

Name \_\_\_\_\_

Period \_\_\_\_\_

AP Biology

Date \_\_\_\_\_

**RAVEN CHAPTER 4 GUIDED NOTES: THE ORIGIN AND EARLY HISTORY OF LIFE**

1. Why are the ideas on how life originated on Earth referred to as hypotheses and not theories?

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2. List and briefly explain the fundamental characteristics that define "life".

a. \_\_\_\_\_

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b. \_\_\_\_\_

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c. \_\_\_\_\_

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d. \_\_\_\_\_

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e. \_\_\_\_\_

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f. \_\_\_\_\_

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g. \_\_\_\_\_

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h. \_\_\_\_\_

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3. What is meant by a **reducing atmosphere**?

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4. How does our present atmosphere differ? \_\_\_\_\_

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5. Outline some valid arguments countering the reducing atmosphere hypothesis.

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6. Explain the significance of the Miller-Urey experiment in testing the abiotic synthesis hypothesis.

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7. Briefly discuss the current controversy about which complex organic molecules formed first: nucleic acids or proteins.

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8. Briefly discuss the contributions of Oparin and Haldane to the bubble hypotheses about the formation of the first cells. Explain what protobionts are.

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9. Discuss the characteristics of the first cells on Earth for which we have an actual fossil record.

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10. Describe the Kingdom Archaeobacteria.

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11. Describe the Kingdom Bacteria. \_\_\_\_\_

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12. Explain the significance of photosynthetic bacteria (*Cyanobacteria*) in the evolution of life on Earth.

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13. Briefly explain the difference between prokaryotes and eukaryotes.

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14. Briefly describe the hypothesis for the origin of the nucleus and ER.

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15. Describe the theory of endosymbiosis. \_\_\_\_\_

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16. Explain the advantages of sexual reproduction over asexual reproduction.

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17. Describe how multicellularity could have evolved and explain its advantages.

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18. List and briefly describe the domains and kingdoms that we have organized life into:

a. Domain: \_\_\_\_\_

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b. Domain: \_\_\_\_\_

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c. Domain: \_\_\_\_\_

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Kingdom: \_\_\_\_\_

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Kingdom: \_\_\_\_\_

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Kingdom: \_\_\_\_\_

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Kingdom: \_\_\_\_\_

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