

## 7.4.3 e3 Building Mutations Narrative

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| <b>Time:</b> 30-45 minutes   | <b>Anchor Phenomena:</b> Why are some people colorblind? |
| <b>Big Idea:</b> Mutations can be harmful, neutral, or beneficial. |  |
| <b>CCCs</b><br>Structure and function.                             | <b>Practices</b><br>Develop and use a model              |

**EPISODE SNAPSHOT:** Students will use instructions (representing DNA) to build structures (representing proteins). Some instructions will have altered information (representing mutations) to have slight or big differences between the structures.

### GATHERING

Teacher distributes different sets of instructions to each group. Students should be in groups of 2-3. Students gather the supplies as listed on their instruction sheet. Students build their assigned structures according to the instructions given. *(Teacher note: Each set of instructions should be slightly different, representing mutations)*

Students compare their finished product with other groups' structures. *(Teacher note: it might be helpful to pair up two groups, so they can closely examine each other's structures and instructions).*

### REASONING

Teacher shows the [video clip](#) to show students about how DNA and proteins are connected. Students use a Venn diagram to list similarities and differences between the information in the video and the activity.

### COMMUNICATING

Each group constructs a letter explaining how one change in DNA can affect a finished product by answering the following prompt: You are a geneticist and the University of Utah. One day, you receive a letter from a student. It says,

"Dear Doctor,

I learned in school that DNA codes for our traits. But I don't believe that little changes in DNA can really cause mutations. DNA is so tiny, there is no way it makes mutations.

Signed--Very Confused"

Write a letter back to her explaining why she is incorrect. Be sure to include a model in your letter to help her understand.

The groups will swap their letters with other "doctors" in the hospital to check for errors.

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| <b>Assessment:</b><br>Students write a letter explaining how DNA errors can cause mutations. | <b>Materials, resources, handouts, etc:</b> <ul style="list-style-type: none"><li>• <a href="#">7.4.3 e3 BuildingMutationsInstructions</a></li><li>• Plastic building blocks (see colors in the building instructions) OR</li><li>• <a href="#">7.4.3 e3 BuildingMutationsPaperBlocks</a> AND</li><li>• <a href="#">7.4.3 e3 BuildingMutationsPaperBlocksInstructions</a></li><li>• Venn Diagram (can be on individual sheets of paper, on a piece of butcher paper, or on individual white boards, if available)</li><li>• DNA and protein synthesis video clip<br/><a href="https://www.youtube.com/watch?v=zwibgNGe4aY">https://www.youtube.com/watch?v=zwibgNGe4aY</a></li></ul> |
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