



BIOLOGY

BOOKS - TARGET PUBLICATION

HEREDITY AND EVOLUTION

Choose The Correct Alternative

1. Which of the following nitrogenous base is NOT present in DNA?

A. Thymine

B. Uracil

C. Adenine

D. Guanine

Answer: B



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2. Adenine can pair with which of the following nitrogenous base?

A. Cytosine

B. Uracil

C. Thymine

D. Both B and C

Answer: D



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3. RNA does not contain

A. deoxyribose

B. phosphate

C. Adenine

D. uracil

Answer: A



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4. Transfer of information from DNA to mRNA is called as _____ process.

A. translocation

B. mutation

C. transcription

D. translation

Answer: C



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5. Which of the following types of RNA carries information from genes to the ribosome?

A. mRNA

B. tRNA

C. rRNA

D. All of the above

Answer: A



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6. The origin of the universe is explained by

A. Drawin's theory

B. Big-bang theory

C. Speciation

D. Lamarckism

Answer: B



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7. Which of the following is/are unicellular organism(s)?

A. Amoeba

B. Chlorella

C. Paramoecium

D. All of the above

Answer: D



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8. Vestigial organ _____ present in human body is proof of evolution.

A. intestine

B. appendix

C. liver

D. eye lens

Answer: B



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9. The appendix is useful in ruminants for digestion of which of the following compounds?

A. Fats

B. Cellulose

C. Proteins

D. Glycogen

Answer: B



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10. _____ is a connecting link between Annelida and Arthropoda.

A. Duck billed platypus

B. Peripatus

C. Lungfish

D. Whale

Answer: B



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11. Connecting links suggest that amphibians have evolved from

A. mammals

B. reptiles

C. fishes

D. aves

Answer: C



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12. Theory of inheritance of acquired characters is also known as

A. Lamarckism

B. Natural selection

C. Speciation

D. translation

Answer: A



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13. Modern man differ from Australipithecus in which of the following aspects?

A. Presence of tail

B. Use of hands for eating food

C. Increased brain size

D. All of the above

Answer: C



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Complete The Paragraph

1. Fill in the blanks by selecting the correct word from the bracket and complete the given

paragraph.

(two, Ramapithecus, modern sciences, seven, Neanderthal man, lemurs, agriculture, orangutans)

The last dinosaurs disappeared approximately _____ crore years ago. Monkey-like animals are said to have evolved from some ancestors who were similar to modern _____. The first human-like animals with erect posture evolved about _____ crore years ago. The first record of this human-like ape is _____ from East Africa. _____ can be considered as the

first member of the class-wise man. About 10 thousand years ago, wise -man started to practice.



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Name The Following

1. Genetic disorder that is caused by mutation.



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2. First living material formed in ocean.



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3. Remnants and impressions of organisms that remain preserved underground.



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4. Method used in palaeontology and anthropology for determining the age fossils

by measuring C-14 radioactivity.



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5. Plants and animals that show some morphological characters by which they are related to two different groups.



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6. Book published by Darwin explaining evolution through natural selection.



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True Or False

1. Francois Jascob and Jacques Monod proposed a model of the process of protein synthesis.



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2. The causality behind the sudden changes was understood due to which principle of Hugo de Vries.



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3. The proof for the fact that protein synthesis occurs through gene was given by George Beadle and Edward Tatum.



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4. Information about protein synthesis is stored in the tRNA.



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5. Proteins are synthesised by DNA through RNA.



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6. During transcription, the sequence of nucleotides in mRNA is complementary to the DNA strand used for synthesis.



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7. tRNA has anticodon with complementary sequence to the codon on mRNA.



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8. mRNA is formed in the nucleus and transferred to the cytoplasm for translation.



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9. Gradual development of plants and animals from ancestors having different structural and functional organization is called evolution.



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10. Under changing environment sudden development of new tissues and organs occurs in living organisms.



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11. Fossils of invertebrates indicate they originated in the Cenozoic era.



