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Correlation of *Introduction to Anatomy and Physiology* ©2014
to Indiana's Academic Standards for Science

Reading Standards for Literacy in Science		
COMPETENCY		**CORRELATING PAGES**
Key Ideas and Details		
11-12.RS.1	Cite specific textual evidence to support analysis of science, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.	153 (#41), 359 (#14), 449 (#41)
11-12.RS.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.	118 (#1), 193 (#44), 235 (#49), 329 (#13), 330 (#24), 346 (#7), 399 (Figure 11.30 caption question), 423 (Figure 12.7 caption question), 571 (#50)
11-12.RS.3	Follow precisely a complex multistep procedure when carrying out experiments or taking measurements; analyze the specific results based on explanations in the text.	107 (#51), 396 (#9), 534 (#13), 539 (#11), 558 (#13)
Craft and Structure		
11-12.RS.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context relevant to grades 11-12 texts and topics.	16 (#1), 18 (#1 and 2), 35 (#43), 79 (#55), 172 (#2), 174 (#5), 252 (#2), 253 (#5), 259 (#1), 351 (#5), 443 (#4), 565 (#14)
11-12.RS.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.	29 (#6), 50 (#14), 73 (#7), 79 (#52-54), 234 (#31), 437 (#9)
11-12.RS.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.	119 (#5), 147 (#9), 193 (#44), 299 (#44), 437 (#9)
Integration of Knowledge and Ideas		
11-12.RS.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.	107 (#50), 299 (#42), 365 (#38 and 39), 449 (#41), 458 (#9)
11-12.RS.8	Evaluate the hypotheses, data, analysis, and conclusions in a science text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	26 (first full paragraph), 29 (#3), 34 (#36 and 38), 253 (#12)
11-12.RS.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	29 (#10), 73 (#10), 153 (#41), 229 (#6), 265 (#43), 274 (#9), 325 (#13), 359 (#14), 365 (#40), 437 (#10), 443 (#12), 483 (#12), 489 (#49)
Range of Reading and Level of Text Complexity		

11-12.RS.10	By the end of grade 12 read and comprehend science texts in the grades 11-CCR text complexity band independently and proficiently.	Students' reading of the chapters of this text combined with their answering of the chapter questions and performance of the chapter activities and labs demonstrates the ability to comprehend science texts independently and proficiently.
Writing Standards for Literacy in Science		
COMPETENCY		**CORRELATING PAGES**
Text Types and Purposes		
11-12.WS.1	Write arguments focused on discipline-specific content.	355 (#2), 517 (#2), 557 (#1)
a.	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.	107 (#50), 437 (#9 and 10)
b.	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.	107 (#50), 437 (#9 and 10)
c.	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	107 (#50), 437 (#9 and 10)
d.	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	107 (#50), 437 (#9 and 10)
e.	Provide a concluding statement or section that follows from or supports the argument presented.	107 (#50), 437 (#9 and 10)
11-12.WS.2	Write informative/explanatory texts, including scientific procedures/experiments.	107 (#50), 437 (#9 and 10)
a.	Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	107 (#50), 147 (#9), 274 (#9), 299 (#42), 437 (#9 and 10), 565 (#15)
b.	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate	107 (#50), 437 (#9 and 10)

	to the audience's knowledge of the topic.	
c.	Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	107 (#50), 437 (#9 and 10)
d.	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.	107 (#49 and 50), 265 (#43), 437 (#9 and 10)
e.	Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).	107 (#50), 437 (#9 and 10)
11-12.WS.3	Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.	107 (#49 and 50), 153 (#42), 265 (#43), 299 (#42), 331 (#49 and 50), 365 (#38 and 39), 409 (#42)
Production and Distribution of Writing		
11-12.WS.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	107 (#49, 50, 51)
11-12.WS.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	107 (#49 and 50), 153 (#42), 265 (#43), 299 (#42), 331 (#49 and 50), 365 (#38 and 39), 409 (#42)
11-12.WS.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	265 (#46), 437 (#10), 489 (#51)
Research to Build and Present Knowledge		
11-12.WS.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	29 (#10), 34 (#38), 73 (#10), 107 (#49 and 50), 119 (#6), 153 (#41), 187 (#12 and 13), 229 (#6), 253 (#12), 265 (#45), 274 (#9), 299 (#42), 324 (#1), 325 (#13), 331 (#49), 355 (#1 and 2), 359 (#14), 365 (#38, 39, 40), 373 (#1), 380 (#1), 387 (#1), 441 (#1), 443 (#12), 458 (#9), 483 (#12), 517 (#1), 557 (#1), 571 (#51)

