












# Learning outcomes and related links in the Egyptian Knowledge Bank (EKB)

## Biology third grade of secondary school 2021 / 2022

Learning outcomes	The sources on the knowledge bank		
	Discovery 	Britannica 	Desinmate 
<b>Unit 1: Structure and function in living organisms</b>			
<p style="text-align: center;"><b>chapter 1 Support and movement in living organisms</b></p> <ol style="list-style-type: none"> <li>Recognize the concept of support in living organisms.</li> <li>Link between structure and function of both skeletal system and muscular system.</li> <li>Drawing the vertebra.</li> <li>Recognize the concept of movement in living organisms</li> <li>Differentiate between pulling movement by tendrils and pulling roots of corms and bulbs.</li> <li>Explain the reason of twining tendrils around the support.</li> <li>Recognize the structure of muscle.</li> <li>Microscopic examination of cytoplasmic movement in the cells of Elodea leaf.</li> <li>Explain the mechanism of movement in man.</li> <li>Mention the functions of muscular system in man.</li> </ol>	<a href="https://lms.ekb.eg/repository/resource/134cd0d3-2c59-4f48-9e9b-703d68365226/en">https://lms.ekb.eg/repository/resource/134cd0d3-2c59-4f48-9e9b-703d68365226/en</a>	<a href="https://lms.ekb.eg/repository/resource/c100931e-363e-46f4-8ab2-2ea7ea9af0d9/ar">https://lms.ekb.eg/repository/resource/c100931e-363e-46f4-8ab2-2ea7ea9af0d9/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343031/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343031/ar</a>
	<b>The Skeletal System</b>	<b>Movement and Support in Plants</b>	<b>Axial skeleton (Skull)</b>
	<a href="https://lms.ekb.eg/repository/resource/41dc03a3-2ccf-4f25-9388-910f9b1a24e8/en">https://lms.ekb.eg/repository/resource/41dc03a3-2ccf-4f25-9388-910f9b1a24e8/en</a>	<a href="https://lms.ekb.eg/repository/resource/bdd70444-752d-4d7a-82ef-5d859b3a68c4/ar">https://lms.ekb.eg/repository/resource/bdd70444-752d-4d7a-82ef-5d859b3a68c4/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333935/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333935/ar</a>
	<b>Muscle Function</b>	<b>The Human Skeleton</b>	<b>Joints</b>
		<a href="https://lms.ekb.eg/repository/resource/bc65300b-0992-471f-adff-31f92b943f55/ar">https://lms.ekb.eg/repository/resource/bc65300b-0992-471f-adff-31f92b943f55/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030363935/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030363935/ar</a>
		<b>Practical Tasks: The Human Skeleton</b>	<b>Ligaments</b>
		<a href="https://lms.ekb.eg/repository/resource/c100931e-363e-46f4-8ab2-2ea7ea9af0d9/ar">https://lms.ekb.eg/repository/resource/c100931e-363e-46f4-8ab2-2ea7ea9af0d9/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333831/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333831/ar</a>
		<b>Movement and Support in Plants</b>	<b>Muscles</b>
		<a href="https://lms.ekb.eg/repository/resource/44789827-3dbb-40a8-9a83-b58ab6488850/ar">https://lms.ekb.eg/repository/resource/44789827-3dbb-40a8-9a83-b58ab6488850/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333832/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333832/ar</a>
		<b>Practical Tasks: Movement in Plants</b>	<b>Human muscle types</b>
		<a href="https://lms.ekb.eg/repository/resource/c07d6ad0-c315-4fd3-a035-3effbbc456b7/ar">https://lms.ekb.eg/repository/resource/c07d6ad0-c315-4fd3-a035-3effbbc456b7/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333031/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333031/ar</a>
		<b>Human Muscular System</b>	<b>Ultrastructure of skeletal muscles</b>




Learning outcomes	<i>The sources on the knowledge bank</i>		
	Discovery 	Britannica 	Desinmate 