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12. Appendix is a fully functional organ in ruminants.



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13. Reptiles and amphibians have evolved from mammals.



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14. Darwin's theory of natural selection explained evolution with respect to useful and useless modifications.



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15. Based on his observations of plants and animals, Darwin suggested that only the fittest organisms survive.



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16. According to Lamarck, the characters which are acquired by the organism during the life time are passed on the next generation.



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17. Long neck of giraffe is an example of Lamarckism.



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18. Genetic variation is responsible for formation of new species from earlier ones.



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19. Geographical isolation leads to speciation.



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Odd One Out

1. Foreleg of ox, Ear pinnae of sheep,
Patagium of bat, Flipper of whale



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2. Coccyx, Intestine, Wisdom teeth, Appendix



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3. Cro-Magnon man, homo erectus,
Australopithecus, Neanderthal man



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Complete The Analogy

1. DNA:Thymine:: RNA: _____



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2. RNA synthesis: _____ :: Protein synthesis: Translation



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3. _____: Sudden changes in genes ::

Evolution : Gradual changes in specific characters.



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4. Morphological evidence: Similarity in position of eyes:: _____: Similarity in structure of bones.



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5. Peripatus: Connecting link:: Wisdom tooth:

_____ options a) morphological evidence

b) Embryological evidence c) vestigial organ d)

anatomical evidence



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6. Survival of fittest: _____ :: Ancestry of

acquired characters: Lamarck



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7. First human like animal: _____::First wise man: Neanderthal man



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Match The Following

1. Match the following columns

	Column I		Column II
i.	Walter and Sutton	a.	Proved that except viruses all living organisms have DNA as genetic material
ii.	Avery, McCarty and MacLeod	b.	Proposed the central dogma
		c.	Observed paired chromosomes in cells of grasshopper
		d.	Discovered triplet codon



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2. Match the following columns

	Column I		Column II
i.	Fossils	a.	Paleontological evidence
ii.	Flipper of whale and forelimb of bat	b.	Morphological evidence
		c.	Anatomical evidence



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3. Match the following columns

	Column I		Column II
i.	Connecting link between pisces and amphibians	a.	Lungfish
ii.	Connecting link between reptiles and mammals	b.	Duck-billed platypus
		c.	<i>Peripatus</i>
		d.	Snail



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Answer The Following

1. Define heredity. Explain the mechanism of hereditary changes.



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2. How are the hereditary changes responsible for evolution?





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3. What is mutation?



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4. How are genes carried?



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5. Enlist the uses of the science of heredity.





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6. How do genes control the structure and functioning of the body?



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7. What do you mean by central dogma?



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8. What is transcription?



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9. Write a note an transcription.



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10. What is meant by triplet codon?



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11. What is translation?



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12. Explain the process of formation of complex proteins.



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13. What is translocation?



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14. Write a short note on evolution.



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15. Explain the process of formation of complex proteins from simple proteins



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16. Explain the theory of evolution and mention the proof supporting it.



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17. What is morphological evidence of evolution?



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18. Define anatomical evidence.



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19. Explain with suitable examples importance of anatomical evidences in evolution.



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20. Define the following :

Vestigial organs



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21. Define vestigial organs. Write names of some vestigial organs in human body and write the names of those animals in whom same organs are functional.



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22. Define vestigial organs. Write any two names of vestigial organs in human body.



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23. What is paleontological evidence of evolution based on?



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24. Study of fossils is an important aspect of study of evolution.



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25. What are connecting links?



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26. Write short notes:

Connecting link



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27. Write short notes:

Embryology



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28. Embryological evidences provide proof of evolution. Explain.



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29. Embryological evidences provide proof of evolution. Explain.



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30. Write short notes:

Darwin's theory of natural selection



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31. Answer in short:

What objections were raised against Darwin's theory of natural selection?



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32. Write short notes:

Lamarckism



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33. Why was Lamarck's theory disproved?



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34. Define the following :

Ancestry of acquired characters



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35. Define evolution.



