook of Anatomy & Physiology - E-Book Kevin T. Patton, Gary A. Thibodeau, 2012-03-15 There's no other A&P text that equals Anatomy & Physiology for its student-friendly writing, visually engaging content, and wide range of learning support. Focusing on the unifying themes of structure and function in homeostasis, this dynamic text helps you easily master difficult material with consistent, thorough, and non-intimidating explanations. You can also connect with the textbook through a number of electronic resources, including the engaging A&P Online course, an electronic coloring book, online tutoring, and more! - Creative, dynamic design with over 1400 full-color photographs and drawings, plus a comprehensive color key, illustrates the most current scientific knowledge and makes the information more accessible. - UNIQUE! Consistent, unifying themes in each chapter such as the Big Picture and Cycle of Life sections tie your learning together and make anatomical concepts relevant. - UNIQUE! Body system chapters have been broken down into separate chapters to help you learn material in smaller pieces. - UNIQUE! A&P Connect guides you to the Evolve site where you can learn more about related topics such as disease states, health professions, and more. - Quick Guide to the Language of Science and Medicine contains medical terminology, scientific terms, pronunciations, definitions, and word part breakdowns for key concepts. - Brief Atlas of the Human of the Human Body contains more than 100 full-color supplemental photographs of the human body, including surface and internal anatomy. - Smaller, separate chapters for Cell Reproduction, Autonomic Nervous System, Endocrine Regulation, and Endocrine Glands. - Expansion of A&P Connect includes Protective Strategies of the Respiratory Tract, Meth Mouth, Chromosome Territories, Using Gene Therapy, and Amazing Amino Acids. - Art and content updates include new dynamic art and the most current information available.

secretion definition anatomy: The Complete Idiot's Guide to Anatomy and Physiology , 2004 An extensively illustrated introduction to human anatomy and physiology emphasizes the interconnection among the various systems, organs, and functions of the human body. Original.

secretion definition anatomy: A Practical Treatise on Medical Jurisprudence Joseph Chitty, 1834

secretion definition anatomy: An American text-book of physiology v.1, 1901 , 1900

secretion definition anatomy: An American Text-book of Physiology William Henry

Howell, 1903 Bouve collection.

secretion definition anatomy: Mosby's Comprehensive Review for General Sonography Examinations - E-Book Susanna Ovel, 2016-06-07 Be confident that you can answer any and all questions on your registry exams correctly when you prepare with this complete review. Mosby's Comprehensive Review for General Sonography Examinations provides study resources for all three main exams required for general ultrasound practice: physics, abdomen, and ob/gyn. Each chapter is arranged in table and outline format with 50 review questions at the end of the chapter and a mock exam at the end of each section. Access additional mock exams for each subject area on the companion CD or Evolve site. These exams give you experience with timed test taking in an electronic environment that simulates the actual registry exam experience. With this realistic preview of the exam environment and solid review of the material, you'll be prepared to ace the exams! Complete preparation for the three general ARDMS exams (physics, abdomen, and ob/gyn) Content review in outline and tabular format provides a quick review of all the material you need to learn, including key terms, anatomy, functions, scanning techniques, lab values, and pathology. More than 2,500 questions in Registry format cover everything you'll be tested on in the Registry exams. Rationales for answers to mock questions help you understand why an answer is correct or incorrect and increase your comprehension. More than 350 ultrasound scans included in the abdominal and ob/gyn sections prepare you for exam questions that ask you to identify pathology on scans. Color insert with Doppler images of the liver, biliary, and umbilical cord helps you be ready to answer questions related to Doppler imaging. Companion CD provides extra timed, graded mock exams and two entertaining, interactive games: Sonography Millionaire and Tournament of Sonography.

secretion definition anatomy: *Internal Secretion and the Ductless Glands* Swale Vincent, 1925

secretion definition anatomy: The Royal Marsden Manual of Clinical Nursing Procedures Lisa Dougherty, Sara Lister, Alex West-Oram, 2015-03-17 The Royal Marsden Manual of Clinical Nursing Procedures has been the number one choice for nurses since it first published, over 30 years ago. One of the world's most popular books on clinical skills and procedures, it provides detailed procedure guidelines based on the latest research findings and expert clinical advice, enabling nurses and students to deliver clinically effective patient-focused care. The ninth edition of this essential, definitive guide, written especially for pre-registration nursing students, now includes a range of new learning features throughout each chapter that have been designed to support student nurses to support learning in clinical practice. Providing essential information on over 200 procedures, this manual contains all the skills and changes in practice that reflect modern acute nursing care.