		<a href="https://lms.ekb.eg/repository/resource/26050c0f-6b52-4339-9b56-0afb17e18664/ar">https://lms.ekb.eg/repository/resource/26050c0f-6b52-4339-9b56-0afb17e18664/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333837/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333837/ar</a>
		<b>The Motor Unit</b>	<b>Mechanism of muscle contraction</b>
		<a href="https://lms.ekb.eg/repository/resource/2a2a0d35-53da-416b-a9f0-8b6c502303b1/ar">https://lms.ekb.eg/repository/resource/2a2a0d35-53da-416b-a9f0-8b6c502303b1/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343033/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343033/en</a>
		<b>Practical Tasks: Human Movement</b>	<b>The appendicular skeleton</b>
			<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343032/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030343032/en</a>
			<b>Axial skeleton (Ribs and sternum)</b>




Learning outcomes	<i>The sources on the knowledge bank</i>			
	Discovery 	Britannica 	Desinmate 	
<b>chapter 2 Hormonal coordination in living organisms</b>	<a href="https://lms.ekb.eg/repository/resource/6624ef76-d96d-420b-9903-955e19f6ed27/ar">https://lms.ekb.eg/repository/resource/6624ef76-d96d-420b-9903-955e19f6ed27/ar</a>	<a href="https://lms.ekb.eg/repository/resource/09b2b345-a3fb-4513-8148-2d0f-8deae353/ar">https://lms.ekb.eg/repository/resource/09b2b345-a3fb-4513-8148-2d0f-8deae353/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030303532/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030303532/ar</a>	
<ol style="list-style-type: none"> <li>1. Recognize the role of scientists in discovering plant and animal hormones and their role in coordinating the work of living organisms organs</li> <li>2. Explain how to coordinate and respond in a plant.</li> <li>3. Explain what is meant by plant hormones.</li> <li>4. Recognize some functions of hormones.</li> <li>5. Mention some vital processes that are affected by plant hormones.</li> <li>6. Explain hormonal coordination and response in humans.</li> <li>7. Explain what is meant by animal hormones.</li> <li>8. Mention examples of endocrine glands in the human body</li> <li>9. Compare between the endocrine glands and the ductal glands in humans.</li> <li>10. List the endocrine glands in the human body.</li> <li>11. Determine the functions of the endocrine glands in the human body</li> <li>12. Explain the effects of hormones secreted by the endocrine glands</li> <li>13. conclude the properties of hormones.</li> <li>14. Recognize the role of the pituitary gland.</li> <li>15. conclude that the pituitary gland is the chief endocrine gland.</li> <li>16. Identify the thyroid gland (thyroid gland activity).</li> <li>17. Explain the function of the parathyroid glands.</li> <li>18. Identify the adrenal glands (excitement glands).</li> <li>19. Identify the role of the pancreas as a regulator of sugar.</li> <li>20. conclude that the pancreas is a double ductal and non-ductal gland.</li> </ol>	<b>Endocrine System</b>	<b>Hormones in Plants</b>	<b>Growth regulators</b>	
	<a href="https://lms.ekb.eg/repository/resource/57588e32-c53a-4fe2-8789-9128103b0eb1/ar">https://lms.ekb.eg/repository/resource/57588e32-c53a-4fe2-8789-9128103b0eb1/ar</a>	<a href="https://lms.ekb.eg/repository/resource/3d37a674-f0db-4c10-b39f-b141b-c4af312/ar">https://lms.ekb.eg/repository/resource/3d37a674-f0db-4c10-b39f-b141b-c4af312/ar</a>	<a href="https://lms.ekb.eg/repository/resource/da1405d1-ac9c-4e7b-b19a-6a743f-ab0d2f/ar">https://lms.ekb.eg/repository/resource/da1405d1-ac9c-4e7b-b19a-6a743f-ab0d2f/ar</a>	<a href="https://lms.ekb.eg/repository/resource/39d04784-90e6-4259-b4c4-821664f347bb/ar">https://lms.ekb.eg/repository/resource/39d04784-90e6-4259-b4c4-821664f347bb/ar</a>
