Unit #5: Endocrine System

Content Area: **Science**
Course(s): **Anatomy and Physiology**
Time Period: **Third Marking Period**
Length: **2 Week**
Status: **Published**

Unit Overview

This chapter begins with a comparison between the nervous system and the endocrine system. The endocrine system is the body's slow-responding, long term manager of homeostasis. It monitors chemical changes the body, and generates an appropriate feedback response. Students explore how the endocrine system manages long-term changes in the body as well as how it reacts when disrupted.

STAGE 1- DESIRED RESULTS

Educational Standards

2020 New Jersey Student Learning Standards- Science

Performance Expectations

Life Sciences

SCI.HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
SCI.HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
SCI.HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms

maintain homeostasis.

Science and Engineering Practices

- Practice 1: Asking Questions and Defining Problems
- Practice 2: Developing and Using Models
- Practice 3: Planning and Carrying Out Information
- Practice 4: Analyzing and Interpreting Data
- Practice 5: Using Mathematics and Computational Thinking
- Practice 6: Constructing Explanations and Designing Solutions
- Practice 7: Engaging in Argument from Evidence
- Practice 8: Obtaining, Evaluating, and Communicating Information

Cross Cutting Concepts

- Systems and System Models
- Energy and Matter
- Structure and Functions
- Stability and Change

Disciplinary Core Ideas

Life Sciences

- LS1.A: Structure and function
- LS1.B: Growth and development of organisms
- LS1.C: Growth and development of organisms

Essential Questions

- What are the general functions of the endocrine system?
- How is the endocrine system organized?
- What are the functions of the different glands?
- How does the Endocrine System rely on the Circulatory System?

- How does the Endocrine system respond to changes in the internal environment?
- How do common Endocrine disorders or disruptors affect homeostasis?

Enduring Understanding

The endocrine system employs hormones, is slower and has a generalized effect, often over a long period of time.

Students will know...

Vocabulary Definitions:

gland, tissue, hormone, secrete, steroid, target cell, metabolism, homeostasis, exocrine, endocrine

Predictable misconceptions:

- Students may assume that the nervous system works independently.
- Students may assume that the nervous system has one-way control of the endocrine system.
- Students may assume that all hormones are reproductive system related.
- Students may assume that the endocrine response is quick, like the nervous system.

Students will be able to...

- interpret interactions between and among hormones and nerve signals which make possible the coordinate of functions of the body.
- analyze and predict the role of synthetic hormones in affecting the various hormone production.
- analyze the process by which the Endocrine System regulates both biochemical and physiological pathways in the human body.

STAGE 2- EVIDENCE OF LEARNING

Formative Assessment Suggestions

- 3- Minute Pause
- A-B-C Summaries
- Analogy Prompt
- Choral Response
- Debriefing
- Exit Card / Ticket
- Hand Signals
- Idea Spinner
- Index Card Summaries
- Inside-Outside Circle Discussion (Fishbowl)
- Journal Entry
- Misconception Check
- Observation
- One Minute Essay
- One Word Summary
- Portfolio Check
- Questions & Answers
- Quiz
- Self-Assessment
- Student Conference
- Think-Pair-Share
- Web or Concept Map

Authentic Assessments Suggestions

1. compare and contrast Nervous and Endocrine Systems in terms of maintaining homeostasis
2. label diagrams to locate the endocrine glands
3. research an endocrine disorder and create an infographic
4. analyze the endocrine role of the pancreas in diabetes and explain how the condition affects other systems of the body
5. endocrine glands / hormones quiz
6. endocrine location / function quiz
7. endocrine pathology/disruptor Infographic

8. endocrinology case studies quiz

Benchmark Assessments

chapter 9 test: endocrine system test

STAGE 3- LEARNING PLAN

Instructional Map

- compare/contrast nervous & endocrine systems
- hormone function
- endocrine organs & functions

Modifications/Differentiation of Instruction

Differentiation Strategies for Special Education Students

- Remove unnecessary material, words, etc., that can distract from the content
- Use of off-grade level materials
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Time allowed
- Level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in “chunks”
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Varied homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate

- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Ability to work at their own pace
- Present ideas using auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment
- Differentiated checklists and rubrics, if available and appropriate

Differentiation Strategies for Gifted and Talented Students

- Increase the level of complexity
- Decrease scaffolding
- Variety of finished products
- Allow for greater independence
- Learning stations, interest groups
- Varied texts and supplementary materials
- Use of technology
- Flexibility in assignments
- Varied questioning strategies
- Encourage research
- Strategy and flexible groups based on formative assessment or student choice
- Acceleration within a unit of study
- Exposure to more advanced or complex concepts, abstractions, and materials
- Encourage students to move through content areas at their own pace
- After mastery of a unit, provide students with more advanced learning activities, not more of the same activity
- Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas

