**Comparación de ADN AP**

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| 1 | G | G | T | C | A | C | G | C | T | G | G | T | A | A | C | C | A | T | G | G | G | G | A | A | G | A | T | G | A | A | T | T | G | A | A | G | C | C | A | T | G | G | G | A | C | A | C | A | G | G | A | A | A | T | C | C | A | A | T | T |
| 2 | G | G | T | C | A | C | G | C | T | G | G | C | A | A | C | C | A | T | G | T | G | G | A | A | G | A | T | G | A | A | T | T | G | A | A | G | A | A | A | T | G | G | G | A | C | A | C | A | G | G | G | A | A | T | C | C | A | A | A | T |
| 3 | G | G | T | C | A | C | G | C | T | G | G | C | A | A | C | C | A | T | G | T | G | G | A | A | G | A | T | G | A | A | T | T | G | A | A | G | A | A | A | T | G | G | G | A | C | A | C | A | G | G | G | A | A | T | C | C | A | A | A | T |
| 4 | G | G | T | C | A | C | G | C | T | G | G | T | A | A | C | C | A | T | G | G | G | G | A | A | G | A | T | G | G | A | T | T | G | A | A | G | C | C | A | T | G | G | G | A | C | A | C | A | G | G | A | A | A | T | C | C | A | A | T | T |

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| 1 | C | A | A | T | T | T | C | G | G | A | C | C | T | G | T | G | A | C | A | G | C | C | C | A | A | A | G | C | A | T | A | G | G | G | A | A | T | A | G | T | T | G | G | T | C | A | A | C | C | T | A | T | T | A | G | T | T | T | A | A |
| 2 | C | A | C | T | T | T | G | G | G | A | C | C | T | G | T | G | A | C | A | G | T | C | C | A | A | A | G | C | A | A | A | G | G | G | A | A | T | A | G | T | T | G | G | T | C | A | C | C | C | T | A | T | T | A | G | A | T | T | A | G |
| 3 | C | A | C | T | T | T | G | G | G | A | C | C | T | G | T | G | A | C | A | G | T | C | C | A | A | A | G | C | A | A | A | G | G | G | A | A | T | A | G | T | T | G | G | T | C | A | C | C | C | T | A | T | T | A | G | A | T | T | A | G |
| 4 | C | A | A | T | A | T | C | G | G | A | C | C | T | G | T | G | A | C | A | G | A | C | C | A | A | A | G | C | A | T | A | G | G | G | A | A | T | A | G | T | T | G | G | T | C | A | A | C | C | T | A | T | T | A | G | T | T | T | A | A |

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| 1 | A | A | A | T | C | A | T | G | A | A | T | T | G | T | T | A | T | A | A | A | A | A | A | G | A | G | C | C | C | T | T | A | A | C | C | T | A | T | T | T | C | T | T | A | T | T | C | C | A | A | T | A | A | T | T | C | C | C | A | A |
| 2 | A | A | A | A | C | A | T | G | A | A | A | T | G | T | T | A | T | A | A | A | A | A | A | G | A | T | C | C | A | T | T | A | A | C | C | T | A | T | T | T | C | T | T | A | T | T | C | C | A | A | T | A | T | T | T | T | T | C | A | A |
| 3 | A | A | A | A | C | A | T | G | A | A | A | T | G | A | T | A | T | A | A | A | A | A | A | G | A | T | C | C | A | T | T | A | A | C | C | T | A | T | T | T | C | T | T | A | T | T | C | C | A | G | T | A | T | T | T | T | T | C | A | A |
| 4 | A | A | A | T | C | A | T | G | A | A | T | T | G | T | T | A | T | A | A | A | A | A | A | G | A | G | C | C | C | T | T | A | A | C | C | T | A | T | T | T | C | T | T | A | T | T | C | C | A | A | T | A | A | T | C | C | C | C | A | A |

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| 1 | A | T | T | T | G | T | A | C | T | A | A | C | T | G | C | C | A | A | C | C | T | T | C | A | T | C | A | A | T | T | C | C | T | A | A | C | T | C | T | T | T | C | C | G | G | A | A | A | C | C | T | T | C | A | A | A | A | T | C | T |
| 2 | T | T | T | T | G | T | A | C | T | A | T | C | T | G | C | C | A | A | C | C | C | T | C | A | T | C | A | A | T | T | C | C | T | A | A | C | T | C | T | T | T | C | C | A | G | A | A | A | C | C | T | T | C | A | A | T | A | T | C | T |
| 3 | T | T | T | T | G | T | A | C | T | A | T | C | T | G | C | C | A | A | C | C | C | T | C | A | T | C | A | A | T | T | C | C | T | A | A | C | T | C | T | T | T | C | C | A | G | A | A | A | C | C | T | T | C | A | A | T | A | T | C | T |
| 4 | A | T | T | C | G | T | A | C | T | A | C | C | T | G | C | C | A | C | C | C | T | T | C | A | T | C | A | A | T | T | C | C | T | A | A | C | T | C | C | T | T | C | C | G | G | A | A | A | C | C | T | T | C | A | A | A | A | T | C | T |