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36. What is speciation?



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37. What is species?



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38. Write evolutionary history of modern man.



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Give Reasons

1. Morphological evidence suggest that dog, sheep and wolf have a common origin.



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2. Forelimb of bat and flipper of whale have different functions but indicate common ancestry.



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3. The vestigial organ appendix is still existent in human beings.



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4. Read the following statements and justify same in your own words with the help of suitable examples.

i. Human evolutions began approximately 7 crore years ago.



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5. State whether the following statements

True or False. Correct the false statements.

Geographical or reproductive isolation leads to speciation.



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6. Study of fossils is an important aspect of study of evolution.



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7. There is evidence of fatal science among chordates.



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Distinguish Between

1. Transcription and Translation.



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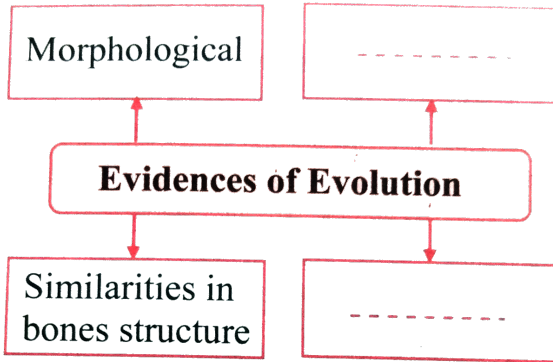
2. Lamarsckism and Natural selection



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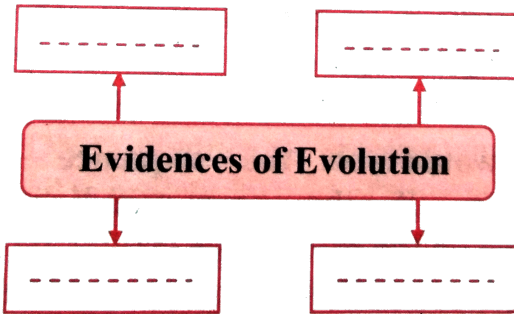
[Complete The Given Chart Table](#)

1. Complete the following diagram



OR

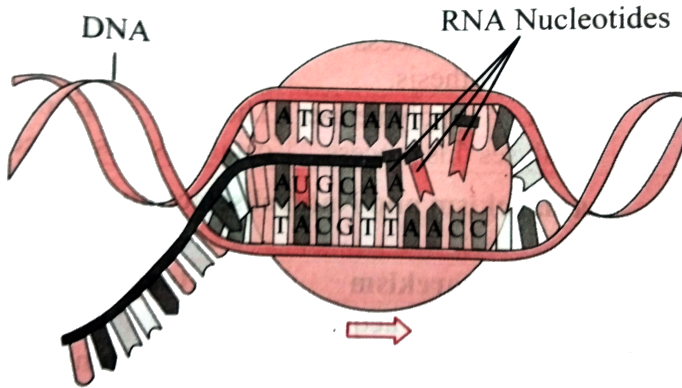
Complete the following chart. [Mar 2019]



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Questions Based On Diagram

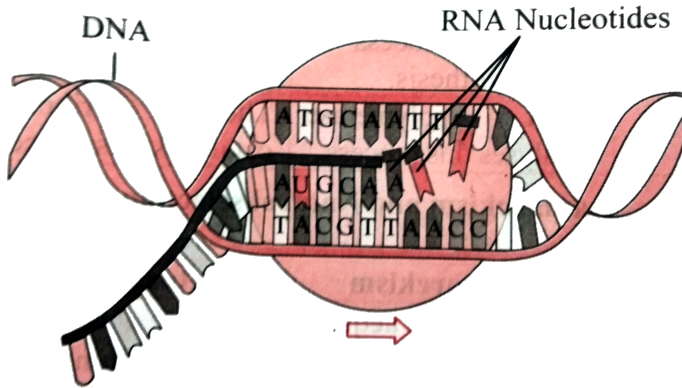
1. Observe the diagram and answer the questions given below it.