11-12.WS.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectivity to maintain the flow of ideas, avoiding plagiarism and overreliance on any once source and following a standard format for citation.	29 (#10), 34 (#38), 73 (#10), 107 (#49 and 50), 119 (#6), 153 (#41), 187 (#12 and 13), 229 (#6), 253 (#12), 265 (#45), 274 (#9), 299 (#42), 324 (#1), 325 (#13), 331 (#49), 355 (#1 and 2), 359 (#14), 365 (#38, 39, 40), 373 (#1), 380 (#1), 387 (#1), 441 (#1), 443 (#12), 458 (#9), 483 (#12), 517 (#1), 557 (#1), 571 (#51)
11-12.WS.9	Draw evidence from informational texts to support analysis, reflection, and research.	29 (#10), 34 (#38), 73 (#10), 107 (#49 and 50), 119 (#6), 153 (#41), 187 (#12 and 13), 229 (#6), 253 (#12), 265 (#45), 274 (#9), 299 (#42), 324 (#1), 325 (#13), 331 (#49), 355 (#1 and 2), 359 (#14), 365 (#38, 39, 40), 373 (#1), 380 (#1), 387 (#1), 441 (#1), 443 (#12), 458 (#9), 483 (#12), 517 (#1), 557 (#1), 571 (#51)
Range of Writing		
11-12.WS.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	107 (#50), 153 (#42), 331 (#49), 525 (#49)
Content Standards		
COMPETENCY		**CORRELATING PAGES**
Standard 1: Levels of Organization in the Human Body: Cellular		
AP.1.1	Compare and contrast diffusion and osmosis, facilitated diffusion, active transport, endocytosis, and exocytosis.	53, 63 (#8), 500, 510 (#4 and 12)
AP.1.2	Define homeostasis, its principal mechanisms at the cellular level and the consequences of failure to maintain homeostasis.	12–14, 14 (#1–4), 15, 16 (#3), 34 (#18 and 20), 54, 78 (#34), 272–274
AP.1.3	Describe the importance of proteins in cell function and structure. Give specific examples of proteins and their functions and describe how proteins are synthesized.	41–42, 56, 425
AP.1.4	Review the stages of mitosis and discuss differences in lifespan among various types of terminally differentiated cells.	60–62, 529–530, 534 (#5 and 11), 569 (#7)
Standard 2: Levels of Organization in the Human Body: Tissue and Organs		
AP.2.1	Explain the interactions that exist among cells within multicellular organisms to produce tissues and organs with distinct functions.	64–73
AP.2.2	Compare and contrast the structure, function and location of cells that make up the various types of muscle tissue, nerve tissue and connective tissue.	68–73, 73 (#7 and 9), 78 (#50)
AP.2.3	Describe the general cellular structure of an epithelium, including the basement membrane. Describe the different types and locations of epithelia.	64–67, 73 (#8), 78 (#50), 79 (#56)