secretion definition anatomy: Essential Medical Physiology Leonard R. Johnson, 2003-10-14 Essential Medical Physiology, Third Edition, deals with the principal subjects covered in a modern medical school physiology course. This thoroughly revised version includes chapters on general physiology as well as cardiovascular, respiratory, renal, gastrointestinal, endocrine, central nervous system, and integrative physiology. It contains clinical notes, chapter outlines with page numbers, 2-color figures throughout, and new chapters on Exercise, Diabetic Ketoacidosis, and Maternal Adaptations in Pregnancy. Among the contributors to this indispensible textbook are leading physiologists Leonard R. Johnson, Stanley G. Schultz, H. Maurice Goodman, John H. Byrne, Norman W. Weisbrodt, James M. Downey, D. Neil Granger, Frank L. Powell, Jr., James A. Schafer, and Dianna A. Johnson. This text is recommended for medical, graduate, and advanced undergraduate students studying physiology, physicians, and clinical specialists as well as anyone interested in basic human physiology. - Includes clinical notes - Key Points summarize most important information - Contains chapter outlines with page numbers - 2-color figures throughout - New chapters on Exercise, Diabetic Ketoacidosis, and Maternal Adaptations in Pregnancy

secretion definition anatomy: A Textbook of General Pathological Anatomy and Pathogenesis Ernst Ziegler, 1888

secretion definition anatomy: A Text-book of pathological anatomy and pathogenesis pt.

1-3 Ernst Ziegler, 1887

secretion definition anatomy: Guyton & Hall Textbook of Medical Physiology_3rd SAE-E-book Mario Vaz, Anura Kurpad, Tony Raj, 2020-07-25 - Chapters have been rearranged and often split to work towards one chapter-one lecture model so that the text is linked to curriculum objectives which appeals to both students and faculty. - Narrative length has been reduced while ensuring the original flow and explanation of concepts is not affected. - Updated Learning Objectives (e.g. Applied physiology of the Renal System) and Glossary of Terms in the beginning of every chapter. - Short, easy-to-read, masterfully edited chapters and a user-friendly full-color design facilitates better learning and retention. - Features expanded clinical coverage including obesity, metabolic and cardiovascular disorders, Alzheimer's disease, and other degenerative diseases. - Complex Concepts/Processes are summarized in flowcharts/flow diagram for better understanding. - Contains more than 1000 carefully crafted diagrams and drawings ensures better understanding of Physiology. - Offers Clinically Oriented perspective - bridging basic physiology with pathophysiology, including cellular and molecular mechanism important for Clinical medicine. - Updated throughout based on the Guyton and Hall Textbook of Physiology 14th edition to reflect the latest knowledge in the field. - The information of the book has been updated to include all areas of the new MCI curriculum (these are either embedded within the existing chapters or as several new chapters at the end of the book).

secretion definition anatomy: An Analytical Compendium of the Various Branches of Medical Science ... A New Edition, Revised and Improved. With Illustrations John NEILL (and SMITH (Francis Gurney)), 1866

secretion definition anatomy: (Strangeways') Veterinary Anatomy Thomas Strangeways, 1892

secretion definition anatomy: Best & Taylor’s Physiological Basis of Medical Practice, 13/e with thePoint Access Scratch Code O. P. Tandon, Y Tripathi, 2011-01-01 The thirteenth edition of this classic text continues and further enriches the rich legacy of the previous editions. In a clear and authoritative style, this edition explains the basic principles of physiology while emphasizing their clinical significance in day-to-day medical practice.

secretion definition anatomy: Encyclopedia of Fish Physiology , 2011-06-01 Fish form an extremely diverse group of vertebrates. At a conservative estimate at least 40% of the world's vertebrates are fish. On the one hand they are united by their adaptations to an aquatic environment and on the other they show a variety of adaptations to differing environmental conditions - often to extremes of temperature, salinity, oxygen level and water chemistry. They exhibit an array of behavioural and reproductive systems. Interesting in their own right, this suite of adaptive physiologies provides many model systems for both comparative vertebrate and human physiologists. This four volume encyclopedia covers the diversity of fish physiology in over 300 articles and provides entry level information for students and summary overviews for researchers alike. Broadly organised into four themes, articles cover Functional, Thematic, and Phylogenetic Physiology, and Fish Genomics. Functional articles address the traditional aspects of fish physiology that are common to all areas of vertebrate physiology including: Reproduction, Respiration, Neural (Sensory, Central, Effector), Endocrinology, Renal, Cardiovascular, Acid-base Balance, Osmoregulation, Ionoregulation, Digestion, Metabolism, Locomotion, and so on. Thematic Physiology articles are carefully selected and fewer in number. They provide a level of integration that goes beyond the coverage in the Functional Physiology topics and include discussions of Toxicology, Air-breathing, Migrations, Temperature, Endothermy, etc. Phylogenetic Physiology articles bring together information that bridges the physiology of certain groupings of fishes where the knowledge base has a sufficient depth and breadth and include articles on Ancient Fishes, Tunas, Sharks, etc. Genomics articles describe the underlying genetic component of fish physiology and high light their suitability and use as model organisms for the study of disease, stress and physiological adaptations and reactions to external conditions. Winner of a 2011 PROSE Award Honorable Mention for Multivolume Science Reference from the Association of American Publishers The definitive