Identify the cellular process depicted in the diagram.

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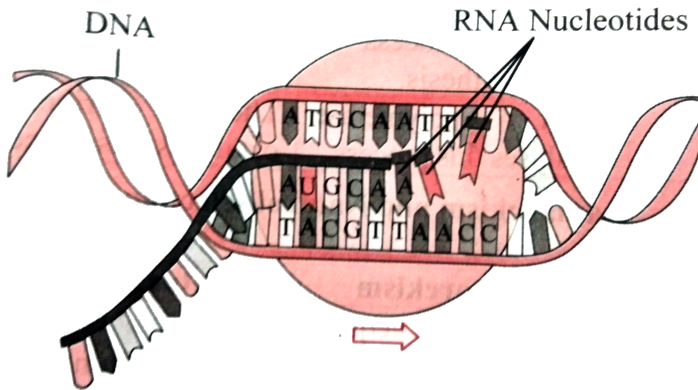
2. Observe the diagram and answer the questions given below it.



Identify the cellular process depicted in the diagram.

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3. Observe the diagram and answer the questions given below it.

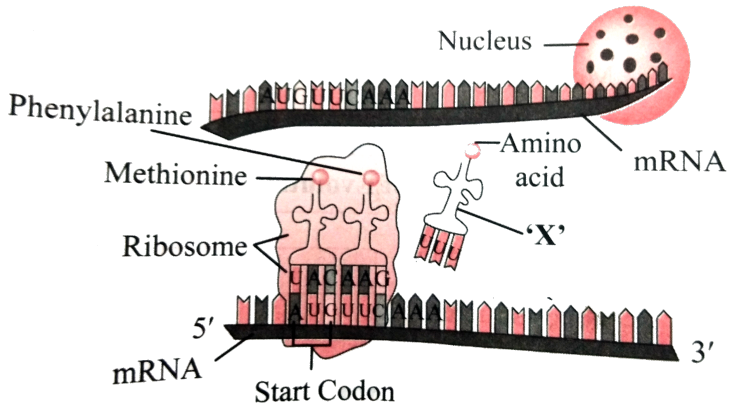


In which part of the cell does this process occur?



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4. Observe the diagram and answer the questions given below it.

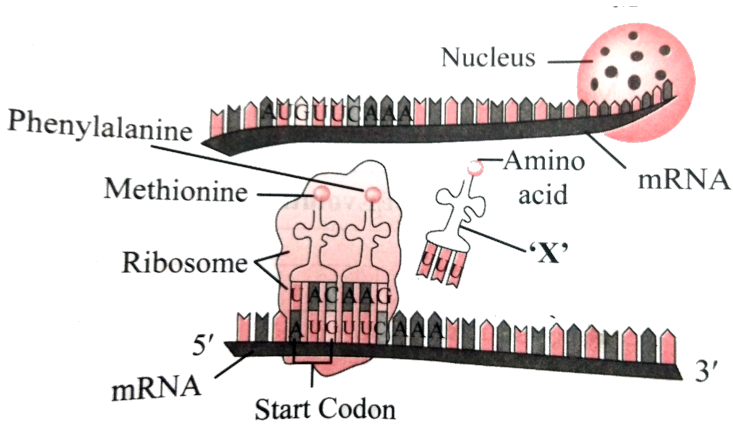


Identify the molecule labelled as X in the given diagram.



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5. Observe the diagram and answer the questions given below it.