		<b>Hormones</b>	<b>Chemical co - ordination in animals</b>	
		<b>The Pituitary Gland</b>	<b>Animal hormones II</b>	
		<a href="https://lms.ekb.eg/repository/resource/39d04784-90e6-4259-b4c4-821664f347bb/ar">https://lms.ekb.eg/repository/resource/39d04784-90e6-4259-b4c4-821664f347bb/ar</a>	<a href="https://lms.ekb.eg/repository/resource/20cbfe84-d3e4-4b82-a7d7-bc-cfd3d5f5fb/ar">https://lms.ekb.eg/repository/resource/20cbfe84-d3e4-4b82-a7d7-bc-cfd3d5f5fb/ar</a>	<a href="https://lms.ekb.eg/repository/resource/09d4b0a0-53b0-4cae-9ec3-59c4b6408195/ar">https://lms.ekb.eg/repository/resource/09d4b0a0-53b0-4cae-9ec3-59c4b6408195/ar</a>
		<b>The Thyroid and Parathyroid Glands</b>	<b>Human endocrine system</b>	
		<b>The Pancreas</b>	<b>Thyroid gland</b>	
		<b>Hormonal Diseases</b>	<b>Adrenal glands</b>	
		<b>Human Hormonal Glands</b>		




Learning outcomes	<i>The sources on the knowledge bank</i>	
	Britannica 	Desinmate 
<b>chapter 3 Reproduction in living organisms</b>	<a href="https://lms.ekb.eg/repository/resource/9e640892-a5a0-457f-ad15-4013980e875a/ar">https://lms.ekb.eg/repository/resource/9e640892-a5a0-457f-ad15-4013980e875a/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030373030/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030373030/ar</a>
	<b>Reproduction in Organisms</b>	<b>Types of reproduction (Asexual reproduction)</b>
<ol style="list-style-type: none"> <li>1. Recognize the concept of reproduction and its importance.</li> <li>2. Discover the capacities of reproduction among organisms.</li> <li>3. Recognize the asexual among organisms.</li> <li>4. Recognize the sexual reproduction among organisms.</li> <li>5. Recognize the life cycle of plasmodium which causes the malaria disease.</li> <li>6. Compare between asexual and sexual reproduction.</li> <li>7. Recognize the structure of flower as an organ of sexual reproduction in the plant.</li> <li>8. Explain the steps of fertilization in a plant.</li> <li>9. Recognize how seeds and fruits are formed.</li> <li>10. Explain formation of fruits as a product of the sexual reproduction process.</li> <li>11. conclude that pancreas is a double ductal and non-ductal gland.</li> <li>12. Recognize the male and female genital systems in human beings.</li> <li>13. Recognize the stages of the spermatogenesis and oogenesis in human.</li> <li>14. Recognize the menstrual cycle in woman and the role of hormone regulation.</li> <li>15. Recognize how the embryo survives inside the uterus and the stages of its formation and development.</li> <li>16. Discover how the twins phenomenon occurs and its types.</li> <li>17. Recognize the means of contraceptive.</li> <li>18. Compare between the embryonic culture and nucleation.</li> <li>19. Recognize the method of extra - uterine fertilization (test tube baby).</li> <li>20. Appreciate the efforts of scientists in the technological progress of the reproduction process.</li> <li>21. Appreciate the capability of the Great Creator in reproduction of generations to continue life on</li> </ol>	<a href="https://lms.ekb.eg/repository/resource/b32304a6-29e1-4533-a78a-57b469b4d251/ar">https://lms.ekb.eg/repository/resource/b32304a6-29e1-4533-a78a-57b469b4d251/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030363038/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030363038/ar</a>
	<b>Asexual Reproduction</b>	<b>Sexual and asexual reproduction</b>
	<a href="https://lms.ekb.eg/repository/resource/9024521a-b387-4669-832b-bf99fd053944/ar">https://lms.ekb.eg/repository/resource/9024521a-b387-4669-832b-bf99fd053944/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030313539/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030313539/ar</a>