AP.2.4	Describe endocrine and exocrine glands and their development from glandular epithelium.	269, 274 (#2)
AP.2.5	Describe the body cavities, their membranes, and the organs within each cavity and their role in the functioning of the body. Describe the major organ systems and their role in the functioning of the body.	6, 7 (Figure 1.3), 8 (#5)
Standard 3: Movement and Support in the Human Body: The Integumentary System		
AP.3.1	Describe the structure of the skin, including the hypodermis, dermis and the layers of the epidermis.	86–89, 91 (#1–3, 8, 11)
AP.3.2	Describe the accessory structures of the skin (i.e., hairs, nails and glands).	89–91, 91 (#5–7, 9)
AP.3.3	Describe the important physiological functions of the skin.	85–86, 91 (#4), 106 (#32)
AP.3.4	Evaluate the cause and effect of diseases associated with the integumentary system.	95–100, 101 (#4–6, 8, 10), 106 (#43 and 44)
Standard 4: Movement and Support in the Human Body: The Skeletal System		
AP.4.1	Describe the structure of a typical long bone and indicate how each part functions in the physiology and growth of the bone.	112, 113–115, 119 (#3 and 5), 151 (#8)
AP.4.2	Distinguish the axial from the appendicular skeleton and name the major bones of each. Locate and identify the bones and the major features of the bones that make up the skull, vertebral column, thoracic cage, pectoral girdle, upper limb, pelvic girdle and lower limb.	120–128, 129 (#1–12), 130–137, 137 (#1–8), 151 (#9–11), 152 (#12–14 and 16–24)
AP.4.3	Compare and contrast the microscopic organization of compact (i.e., cortical) bone and spongy (i.e., trabecular) bone.	111–112, 119 (#2)
AP.4.4	Describe the major types of joints in terms of their mobility and the tissues that hold them together.	138–141, 141 (#1–8), 152 (#25–30)
AP.4.5	Analyze and describe the effects of pressure, movement, torque, tension and elasticity on the human body.	18–20, 21 (#1, 6, 8, 10, 11)
Standard 5: Movement and Support in the Human Body: The Muscular System		
AP.5.1	Name the components of a skeletal muscle fiber and describe their functions. Describe how the thin and thick filaments are organized in the sarcomere.	156–157, 158 (Figure 5.2), 159 (#3), 161 (#1)
AP.5.2	Explain the molecular processes and biochemical mechanisms that provide energy for muscle contraction and relaxation.	159–161, 161 (#5 and 9)
AP.5.3	Describe a motor unit and its importance in controlling the force and velocity of muscle contraction. Describe the neuromuscular junction and the neurotransmitter released at the neuromuscular junction.	162–165, 170 (#2 and 3)

AP.5.4	Distinguish between isotonic and isometric contractions of skeletal muscle; cite examples of each and discuss how the forces generated in muscle contraction are amplified by the use of levers.	160, 161 (#5), 191 (#8)
AP.5.5	Identify the major muscles on a diagram of the body's musculature, through dissection or both. Describe the movements associated with each muscle.	174–181, 192 (#19–26)
AP.5.6	Explain what is meant by muscular hypertrophy and atrophy and discuss causes of these processes.	117–119
Standard 6: Integration and Coordination in the Human Body: The Nervous System		
AP.6.1	Distinguish the structures of the various types of neurons. Diagram the structure of a motor neuron and explain the function of each of its parts.	198–201, 201 (#4–7, 10)
AP.6.2	Describe the different types of neuroglia. Describe the function of oligodendrocytes and Schwann cells. Describe the structure and function of the myelin sheath and the role that Schwann cells play in myelin and in regeneration of a severed axon.	198, 201 (#8 and 9)
AP.6.3	Discuss mathematically the origin of the resting potential. Refer to transcellular gradients of sodium and potassium ions, the "permeability" of the plasma membrane to these ions, and the intracellular concentration of negatively-charged proteins.	202–203, 205, 235 (#43–46)
AP.6.4	Explain the changes in membrane potential during the action potential and their relationship to the number of open channels for sodium and potassium ions.	202–203
AP.6.5	Explain the role of excitatory and inhibitory neurotransmitters. Explain why is it important to remove a neurotransmitter from its site of action and describe two mechanisms for removal.	204, 206 (Check Your Understanding #1–3)
AP.6.6	Describe the meninges of brain and spinal cord. Describe the cerebral ventricles and their interconnections. Describe the secretion, flow pathways, absorption, locations and functions of cerebrospinal fluid.	212, 215 (#7)
AP.6.7	Discuss the functions of the spinal cord. Describe the five segments (i.e., regions) of the spinal cord and explain its organization in terms of gray matter; white matter; and dorsal and ventral roots.	212–214, 215 (#6)
AP.6.8	Discuss the components and broad function of the brain stem and the diencephalon. Describe and give the functions of the various structures that make up the cerebrum	207–209, 211–212

