**Introduction**



**Major Themes for the Unit**

* Scientific themes: Protein Synthesis: transcription, translation, protein folding
* Scientific practice: Computational Thinking, Modeling
* Cross-cutting Concepts: Structure and Function, Patterns, Cause and Effect
* SSI: Alzheimer’s Disease and Genetic Testing

**Driving Question**: Should the genetic tests for determining Alzheimer's disease risk be available to the public? Should health insurance companies be allowed to require their clients to take the Alzheimer’s test?

**Concepts needed to explore the driving question**

* Science concepts
  + Structure of DNA
  + Transcription
  + Translation
  + Protein Folding
  + Environmental Impacts
  + Genetic mutations
* What social ideas and concerns influence negotiation of the issue?
  + Insurance
  + Politics
  + Economic Status

**Unit-level performance expectations**

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| --- | --- |
| **HS-LS1-1** | **STANDARD / PE:**Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.  **ASSESSMENT BOUNDARY:**Assessment does not include identification of specific cell or tissue types, whole body systems, specific protein structures and functions, or the biochemistry of protein synthesis. |
| **HS-LS3-2** | **STANDARD / PE:**Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.  **CLARIFICATION STATEMENT:**Emphasis is on using data to support arguments for the way variation occurs.  **ASSESSMENT BOUNDARY:**Assessment does not include the phases of meiosis or the biochemical mechanism of specific steps in the process. |
| **Social Connections** | Students will analyze and interpret data and use evidence driven argumentation to describe the effects of either side of the issue of insurance and genetic testing for Alzheimer’s disease. |

**Unit assessment(s)**

●Models and algorithms

●Culminating Activity

●Content pre and post exam- multiple choice and short answer

\*\*The unit references a practitioner article that will be published in the American Biology Teacher journal.  Contact Mandy Peel at [anpn98@mail.missouri.edu](https://web.archive.org/web/20190710110731/mailto:anpn98@mail.missouri.edu) for an electronic copy of the article.