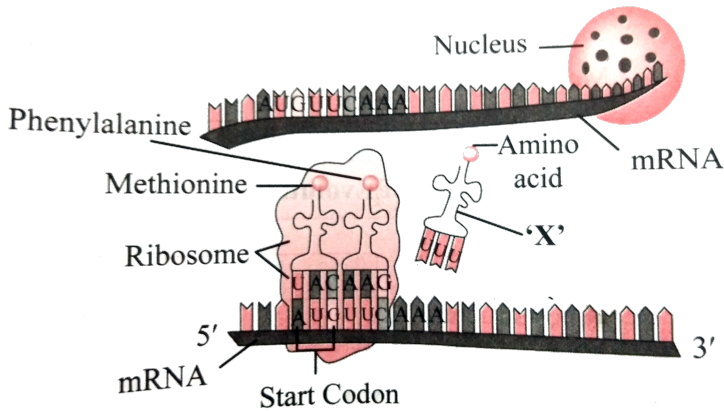


What would be the sequence on the anticodon, if the corresponding codon sequence on the mRNA is GAU?



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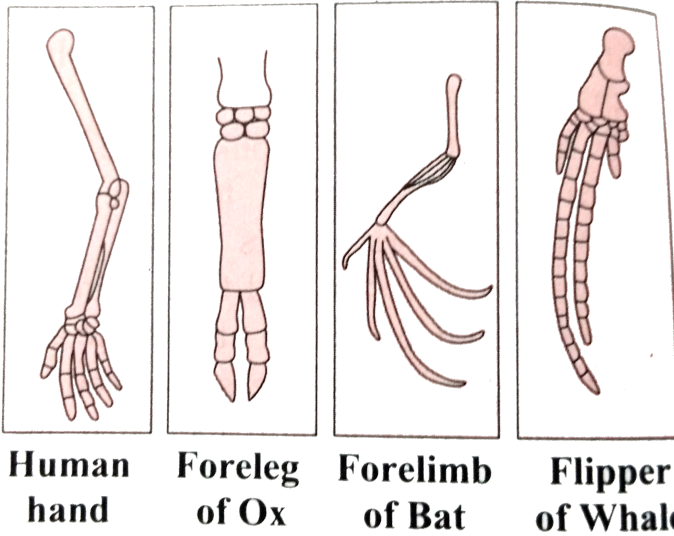
6. Observe the diagram and answer the questions given below it.



During the process of translation, the amino acids are bound by which bond?

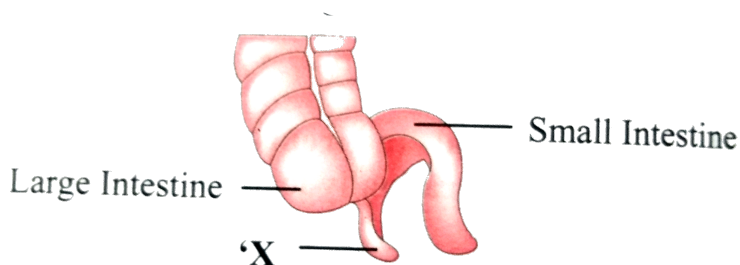
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7. Observe the following diagram and explain the anatomical evidences with the help of the given diagram.



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8. Carefully observe the given diagram and answer the following questions.

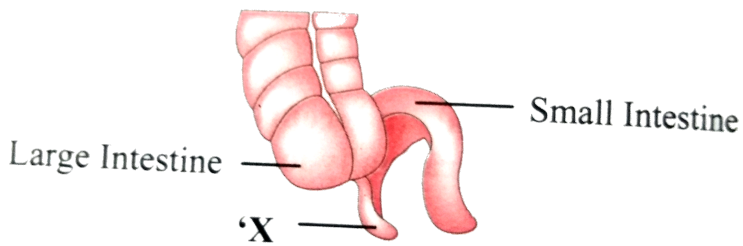


Identify the part labelled as X.



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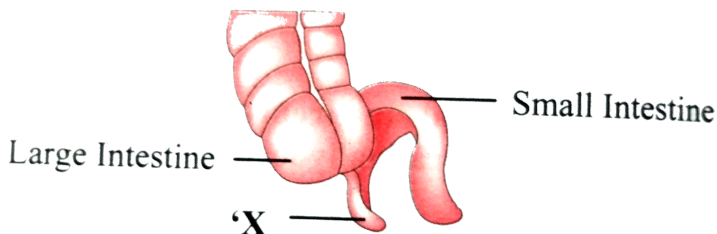
9. Carefully observe the given diagram and answer the following questions.