	including the cerebral cortex and its anatomical divisions, the cerebral components of the basal ganglia, and the corpus callosum.	
AP.6.9	Describe the structure and functions of the cerebellum and its nuclei regarding postural control, smooth coordination of movements and motor learning.	212
AP.6.10	Describe the major characteristics of the autonomic nervous system and contrast its efferent pathways with those of somatic nervous system. Compare and contrast the actions, origins and pathways of nerve fibers in the parasympathetic and sympathetic divisions of the autonomic nervous system including their associated ganglia and neurotransmitters.	219–221
Standard 7: Integration and Coordination in the Human Body: Somatic and Special Senses		
AP.7.1	Explain how information on stimulus intensity and stimulus quality is signaled to the brain.	197–201, 202–206
AP.7.2	Explain what is meant by sensory receptor adaptation and give examples related to everyday experience.	197–201, 202–206
AP.7.3	Describe the structure, function and location of olfactory and taste receptor cells.	254–255, 257–258, 259 (#2–5, 7–8)
AP.7.4	Identify and describe the parts of the eye. Describe the cells found in the neural retina and the functional dependence of the rods and cones on the pigmented epithelium (i.e., the non-neural retina).	238–241, 246 (#2, 4–7)
AP.7.5	Compare the structures of rods and cones, describe the fovea and its function, and discuss the relationship of rods and cones to visual acuity, night vision, dark adaptation, color vision and color blindness.	241
AP.7.6	Describe the three regions of the ear. Distinguish the structure and function of the vestibular apparatus from the auditory apparatus. Describe how sound is transmitted from the external auditory meatus to the cochlea.	247–250, 253 (#1–2, 8, 10)
AP.7.7	Explain how the hair cells in the vestibular apparatus and cochlea respond to head tilt, linear acceleration, rotation and sound.	249–250, 253 (#7)
Standard 8: Integration and Coordination in the Human Body: The Endocrine System		
AP.8.1	Discuss the difference between an endocrine gland and an exocrine gland.	269, 274 (#2–4)
AP.8.2	Explain the nature of a hormone and the endocrine system in relation to digestion and metabolism, homeostasis, growth, development, and reproduction.	269–270

AP.8.3	Identify the chemical classes to which important hormones belong and explain that some hormones act via second messengers.	270
AP.8.4	Discuss chemical signals that can control hormone secretion.	271–272
AP.8.5	Describe the structure and hormones of the hypothalamus-pituitary complex and the function of these hormones in controlling the thyroid, gonads and adrenal cortex. Describe the structure of these glands and the functions of the hormones secreted by them.	275–279, 285 (#1)
AP.8.6	For glands that are not under the control of the hypothalamus-pituitary complex, describe their structure, the hormones they secrete and their function, and the stimuli for secretion.	279–285, 285 (#2–5, 7)
AP.8.7	Discuss how the hypothalamus-pituitary complex, the sympathetic nervous system, the adrenal medulla and the adrenal cortex are all involved in the body's response to stress.	270–271, 282
AP.8.8	Explain how the cells of the adrenal medulla supplement the actions of the autonomic nervous system.	282, 285 (#6)
Standard 9: Transport in the Human Body: The Blood		
AP.9.1	Distinguish whole blood from plasma and serum. Classify and explain the functions of the formed elements found in blood and describe where they are produced.	334–346, 346 (#2–7)
AP.9.2	Describe how erythropoietin regulates red blood cell production.	340
AP.9.3	Explain the ABO blood types and their significance in blood transfusion.	347–349, 351 (#1–4, 6–8, 10–13), 364 (#21–22)
AP.9.4	Describe the basic processes in blood clotting.	343, 345–346, 346 (#7), 364 (#11)
Standard 10: Transport in the Human Body: The Cardiovascular System		
AP.10.1	Describe the layers found in the walls of blood vessels and discuss the relative prominence of these layers in the different types of blood vessels. Include an analysis of vasoconstriction and vasodilation and their importance in controlling blood flow through tissues. Describe both the venous pump and varicose veins.	368, 374 (#1, 4–5, 8), 382–384, 396 (#1)
AP.10.2	Diagram the structure of a capillary bed and explain how materials move in and out of capillaries.	385, 396 (#5)
AP.10.3	Describe the heart and include the pericardium, the layers in its wall, the four chambers, the valves, and the great vessels entering and leaving the heart. Describe the	368–374, 407 (#9)