	<b>Sexual Reproduction</b>	<b>Parts of a flower</b>
	<a href="https://lms.ekb.eg/repository/resource/f38504e7-c494-436c-9d73-ee2ddc4ebc45/ar">https://lms.ekb.eg/repository/resource/f38504e7-c494-436c-9d73-ee2ddc4ebc45/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031323939/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031323939/en</a>
	<b>Practical Tasks: Reproduction</b>	<b>Female reproductive anatomy</b>
	<a href="https://lms.ekb.eg/repository/resource/2f47a997-55a2-4a11-9586-97c70ebc556e/ar">https://lms.ekb.eg/repository/resource/2f47a997-55a2-4a11-9586-97c70ebc556e/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333034/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333034/ar</a>
	<b>The Flower and Its Parts</b>	<b>Male reproductive system (Anatomy and physiology)</b>
	<a href="https://lms.ekb.eg/repository/resource/d64a2e92-b21c-4c00-8805-6766558e6a1e/ar">https://lms.ekb.eg/repository/resource/d64a2e92-b21c-4c00-8805-6766558e6a1e/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353437/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353437/ar</a>
	<b>Practical Tasks: Germination</b>	<b>Reproductive system (Female)</b>
	<a href="https://lms.ekb.eg/repository/resource/bd-4581fa-2b7d-404e-a88f-b811814dc560/ar">https://lms.ekb.eg/repository/resource/bd-4581fa-2b7d-404e-a88f-b811814dc560/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353433/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353433/ar</a>
	<b>Practical Tasks: Fruits and Seeds</b>	<b>Oogenesis</b>

Learning outcomes	<i>The sources on the knowledge bank</i>	
	<b>Britannica</b> 	<b>Desinmate</b> 
	<a href="https://lms.ekb.eg/repository/resource/333904cf-95b1-4ea2-be44-7c5bfca78d18/ar">https://lms.ekb.eg/repository/resource/333904cf-95b1-4ea2-be44-7c5bfca78d18/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353435/ar">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353435/ar</a>
	<b>Human Male Genitalia</b>	<b>Developmental stages (Embryonic development)</b>
	<a href="https://lms.ekb.eg/repository/resource/cbccf320-677d-4135-8d0c-23ab51f0ad0f/ar">https://lms.ekb.eg/repository/resource/cbccf320-677d-4135-8d0c-23ab51f0ad0f/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333034/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031333034/en</a>
	<b>Sperm and Spermatogenesis</b>	<b>Male reproductive system (Anatomy and physiology)</b>
	<a href="https://lms.ekb.eg/repository/resource/965fed90-9269-4f3b-aa72-3d9fa2a18a9b/ar">https://lms.ekb.eg/repository/resource/965fed90-9269-4f3b-aa72-3d9fa2a18a9b/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353438/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353438/en</a>
	<b>Human Female Genitalia</b>	<b>Reproductive system (Male)</b>
	<a href="https://lms.ekb.eg/repository/resource/e52d3d7d-7d4d-4acd-a584-f9e07780d2b4/ar">https://lms.ekb.eg/repository/resource/e52d3d7d-7d4d-4acd-a584-f9e07780d2b4/ar</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031323939/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031323939/en</a>
	<b>Oogenesis in Humans</b>	<b>Female reproductive anatomy</b>
	<a href="https://lms.ekb.eg/repository/resource/dfb4bfa7-9da6-41e0-b6af-99a896467456/ar">https://lms.ekb.eg/repository/resource/dfb4bfa7-9da6-41e0-b6af-99a896467456/ar</a>	
	<b>Advancements in Human Reproduction</b>	
	<a href="https://lms.ekb.eg/repository/resource/dfb4bfa7-9da6-41e0-b6af-99a896467456/en">https://lms.ekb.eg/repository/resource/dfb4bfa7-9da6-41e0-b6af-99a896467456/en</a>	
	<b>Fertilization and Pregnancy</b>	
	<a href="https://lms.ekb.eg/repository/resource/9adbb453-9d71-4290-8e33-7c9d-33dc66eb/en">https://lms.ekb.eg/repository/resource/9adbb453-9d71-4290-8e33-7c9d-33dc66eb/en</a>	