encyclopedia for the field of fish physiology Three volumes which comprehensively cover the entire field in over 300 entries written by experts Detailed coverage of basic functional physiology of fishes, physiological themes in fish biology and comparative physiology amongst taxonomic Groups Describes the genomic bases of fish physiology and biology and the use of fish as model organisms in human physiological research Includes a glossary of terms

secretion definition anatomy: A Reference Handbook of the Medical Sciences Embracing the Entire Range of Scientific and Allied Sciences Albert Henry Buck, 1903

Related to secretion definition anatomy

Secretion - Wikipedia Secretion is the movement of material from one point to another, such as a secreted chemical substance from a cell or gland. In contrast, excretion is the removal of certain substances or

Secretion | Hormones, Glands & Cells | Britannica secretion, in biology, production and release of a useful substance by a gland or cell; also, the substance produced. In addition to the enzymes and hormones that facilitate and regulate

SECRETION Definition & Meaning - Merriam-Webster The meaning of SECRETION is the process of segregating, elaborating, and releasing some material either functionally specialized (such as saliva) or isolated for excretion (such as urine)

Secretion - (Anatomy and Physiology II) - Vocab, Definition Secretion is the process through which substances are produced and released by cells or glands to perform specific functions in the body. This process is essential for various physiological

Secretion | definition of secretion by Medical dictionary The process of secreting a substance, especially one that is not a waste, from the blood or cells: secretion of hormones; secretion of milk by the mammary glands

SECRETION Definition & Meaning | Secretion definition: (in a cell or gland) the act or process of separating, elaborating, and releasing a substance that fulfills some function within the organism or undergoes excretion

SECRETION | English meaning - Cambridge Dictionary SECRETION definition: 1. the process by which an animal or plant produces and releases a liquid, or the liquid produced. Learn more

What Is A Secretion? | Essential Biological Functions A secretion is a substance produced and released by cells, serving various vital functions in organisms. Secretion plays a crucial role in the functioning of living organisms, from single

The Secrets of Secretion: Protein Transport in Cells Secretion is a fundamental process in which cells release substances to their external environments. Secretion is essential for many body functions, including growth,

Secretion – Definition, Mechanism, Importance - Biology Notes Online Secretion is the process by which cells actively transport molecules, often synthesized within the cell, to their exterior environment

Secretion - Wikipedia Secretion is the movement of material from one point to another, such as a secreted chemical substance from a cell or gland. In contrast, excretion is the removal of certain substances or

Secretion | Hormones, Glands & Cells | Britannica secretion, in biology, production and release of a useful substance by a gland or cell; also, the substance produced. In addition to the enzymes and hormones that facilitate and regulate

SECRETION Definition & Meaning - Merriam-Webster The meaning of SECRETION is the process of segregating, elaborating, and releasing some material either functionally specialized (such as saliva) or isolated for excretion (such as urine)

Secretion - (Anatomy and Physiology II) - Vocab, Definition Secretion is the process through which substances are produced and released by cells or glands to perform specific functions in the body. This process is essential for various physiological

Secretion | definition of secretion by Medical dictionary The process of secreting a substance,

especially one that is not a waste, from the blood or cells: secretion of hormones; secretion of milk by the mammary glands

SECRETION Definition & Meaning | Secretion definition: (in a cell or gland) the act or process of separating, elaborating, and releasing a substance that fulfills some function within the organism or undergoes excretion

SECRETION | English meaning - Cambridge Dictionary SECRETION definition: 1. the process by which an animal or plant produces and releases a liquid, or the liquid produced. Learn more

What Is A Secretion? | Essential Biological Functions A secretion is a substance produced and released by cells, serving various vital functions in organisms. Secretion plays a crucial role in the functioning of living organisms, from single

The Secrets of Secretion: Protein Transport in Cells Secretion is a fundamental process in which cells release substances to their external environments. Secretion is essential for many body functions, including growth,

Secretion – Definition, Mechanism, Importance - Biology Notes Online Secretion is the process by which cells actively transport molecules, often synthesized within the cell, to their exterior environment

Back to Home: https://explore.gcts.edu