	major arteries branching off from the aorta and the regions they supply. Describe the major veins entering the superior and inferior venae cavae. Explain with diagrams how the heart valves ensure one-way blood flow during systole and diastole. Discuss the heart sounds and the points in the cardiac cycle when they are heard.	
AP.10.4	Discuss the importance of the baroreceptor reflex in the regulation of blood pressure. Explain what is meant by hypertension and mention some of the dangers associated with it.	376, 381 (#1), 402
AP.10.5	Describe how the action potential of a cardiac muscle cell differs from that of a neuron. Describe the importance of calcium ion influx during the plateau phase of the action potential. Discuss the functioning of pacemaker cells and the how the wave of depolarization is transmitted to the ventricles.	72, 158, 375, 376 (#2)
AP.10.6	Explain the adjustment of the cardiovascular system to exercise and how it relates to hemorrhage. Contrast changes in the distribution of blood flow and cardiac output and explain the importance of the sympathetic branch of the autonomic nervous system in these responses.	385, 387 (Taking It Further), 396 (#7), 400
Standard 11: Transport in the Human Body: The Lymphatic System and Immune Mechanisms		
AP.11.1	Discuss the major anatomical structures and functions of the lymphatic system including the lymphatic vessels, the structure and major groupings of lymph nodes, and the structures and functions of the spleen, thymus and bone marrow.	415–419, 420 (#3, 10)
AP.11.2	Discuss the different types of pathogens and outline the strategies the body uses to protect itself from them. Compare and contrast non-specific, innate or natural immunity from specific or acquired immunity.	421–428, 428 (#1–8), 429–436, 437 (#1, 4, 8, 9), 448 (#25)
AP.11.3	Describe the mechanisms of the acute inflammatory response, its causes and the role of chemical signaling molecules.	425–427, 428 (#5)
AP.11.4	Describe the development and maturation of B- and T-lymphocytes. Discuss why the development of self-tolerance is important.	415, 417, 420 (#6), 437 (#5)
AP.11.5	Define and discuss antigens, antibodies and complement.	424–425, 430, 433, 437 (#2, 4, 6, 7), 448 (#16)
Standard 12: Absorption and Excretion in the Human Body: The Digestive System		
AP.12.1	Describe the functions of all the structural components and enzymes of the gastrointestinal tract and accessory organs in	464–478, 478 (#1–15), 488 (#29–30)

