## Review Worksheet: DNA Evidence ERVs and mtDNA

**Name: ……**

*Do these questions, using your learning resources. Look at the "marks" to give you an idea of the level of detail required in the response (formative only – does not count towards your grade). At the end, mark your work, correct it, and fill in the reflection section. Questions marked * require you to use reasoning, inferring and application of knowledge, or perhaps extra research to get the answer. It won't be right there in the text.*

1: Where do scientists gain information from when comparing DNA?
(2 marks)

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2: Define 'genome'. Describe how sequencing the genome can be used to provide evidence for evolution.
(4 marks)

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3: Define 'endogenous retrovirus'.
(1 mark)

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4: Describe how endogenous retroviruses are used as evidence for evolution.
(3 marks)

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5: What do the genes on mtDNA code for?
(3 marks)

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6: Why do we only inherit mitochondrial DNA from our mothers?
(3 marks)

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7: The DNA of dogs is 85% similar to that of humans, while the DNA of chimpanzees is 98% similar to that of humans. Explain how this information supports the idea that we have a more recent common ancestor with chimpanzees than with dogs.
(5 marks)

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8: Explain why not all retroviruses are endogenous retroviruses, and why only endogenous retroviruses are useful in providing evidence for evolution.
(6 marks)

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9: Explain why comparison of structures such as endogenous retroviruses and mitochondrial DNA was not available prior to the development of techniques such as electrophoresis and DNA sequencing.
(2 marks)

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10: Below is a table showing different animals and the type of ERVs their DNA contains. Analyse the data and answer the questions below about the relatedness of the organisms listed.

| **Animal** | **ERVs** |
|---|---|
| Fish | ervZ, ervB, ervN |
| Lizard | ervZ, ervB, ervF, ervQ, ervL |
| Bird | ervZ, ervB, ervF, ervR |
| Shark | ervZ, ervM |
| Human | ervZ, ervB, ervF, ervE, ervQ |

a) Which of the listed animals shares the most recent common ancestor with humans?
(1 mark)

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b) Which of the listed animals is shares the most recent common ancestor with birds?
(1 mark)

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c) Which of the listed animals is most distantly related to humans?
(1 mark)

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d) Is the Fish more closely related to the Shark, or the Bird? Explain your answer.*
(6 marks)

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11. Body temperature regulation within a narrow range of values is important for survival. The body can gain and lose heat from the external environment.

a) List the two ways in which the body can gain heat from the external environment and give an example of each.
(4 marks)

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b) List the two ways in which the body can lose heat to the external environment and give an example of each.
(4 marks)

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Go back and mark your work using the marking key provided. What score did you get? /46

*I included enough detail in my answers.*

*I was able to find information in the text/powerpoint presentation.*

*I was able to reason and infer where the information wasn't directly in the text (questions with *).*

*I marked my work and wrote down any answers where I missed marks.*