What type of organ is shown in the given diagram?

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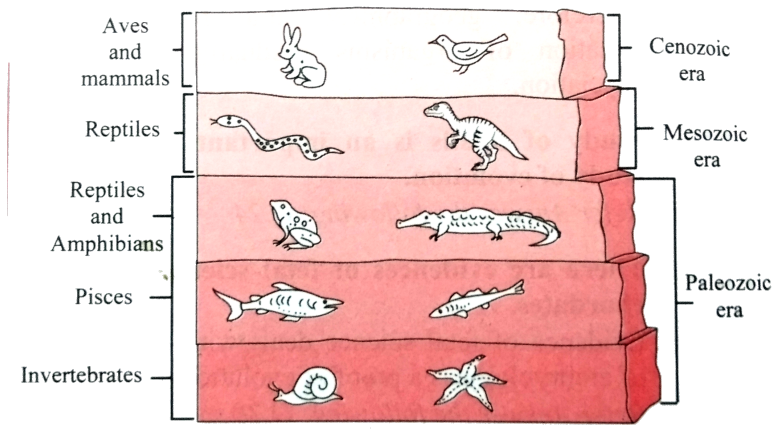
10. Carefully observe the given diagram and answer the following questions.



Mention any other two examples of such organs in humans.

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11. Explain the given diagram.



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12. Observe and discuss.

Observe the following pictures and discuss the characters observed.



Duck billed platypus



Lungfish

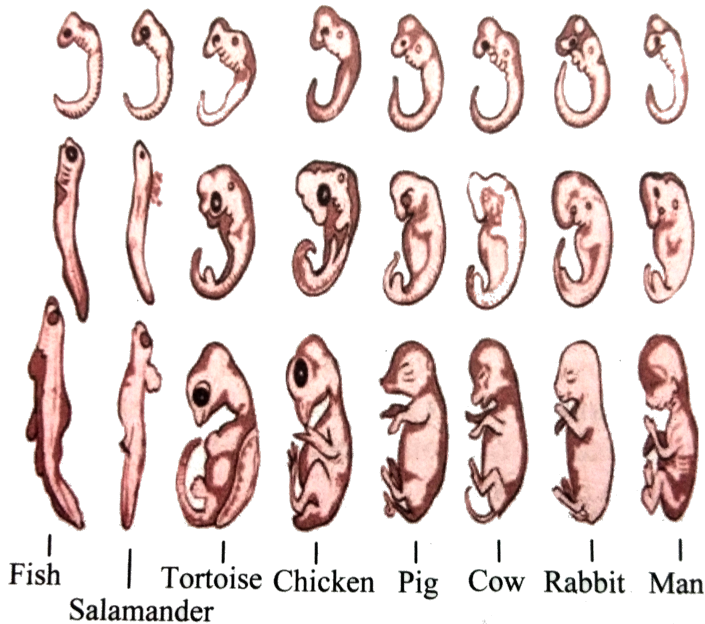


Peripatus



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13. Observe the given figure and answer the questions.

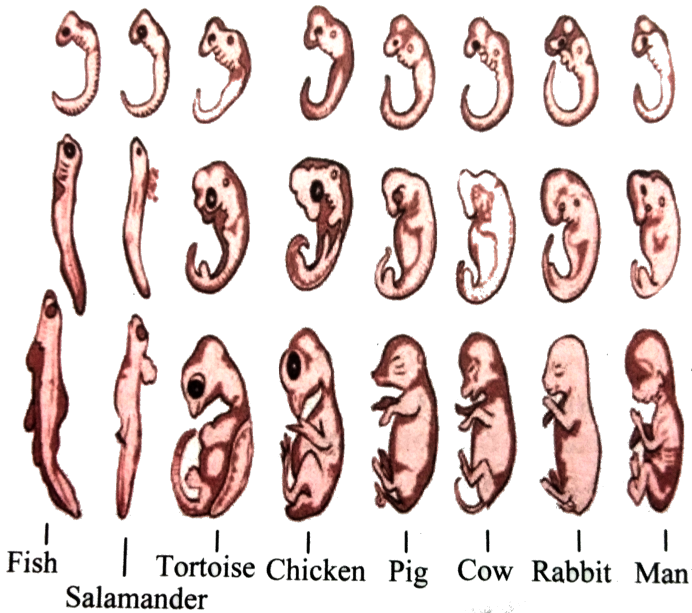


Identify the evidence of evolution shown in the given diagram.