	<b>Pollination and Fertilization</b>	
	<a href="https://lms.ekb.eg/repository/resource/09b9800f-9043-41aa-9576-0152c973e-b6c/en">https://lms.ekb.eg/repository/resource/09b9800f-9043-41aa-9576-0152c973e-b6c/en</a>	
	<b>Practical Tasks: The Flower</b>	

*The sources on the knowledge bank*

Learning outcomes	<i>The sources on the knowledge bank</i>		
	Discovery 	Britannica 	Desinmate 
<b>chapter 4 Immunity in Living organisms</b>	<a href="https://lms.ekb.eg/repository/resource/a5389d14-5fdc-4c92-a4e2-4890f87a6e3c/en">https://lms.ekb.eg/repository/resource/a5389d14-5fdc-4c92-a4e2-4890f87a6e3c/en</a>	<a href="https://lms.ekb.eg/repository/resource/e9662500-1109-4d6b-8a96-704e69d5da56/en">https://lms.ekb.eg/repository/resource/e9662500-1109-4d6b-8a96-704e69d5da56/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353233/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353233/en</a>
1. Recognize the concept of the immune system and its importance for living organisms.	Immune System	Lymphatic Organs	Cells of the immune system
2. Compare between the natural immunity and acquired immunity.	<a href="https://lms.ekb.eg/repository/resource/e2b4830b-383a-4a36-bfe9-cec-4d301aa36/en">https://lms.ekb.eg/repository/resource/e2b4830b-383a-4a36-bfe9-cec-4d301aa36/en</a>	<a href="https://lms.ekb.eg/repository/resource/f37e8ca2-6243-46fd-ab9e-ae2b453721d1/en">https://lms.ekb.eg/repository/resource/f37e8ca2-6243-46fd-ab9e-ae2b453721d1/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353235/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353235/en</a>
3. List the pathogens of the plant Explain how the immune system works in the plant	Autoimmune Diseases	Immunology	How are antibodies produced ?
4. Recognize the structural immunity and the biochemical immunity of the Plants	<a href="https://lms.ekb.eg/repository/resource/88833b95-3d70-40a9-ba3c-a91eb205f800/en">https://lms.ekb.eg/repository/resource/88833b95-3d70-40a9-ba3c-a91eb205f800/en</a>	<a href="https://lms.ekb.eg/repository/resource/8109e164-9d85-454b-a4b2-e3e9235ba121/en">https://lms.ekb.eg/repository/resource/8109e164-9d85-454b-a4b2-e3e9235ba121/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353239/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030353239/en</a>
5. Determine the organs of the Explains the structure and function of the human lymphatic system.	The Immune System and Human Immune Response: Germs	Practical Tasks: Acquired Immunity	Structure of antibody
6. Determines the relationship of the lymphatic system to the immune system in the human body.		<a href="https://lms.ekb.eg/repository/resource/07d7d00a-3fb3-4667-a0fd-14d30a205544/en">https://lms.ekb.eg/repository/resource/07d7d00a-3fb3-4667-a0fd-14d30a205544/en</a>	
7. Compare natural and acquired immunity		Antibodies	
8. Defines the types of lymphocytes		<a href="https://lms.ekb.eg/repository/resource/525cc4a7-8724-42fa-aab3-e00ceec064e7/en">https://lms.ekb.eg/repository/resource/525cc4a7-8724-42fa-aab3-e00ceec064e7/en</a>	
9. Recognize antibodies and how they work		Immunity in Plants	
10. Define some natural immune system		<a href="https://lms.ekb.eg/repository/resource/269103d4-2dca-40ed-babb-7924c8b61472/en">https://lms.ekb.eg/repository/resource/269103d4-2dca-40ed-babb-7924c8b61472/en</a>	
		Stages of Acquired Immunity	
		<a href="https://lms.ekb.eg/repository/resource/be8b1ecf-ad89-4de1-996b-e468326bbda1/en">https://lms.ekb.eg/repository/resource/be8b1ecf-ad89-4de1-996b-e468326bbda1/en</a>	
		Immunity in Humans	
		<a href="https://lms.ekb.eg/repository/resource/df0e78e9-3500-44da-aa8f-d0ebca764522/en">https://lms.ekb.eg/repository/resource/df0e78e9-3500-44da-aa8f-d0ebca764522/en</a>	