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| 1 | A | A | T | T | G | C | T | T | C | G | A | T | T | T | C | T | C | C | T | A | G | G | C | T | C | A | C | T | T | A | G | C | A | T | C | T | T | T | C | C | T | C | A | T | T | T | T | A | T | T | T | C | C | T | C | A | A | T | C | T |
| 2 | A | A | A | T | G | C | T | T | C | C | A | T | T | T | C | T | C | C | T | A | G | T | C | T | C | A | C | A | T | A | G | C | A | T | C | C | T | C | C | C | T | C | A | T | C | T | T | A | T | T | T | C | C | T | C | A | T | T | C | T |
| 3 | A | A | A | T | G | C | T | T | C | C | A | T | T | T | C | T | C | C | T | A | G | T | C | T | C | A | C | A | T | A | G | C | A | T | C | C | T | C | C | C | T | C | A | T | C | T | T | A | T | T | T | C | C | T | C | A | T | T | C | T |
| 4 | A | A | C | T | G | C | T | T | C | G | A | T | T | T | C | T | C | C | T | A | G | G | C | T | C | A | C | T | T | A | G | C | A | T | C | T | T | T | C | C | T | C | A | T | T | T | A | A | T | T | T | C | C | T | C | A | A | T | C | C |

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| 1 | C | C | T | G | T | T | G | C | A | C | C | A | A | C | C | T | G | G | C | A | A | G | G | C | C | C | T | T | T | T | C | C | C | A | G | G | T | T | A | A | C | T | C | C | A | C | A | A | C | A | G | G | T | T | A | A | C | T | T | T |
| 2 | C | C | T | G | C | T | G | C | A | C | C | A | G | C | C | T | G | G | C | A | A | G | G | C | C | C | T | A | A | T | C | G | C | A | G | G | T | T | A | A | G | T | C | C | A | C | A | A | C | A | G | G | T | T | T | T | C | T | T | T |
| 3 | C | C | T | G | C | T | A | C | A | C | C | A | G | C | C | T | G | G | C | A | A | G | G | C | C | C | T | A | A | T | C | G | C | A | G | G | T | T | A | A | G | T | C | C | A | C | A | A | C | A | G | G | T | T | T | T | C | T | T | T |
| 4 | C | C | T | G | T | C | G | C | A | C | C | A | A | C | C | T | G | G | C | A | A | G | G | C | C | C | T | T | C | T | C | C | C | A | G | G | T | T | A | A | C | T | C | C | A | C | A | A | A | A | G | G | T | T | A | A | C | T | T | T |

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| 1 | C | T | T | C | C | T | A | T | C | C | A | A | A | T | A | T | T | A | T | T | T | T | C | C | G | C | T | A | C | C | C | T | C | T | T | T | A | A | A | C | A | T | G | A | A | C | C | T | G | A | T | T | A | G | T | A | C | C | T | T |
| 2 | C | T | T | A | C | T | A | T | C | C | T | A | A | A | A | T | T | A | T | T | T | T | C | C | T | C | T | A | C | C | C | T | C | T | T | T | T | T | A | C | A | T | G | A | A | C | C | T | G | A | T | T | A | G | T | A | T | C | T | T |
| 3 | C | T | T | A | C | T | A | T | C | C | T | A | A | A | A | T | T | A | T | T | T | T | C | C | T | C | T | A | C | C | C | T | C | T | T | T | T | T | G | C | A | T | G | A | A | C | C | T | G | A | T | T | A | G | T | A | T | C | T | T |
| 4 | C | T | T | C | C | T | T | T | C | C | A | A | A | T | T | T | T | A | T | T | T | T | C | C | G | C | T | A | C | C | C | T | T | T | T | T | A | A | A | C | A | T | G | A | A | C | C | T | G | A | T | T | A | C | T | A | C | C | T | T |

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| 1 | C | T | C | C | T | T | T | T | C | C | C | A | T | G | G | T | G | G | G | T | A | A | T | C | T | T | G | T | T | T | A | A | G | C | C | T | T | C | A | G | C | T | C | A | T | A | G | A | C | T | A | A | A | T | T | G | G | G | A | T |
| 2 | C | T | C | C | T | A | T | T | C | C | C | A | T | G | G | T | G | G | C | T | A | A | T | C | T | T | G | T | T | T | T | A | G | C | C | C | T | C | A | G | C | T | C | A | A | A | G | A | G | T | A | A | A | T | T | G | A | G | A | T |
| 3 | C | T | C | C | T | A | T | T | C | C | C | A | T | G | G | T | G | G | C | T | A | A | T | C | T | T | G | T | T | T | T | A | G | C | C | C | T | C | A | G | C | T | C | A | A | A | G | A | G | T | A | A | A | T | T | G | A | G | A | T |
| 4 | C | T | G | G | T | T | T | T | C | C | C | A | T | G | G | T | G | G | G | T | T | A | T | C | T | T | G | G | T | T | A | A | G | C | C | T | T | C | A | G | C | T | C | A | T | A | G | A | C | T | A | A | A | T | T | G | G | G | A | T |

**Adaptado de:** NSTA. https://www.nsta.org/publications/press/extras/files/virus/Virus-Activity6.pdf

La gráfica representa un gen, pero de cuatro organismos diferentes. El gen es mucho más largo (¡más de 1,500 nucleótidos!), por lo que sólo se proporcionaron los primeros 400 nucleótidos de los cuatro. Compara las secuencias de nucleótidos de los cuatro genes de los cuatro organismos diferentes y utiliza esa comparación para responder las siguientes preguntas.

1. Basándote en los datos, construye un cladograma de los cuatro organismos.
2. ¿Cuáles son los dos organismos que son más parecidos? ¿Qué pruebas tienes para apoyar esa afirmación?
3. ¿Cuál es el orden de desviación? ¿Cómo lo sabes?