	relation to the processing, digesting, and absorbing of the three major food classes.	
AP.12.2	Explain the roles of the lacteals and the hepatic portal vein in transporting the products of digestion.	471–472, 473–474
AP.12.3	Describe the regulation of the enzyme and bicarbonate content of the pancreatic juice.	475–476, 478 (#14)
AP.12.4	Explain the difference between metabolic and respiratory acidosis and alkalosis.	313
AP.12.5	Describe the microscopic anatomy of the liver and its relationship to the functions of the liver.	473–475
Standard 13: Absorption and Excretion in the Human Body: The Respiratory System		
AP.13.1	Contrast inspiration and expiration (i.e., quiet and forced) and explain the role of various muscles and of lung elasticity in this process.	311–312, 312 (Check Your Understanding #3 and 4)
AP.13.2	Compare the percentages of the oxygen and carbon dioxide in the external air to the percentages in the alveolar and the pulmonary capillaries. Explain the meaning of partial pressure.	311, 313–314, 317 (#7)
AP.13.3	Explain the use of the spirometer and describe the data it generates in a spirogram.	315–316, 317 (#9), 331 (Analyzing and Evaluating Data)
AP.13.4	Describe the neuronal networks controlling respiration. Contrast and compare the chemoreceptors involved in control of respiration and the stimuli to which they respond. Explain how these receptors affect ventilation under conditions of low arterial oxygen partial pressure, high arterial carbon dioxide and low arterial pH.	313–315, 330 (#28)
Standard 14: Absorption and Excretion in the Human Body: The Urinary System		
AP.14.1	Describe the external and internal structure of the kidney. Describe the parts of a nephron and how it is involved in the three steps in the production of urine. Compare the composition of plasma and ultrafiltrate and discuss the percentages of filtered water, sodium and glucose normally reabsorbed by the kidney tubules.	493–496, 497 (#2–8), 524 (#9 and 10)
AP.14.2	Explain the importance of the juxtaglomerular cells in the secretion of renin and how it plays a central role in controlling blood pressure by controlling blood levels of angiotensin and aldosterone.	494, 496, 505
AP.14.3	Explain the neural basis of micturition including the function of the sphincters associated with the male and female urethra.	508–509, 510 (#3)
AP.14.4	Discuss how the volume of body fluid is determined by the balance between ingested and metabolic water on the one hand and	500–504, 524 (#25)

	water lost in the urine, respiration, feces and sweating on the other hand.	
AP.14.5	Describe how the kidneys respond to excess water intake and to dehydration. Explain the role of antidiuretic hormone and of other hormones that control sodium and water absorption in the kidney.	506, 510 (#11)
AP.14.6	Describe how food and metabolic processes add acid to the body fluids. Recognize how chemical buffers, the lungs and the kidneys interact in protecting the body against lethal changes of pH.	54, 313, 334, 337
Standard 15: Life Cycle in the Human Body: The Reproductive System		
AP.15.1	Discuss the anatomy and physiology of the male and female reproductive systems.	535–538, 539 (#1–8), 540–544, 549 (#1–9), 570 (#14, 23, 24)
AP.15.2	Compare and contrast oogenesis and spermatogenesis. Distinguish between diploid germ cells and haploid or monoploid sex cells.	530–531, 534 (#6), 538, 539 (#6), 545
AP.15.3	Describe the hormones of the gonads, their cellular origins and their functions. Explain the functions of the gonadotropins FSH and LH in males and females.	532
AP.15.4	Explain what is happening during the follicular, ovulatory and luteal phases of the menstrual cycle. Describe how estradiol and progesterone released by the ovaries are responsible for the phases that the uterus goes through during the menstrual cycle.	545–548, 549 (#8–11)
AP.15.5	Describe how spermatozoa move through the female reproductive tract and describe the process of fertilization.	550–551, 558 (#1–4)
AP.15.6	Explain the differences among a dikaryon zygote, a zygote, a morula and a blastocyst. Recognize that the implanted blastocyst secretes human gonadotropin, which prolongs the life of the corpus luteum and therefore maintains progesterone secretion. Describe the process of implantation and development of the placenta, the substances that move across it and the role of the placenta in maintaining the fetus.	552–555, 558 (#5–8)
AP.15.7	Describe the changes in the breast leading to lactation, the hormonal events that initiate milk secretion, the maintenance of milk secretion by the breasts and the milk ejection reflex.	555–556, 558 (#9–10)