		Acquired Immunity	

Learning outcomes	<i>The sources on the knowledge bank</i>			
	Discovery 	Britannica 	Desinmate 	
<b>Unit 2:</b>				
<p><b>chapter 1 DNA and Genetic Information</b></p> <ol style="list-style-type: none"> <li>Recognize errors that may occur during the translation of the genetic code.</li> <li>Recognize the structure of the genetic content.</li> <li>appreciates the contributions of science and scientists in the advancement of genetics and the solution of many genetic problems.</li> <li>Recognize the role of scientists in knowing the material of genetics.</li> <li>Estimate the role of scientists in reaching the structure of the DNA helix and its replication</li> <li>Discover the causes and outcomes of the mutation</li> </ol>	<a href="https://lms.ekb.eg/repository/resource/5a332100-5535-4ba2-9b54-ead18887d2d3/en">https://lms.ekb.eg/repository/resource/5a332100-5535-4ba2-9b54-ead18887d2d3/en</a>	<a href="https://lms.ekb.eg/repository/resource/8f6ce1c4-835c-46c5-9cbf-ae9536870c55/en">https://lms.ekb.eg/repository/resource/8f6ce1c4-835c-46c5-9cbf-ae9536870c55/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333130/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333130/en</a>	
	Science in Progress: Human Genome Project: Overview		The Structure of DNA	Structure of DNA
	<a href="https://lms.ekb.eg/repository/resource/61f927e2-7034-48b4-948e-a1e8aba15737/en">https://lms.ekb.eg/repository/resource/61f927e2-7034-48b4-948e-a1e8aba15737/en</a>	<a href="https://lms.ekb.eg/repository/resource/12108eff-29c9-43df-afab-8809659b40a6/en">https://lms.ekb.eg/repository/resource/12108eff-29c9-43df-afab-8809659b40a6/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333237/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030333237/en</a>	
	DNA Carries Genetic Material		DNA Replication and Repair	Mutation
	<a href="https://lms.ekb.eg/repository/resource/96cf4ac5-71f0-47c5-a7ea-7cd4d018f427/en">https://lms.ekb.eg/repository/resource/96cf4ac5-71f0-47c5-a7ea-7cd4d018f427/en</a>	<a href="https://lms.ekb.eg/repository/resource/73d291e9-95b5-449a-bed9-8076dfc9259c/en">https://lms.ekb.eg/repository/resource/73d291e9-95b5-449a-bed9-8076dfc9259c/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031313934/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303031313934/en</a>	
	Double Helix		DNA in Prokaryotes and Eukaryotes	DNA replication
	<a href="https://lms.ekb.eg/repository/resource/1f295813-542b-4afd-94dd-a4cf4da177fc/en">https://lms.ekb.eg/repository/resource/1f295813-542b-4afd-94dd-a4cf4da177fc/en</a>	<a href="https://lms.ekb.eg/repository/resource/c28aa5db-2149-4622-a487-6596df1f5a69/en">https://lms.ekb.eg/repository/resource/c28aa5db-2149-4622-a487-6596df1f5a69/en</a>		
	Evolution: Sources of Genetic Variability: Mutation		Practical Tasks: DNA	
	<a href="https://lms.ekb.eg/repository/resource/f77635f5-78de-4213-824e-47f0ff331846/en">https://lms.ekb.eg/repository/resource/f77635f5-78de-4213-824e-47f0ff331846/en</a>	<a href="https://lms.ekb.eg/repository/resource/94c52d20-9403-480c-bc4f-2d8e9def53fe/en">https://lms.ekb.eg/repository/resource/94c52d20-9403-480c-bc4f-2d8e9def53fe/en</a>		
	The Genetic Code		The Human Genome	
	<a href="https://lms.ekb.eg/repository/resource/863004ae-c6a7-480e-a08e-f49b898ef8c1/en">https://lms.ekb.eg/repository/resource/863004ae-c6a7-480e-a08e-f49b898ef8c1/en</a>	<a href="https://lms.ekb.eg/repository/resource/d636c2ff-ef88-42f7-b2ba-09a0f233d13b/en">https://lms.ekb.eg/repository/resource/d636c2ff-ef88-42f7-b2ba-09a0f233d13b/en</a>		
	Genetics		Practical Tasks: DNA Structure	
		<a href="https://lms.ekb.eg/repository/resource/f15b3116-9e08-4daf-9dbc-87531339b454/en">https://lms.ekb.eg/repository/resource/f15b3116-9e08-4daf-9dbc-87531339b454/en</a>		