Differentiated Strategies for ELL Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in “chunks”
- Varied texts and supplementary materials, including visuals
- Use technology, if available and appropriate

- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language.
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Allow students to work at their own pace
- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Role play
- Provide graphic organizers, highlighted materials
- Strategy and flexible groups based on formative assessment

Differentiation Strategies for At Risk Students

- Remove unnecessary materials, words, etc., that can distract from the content
- Provide appropriate scaffolding
- Limit the number of steps required for completion
- Gradually increase the level of independence required
- Tiered centers, assignments, lessons, or products
- Provide appropriate leveled reading materials
- Deliver the content in “chunks”
- Varied texts and supplementary materials
- Use technology, if available and appropriate
- Differentiate homework and products
- Varied questioning strategies
- Provide background knowledge
- Define key vocabulary, multiple-meaning words, and figurative language
- Use audio and visual supports, if available and appropriate
- Provide multiple learning opportunities to reinforce key concepts and vocabulary
- Meet with small groups to reteach idea/skill
- Provide cross-content application of concepts
- Presenting ideas through auditory, visual, kinesthetic, & tactile means
- Provide graphic organizers and/or highlighted materials
- Strategy and flexible groups based on formative assessment

504 Plans

Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their

abilities to:

- walk, breathe, eat, or sleep
- communicate, see, hear, or speak
- read, concentrate, think, or learn
- stand, bend, lift, or work

Examples of accommodations in 504 plans include:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials
- behavior management support
- adjusted class schedules or grading
- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits
- occupational or physical therapy

Modification Strategies

- Extended Time
- Frequent Breaks
- Highlighted Text
- Interactive Notebook
- Modified Test
- Oral Directions
- Peer Tutoring
- Preferential Seating
- Re-Direct
- Repeated Drill / Practice
- Shortened Assignments
- Teacher Notes
- Tutorials
- Use of Additional Reference Material

- Use of Audio Resources

High Preparation Differentiation

- Alternative Assessments
- Choice Boards
- Games and Tournaments
- Group Investigations
- Guided Reading
- Independent Research / Project
- Interest Groups
- Learning Contracts
- Leveled Rubrics
- Literature Circles
- Menu Assignments
- Multiple Intelligence Options
- Multiple Texts
- Personal Agendas
- Project Based Learning (PBL)
- Stations / Centers
- Think-Tac-Toe
- Tiered Activities / Assignments
- Varying Graphic Organizers

Low Preparation Differentiation

- Choice of Book / Activity
- Cubing Activities
- Exploration by Interest (using interest inventories)
- Flexible Grouping
- Goal Setting With Student
- Homework Options
- Jigsaw
- Mini Workshops to Extend Skills
- Mini Workshops to Re-teach
- Open-ended Activities
- Think-Pair-Share by Interest
- Think-Pair-Share by Learning Style

- Think-Pair-Share by Learning Style
- Think-Pair-Share by Readiness
- Use of Collaboration
- Use of Reading Buddies
- Varied Journal Prompts
- Varied Product Choice
- Varied Supplemental Materials
- Work Alone / Together

Horizontal Integration- Interdisciplinary Connections

See Appendix

Vertical Integration- Discipline Mapping

Prerequisites: Students who wish to take Honors Anatomy & Physiology should have earned and A or B in both Biology and Chemistry courses.

Students who have successfully completed Honors Anatomy & Physiology are encouraged to enroll in: Physics, Zoology, Forensics or Human Impact on the Environment

Additional Materials

Textbook : Essentials of Human Anatomy & Physiology 11e, Elaine N. Marieb masteringaandp.com

Internet Resources

endocrine overview http://schoolmediainteractive.com/view/object/clip/F1BAC325B0BBD4C714673D99AD89245D/02

How does the thyroid manage your metabolism?https://www.youtube.com/watch?v=iNrUpBwU3q0&index=1&list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP&t=12s

What does the pancreas do?https://www.youtube.com/watch?v=8dgoeYPoE-0&index=2&list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP

The endocrine system explained under 4 minuteshttps://youtu.be/z-GXGR7AFpQ?list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP

Insulin, Glucose and Youhttps://www.youtube.com/watch?v=ae_jC4FDOUc&index=7&list=PLwvwk1_KCIU-

uaUmboOs97o8KewwjchrP

Endocrine System, part 1 – Glands & Hormones: Crash Course A&P #23https://www.youtube.com/watch?v=eWHH9je2zG4&list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP&index=4

Endocrine System, part 1 – Glands & Hormones: Crash Course A&P #24https://www.youtube.com/watch?v=SCV_m91mN-Q&list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP&index=3

Great Gands – Your Endocrine System: Crash Course Biology #33https://www.youtube.com/watch?v=WVrlHH14q3o&list=PLwvwk1_KCIU-uaUmboOs97o8KewwjchrP&index=6

Interactive Endocrine topics http://www.interactivephysiology.com/login/endodemo/systems/systems/endocrine/