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14. Observe the given figure and answer the questions.

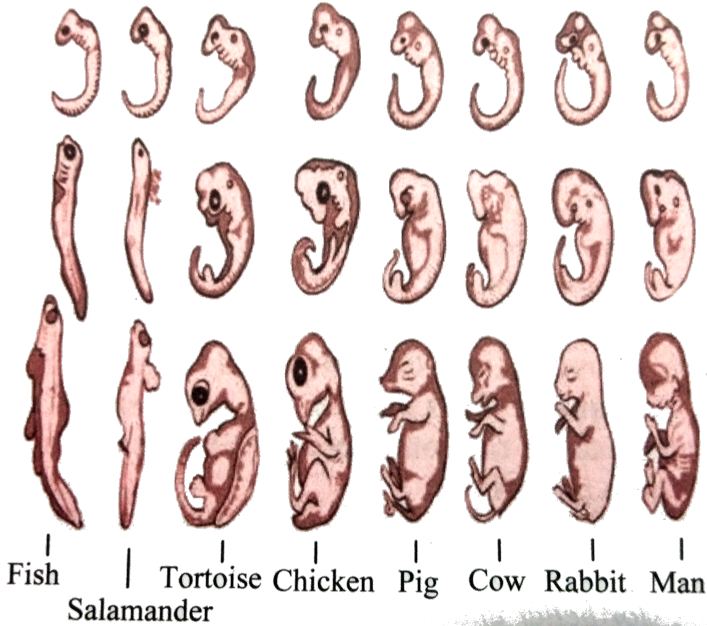


How is this evidence used as a proof of evolution?



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15. Observe the given figure and answer the questions.



Mention any two other evidence of evolution.



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1. Information about protein synthesis is stored in the DNA. Proteins are synthesized by DNA through RNA. This is also known as the central dogma of life. The nucleotide sequences of the mRNA produced are complementary to the DNA strand that is used as the template for synthesis. This process of synthesis of RNA from DNA is known as transcription. The code for each amino acid consists of three nucleotides (triplet codon) that are present on the mRNA.

The tRNA has an anticodon sequence complementary to the codon on the mRNA. During translation, the code on mRNA is read and respective amino acids brought by tRNA are joined together by peptide bonds. Based on the given paragraph, answer the following question:

- i. If 3'-AACGT-5' is a sequence of the template DNA strand, what would be the nucleotide sequence of the corresponding mRNA synthesized from it?
- ii. What is the difference in nitrogenous bases of DNA and RNA?

iii. Which enzyme would be required for the synthesis of RNA from DNA during transcription?

iv. How many amino acids can the following mRNA sequence code for ?

5'-UUCAGCCGUGUCAUU-3'

v. What is the function of mRNA in translation?



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Apply Your Knowledge

1. Answer in short:

Which component of the cellular nucleus of living organisms carries hereditary characters?



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2. Answer in short:

What do we call to the process of transfer of physical and mental characters from parents to the progeny?



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3. Answer in short:

Which are the components of DNA molecule?



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4. Sketch and explain the structure of DNA and various types of RNA.



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5. Answer in short:

Explain the meaning of genetic disorders and give names of some disorders.



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6. Answer in short:

What is the function of the appendix of our digestive system?



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7. Answer in short:

Are our wisdom teeth really useful for chewing the food?



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8. Answer in short:

Why did the huge animals like dinosaur become extinct?