			Genetic Mutations	
	<a href="https://lms.ekb.eg/repository/resource/9f5bc-c5d-0150-4db9-8cda-fad4f3e78a7d/en">https://lms.ekb.eg/repository/resource/9f5bc-c5d-0150-4db9-8cda-fad4f3e78a7d/en</a>			
		The Discovery of DNA		

Learning outcomes	<i>The sources on the knowledge bank</i>		
	Discovery 	Britannica 	Desinmate 
<b>chapter 2 Nucleic Acids and Protein Synthesis</b>	<a href="https://lms.ekb.eg/repository/resource/7b3057f2-3320-401f-86f2-56d6a8a49060/en">https://lms.ekb.eg/repository/resource/7b3057f2-3320-401f-86f2-56d6a8a49060/en</a>	<a href="https://lms.ekb.eg/repository/resource/b4b554d6-9429-4bd0-a3d2-2ae-74261d1c4/en">https://lms.ekb.eg/repository/resource/b4b554d6-9429-4bd0-a3d2-2ae-74261d1c4/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323431/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323431/en</a>
<ol style="list-style-type: none"> <li>1. Know the kinds of proteins.</li> <li>2. know the structure of the nucleic acid RNA.</li> <li>3. Compare between these kinds of RNA (ribosomal - transfer - messenger).</li> <li>4. Know the genetic code.</li> <li>5. Know the steps of protein synthesis.</li> <li>6. Know the modern techniques of molecular technology.</li> <li>7. Know the concept of the human genome and its importance in drug manufacture.</li> <li>8. Appreciate the greatness of God concerning the genetic information and its role in characterize humans with traits that differ from one person to another</li> </ol>	Nucleic Acids	Applications of Genetic Information	Types of RNA
	<a href="https://lms.ekb.eg/repository/resource/3088de83-8e2f-4541-982f-c989acd1e2a3/en">https://lms.ekb.eg/repository/resource/3088de83-8e2f-4541-982f-c989acd1e2a3/en</a>	<a href="https://lms.ekb.eg/repository/resource/bc4fa05a-a0e3-4370-8f22-2df-0f4672a14/en">https://lms.ekb.eg/repository/resource/bc4fa05a-a0e3-4370-8f22-2df-0f4672a14/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323235/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323235/en</a>
	The Structure of the Cell: Proteins & Enzymes	Cloning DNA Sequences	Recombinant DNA replication and transfer
	<a href="https://lms.ekb.eg/repository/resource/0443a6d8-c06f-4025-86d9-d013dfcd7655/en">https://lms.ekb.eg/repository/resource/0443a6d8-c06f-4025-86d9-d013dfcd7655/en</a>	<a href="https://lms.ekb.eg/repository/resource/76d8af50-a5b6-4b6d-8da2-8547da046b04/en">https://lms.ekb.eg/repository/resource/76d8af50-a5b6-4b6d-8da2-8547da046b04/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323233/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323233/en</a>
	Ribosomes and Protein Synthesis	Protein Synthesis	Synthesis of m-RNA
		<a href="https://lms.ekb.eg/repository/resource/3c3afc54-481f-4bf9-b6d5-e18514987848/en">https://lms.ekb.eg/repository/resource/3c3afc54-481f-4bf9-b6d5-e18514987848/en</a>	<a href="https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323234/en">https://lms.ekb.eg/repository/resource/65757265-6b61-656b-6231-303030323234/en</a>
		Molecular Technology	Protein synthesis
		<a href="https://lms.ekb.eg/repository/resource/bc1c348a-bac2-4c2c-aadc-1061bbaa-b99a/en">https://lms.ekb.eg/repository/resource/bc1c348a-bac2-4c2c-aadc-1061bbaa-b99a/en</a>	
		Proteins in Living Organisms	
		<a href="https://lms.ekb.eg/repository/resource/7f59c50f-d017-48d6-9a6c-cc67e0ff8b6d/en">https://lms.ekb.eg/repository/resource/7f59c50f-d017-48d6-9a6c-cc67e0ff8b6d/en</a>	
		Ribonucleic Acids	
		<a href="https://lms.ekb.eg/repository/resource/05e58bd1-1c9b-4956-9094-860d9883177a/en">https://lms.ekb.eg/repository/resource/05e58bd1-1c9b-4956-9094-860d9883177a/en</a>	
	Practical Tasks: The Genetic Code		