**How Does DNA Determine the Traits of an Organism? NAMES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SB2. Students will analyze how biological traits are passed on to successive generations.**

b. Explain the role of DNA in storing and transmitting cellular information.

d. Describe the relationships between changes in DNA and potential appearance of new traits.

Introduction: In this simulation, you will examine the DNA sequence of a fictitious organism: the Biozoan. Biozoans were discovered on walls of a science lab aquarium. Biozoans only have one chromosome with 6 genes on it. You job is to analyze the genes of its DNA and determine what traits the organism has.

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| **Biozoan DNA TRAITS** |
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| tRNA triplet | Amino Acid Number |
| ACC | 20 |
| AGC | 16 |
| CGA | 2 |
| AAC  | 4 |
| CGC | 3 |
| GGG | 5 |
| AGG | 7 |
| AAA | 8 |
| UUU | 9 |
| GGU | 12 |
| UAU | 13 |
| CCC | 1 |
| AUC | 6 |
| CUA | 10 |
| GGA | 11 |

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| Amino Acid Sequence | Trait |
| 20-11-13 | hairless |
| 20-12-13 | hairy |
| 20-21-21 | plump |
| 13-14-15 | skinny |
| 16-2 - 5 | 4 legged |
| 16-4 - 5 | 2 legged |
| 12-7-8 | round head |
| 5-7-8 | block head |
| 9-8 - 8 | no tail |
| 9-4 - 8  | tail |
| 11-3-2 | slanted eyes |
| 11-3-3 | wide round eyes |
| 6-6-10 | male |
| 6-6-14 | female |

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Observations and Analysis of Biozoan DNA: You are given a chromosome from a Biozoan with the following sequence. Each gene has only 3 amino acids. Your job is to determine the sequence of amino acids for your specimen. Write the complimentary mRNA, tRNA, the amino acid (A.A.) sequence it codes for and the related trait in the chart below. REMEMBER\*\*\* the mRNA code is used to determine the appropriate amino acid!

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| DNA | A C C G G T T A T | A G C C G A G G G | T T T A A C A A A | G G A C G C C G A | G G G A G G A A A | A T C A T C C T A  |
| mRNA |   |
| tRNA |   |
| A.A. |   |
| Trait |   |

Draw your Biozoan in the space below. Be creative! Include the environment of the Biozoan.

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