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9. Answer in short:

Why are many species of animals and birds getting extinct?



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10. Internet is my friend.

Collect the information from internet about Big-bang theory related with formation of stars and planets and present it in your class.



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11. Which are the different organs in body of organisms?



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12. Answer in short:

Is each of the organs useful to organism?



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13. USE of ICT.

Collect the information of geological dating and present it in the classroom.



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14. Use of ICT.

Find how the vestigial organs in certain animals are functional in others. Present the information in your class and send it to others.





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Internet Is My Friend

1. Collect the pictures and information of various species of monkeys from internet



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Project

1. Make a presentation on human evolution using various computer softwares and arrange a group discussion over it in the classroom.



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2. Read the book- Pruthvivar Manus Uparach written by Late. Dr. Sureschandra Nadkarni and note your opinion on evolution.



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Chapter Assessment

1. Which of the following is the most primitive ancestor of man?

- A. Dryopithecus
- B. Aegyptopithecus
- C. Ramapithecus
- D. Cro-magnon man

Answer:



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2. Which of the following fossil man had cranial capacity nearly equal to that of modern man?

A. Neanderthal man

B. Australopithecus

C. Ramapithecus

D. Dryopithecus

Answer:



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3. Monkey like animals are characterized as members of genus Homo. Options - a) By large brain size b) By erect posture c) By large skull size d) None of the above

A. by large brain size

B. by erect posture

C. by large skull size

D. none of the above

Answer:



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4. Duck billed platypus is the connectig link between Mammals and _____

A. Reptiles

B. Aves

C. Pisces

D. Ambhibia

Answer:



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5. i. Complete the analogy,

Similarity in structure of mouth:

Morphological evidence: : Similarity in

structure of bones: _____



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6. State true or false. If false, write the correct sentence.

Strengthening of the shoulders of an ironsmith due to repeated hammering movements is an example of natural selection.



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7. Find the odd one out.

Lamarckism, Translation, Natural selection, Speciation.





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8. Match the columns.

	Column I		Column II
a.	Transcription	1.	Process of protein synthesis from mRNA
b.	Translocation	2.	Movement of mRNA from nucleus to the cytoplasm
		3.	Movement of ribosome on the mRNA by a distance of one codon
		4.	Process of RNA synthesis from DNA



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9. Give reasons why Peripatus is considered the connecting link between annelids and arthropods.



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10. Forelimb of bat and flipper of whale have different functions but indicate common ancestry.



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11. Write a note on the evolution of Ramapithecus from monkey like animals.



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12. Define speciation. Give examples of any two factors causing speciation.



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13. Give four examples of vestigial organs in humans.



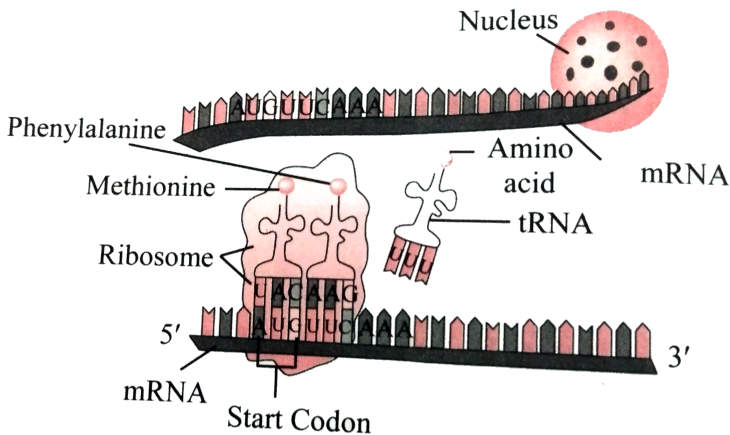
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14. Explain Lamarck's theory of evolution with examples.



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15. Observe the given diagram and explain the cellular process depicted in it.



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16. Explain three evidences of evolution giving examples.



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17. Explain in detail the process of formation of complex compounds on earth.



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