Unit #10: Reproductive System

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

Unit Overview

This unit explores the role of the reproductive system as it pertains to the growth and development of humans. In this chapter, the male anatomy and reproductive functions are presented first. The next section of the chapter covers the female anatomy and reproductive functions. The culmination of this study provides an overview of pregnancy, embryonic development and the aging process.

STAGE 1- DESIRED RESULTS

Educational Standards

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-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
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-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding

the instructions for characteristic traits passed from parents to offspring.

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

- Cause and Effect
- Scale, Proportion, and Quantity
- 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
- LS3.A: Inheritance of traits
- LS3.B: Variation of traits

Essential Questions

- What are the components of the reproductive system that support human growth and development?

- How are the structures of the reproductive system important and growth, development and aging?
- What are the stages of growth and development from fertilization to maturity?

Enduring Understanding

- Reproduction is the mechanism by which the body repairs itself and passes on traits to the next generation
- The goal of all living things is to continue the species and improve the next generation
- Sexual reproduction increases variability and this helps to insure resistance from disease
- The male body is designed to manufacture and deliver sperm and the female body is designed to manufacture ova and nourish a developing fetus
- Sperm and ova are carriers of DNA, and must be used for the next generation to occur
- The female body is specifically designed and hormonally driven to nourish the developing fetus for at least nine months
- Development, Growth and Aging are dynamic and continuous biological processes

Students will know…

Vocabulary Definitions:

meiosis, oogenesis, spermatogenesis, menstruation, progesterone, luteinizing hormone, follicle stimulating hormone, corpus luteum, blastocyst, gestation, gametes, gonads, ejaculation, endometrium, epididymis, estrogen, menses, oocyte, ovulation, perineum, semen, testosterone, zygote, fertilization, implantation, parturition, primary germ layers (endoderm, mesoderm, ectoderm), diploid, haploid

Predictable misconceptions:

- Students may believe that the reproductive system functions independently and only affects reproductive health
- Students may believe that the tissues and organs of fetuses instantly form upon fertilization
- Students may believe that only pregnancy can interrupt a woman's menstrual cycle

Students will be able to…

- list the essential and accessory organs of the male and female reproductive systems and give generalized

functions of each.

- describe the gross and microscopic structure of the gonads in both sexes and explain the developmental steps in spermatogenesis and oogenesis.
- discuss the primary functions of the sex hormones and identify the cell type or structure responsible for their secretion.
- identify and discuss the phases of the menstrual cycle and correlate each phase with its occurrence in a typical 28-day cycle.
- discuss the concept of development as a biological process characterized by continuous modification and change.
- identify the three primary germ layers and several derivatives in the adult body that develop from each layer.
- discuss the effects of aging on the major body organs systems.

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. label and identify functions of male reproductive anatomy
2. male reproductive quiz
3. label and identify functions of female reproductive anatomy
4. female reproductive quiz
5. compare and contrast different categories of birth control
6. describe the “journey of life” from the event of ejaculation to birth to discuss the process of ovulation, fertilization and implantation and fetal development
7. identify & describe stages of fetal development
8. fertilization & pregnancy quiz
9. jigsaw the effects of aging on each system of the body

Benchmark Assessments

chapter 16 test: reproductive system

STAGE 3- LEARNING PLAN

Instructional Map

- anatomy & physiology of the female reproductive system
- anatomy & physiology of the male reproductive system

- anatomy & physiology of pregnancy & fetal development
- anatomy & physiology of growth and aging

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

From Conception to Birth https://www.youtube.com/watch?v=7ItmwtLCDVY

The Miracle of Life https://www.youtube.com/watch?v=lM2-8se6pp8

Crash Course, Reproductive System, Part 1 - Female Reproductive System https://www.youtube.com/watch?v=RFDatCchpus

Crash Course, Reproductive System, Part 2 - Male Reproductive System https://www.youtube.com/watch?v=-XQcnO4iX_U

Crash Course, Reproductive System, Part 3 - Sex & Fertilization https://www.youtube.com/watch?v=SUdAEGXLO-8

Crash Course, Reproductive system, Part 4 - Pregnancy & Development https://youtu.be/BtsSbZ85yiQ

Ted Ed - Why do Women have Periods? https://www.youtube.com/watch?v=cjbgZwgdY7Q

Ted Ed - Why do our Bodies Age? https://www.youtube.com/watch?v=GASaqPv0t0g

TedX - Slowing Down Ageing https://youtu.be/GrLgYhtoBXA