Food Allergy Unit Front Matter

Unit Overview

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Storylines and Phenomena

This unit was designed using the Storyline approach. Storylines start with an anchoring phenomenon that raises questions or introduces a problem. Each step in a storyline unit is then driven by students' questions that arise from the phenomenon.

In this case, the anchoring phenomenon is something familiar, yet still mysterious, to this generation of students: bans on certain foods in their cafeterias and classrooms. Students will probably be able to connect the bans to food allergies, but might not be able to explain why a person has food allergies. The first day of the unit allows students to consider what they do and don't know about food allergies and what they want to find out. This gives them a reason for investigating the biological mechanism behind food allergies and intolerances. In doing so, they will make sense of Disciplinary Core Ideas related to genetics and genomics.

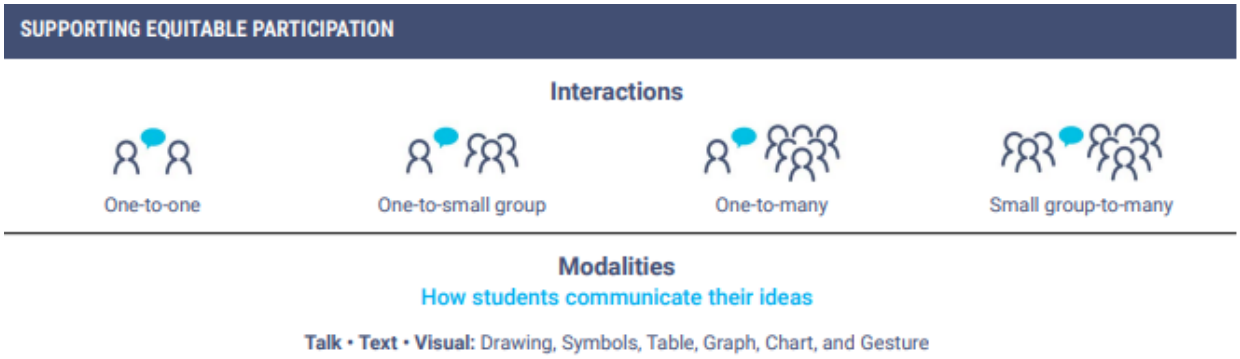
The food allergy storyline allows students to develop science ideas related to **LS1.A Structure and Function** and **LS3.A Inheritance of Traits.**

Throughout the unit, students use several science and engineering practices at the high school level. In certain parts of the storyline, students are not required to engage in a particular practice at the high school level. This is done intentionally, and the purpose is twofold: 1. To allow students who may be unfamiliar with the science practices to demonstrate what they are able to do, and 2. To provide teachers with an opportunity to assess where students are in the learning progression of the practice.

Building Science Ideas as a Community of Learners

Intentional Progression of Interactions to Build Community

- Alone zone
- Partner share
- Small group
- Class



Recording Student Ideas Publicly

Making students' thinking public is an important step in the process of building science ideas as a community of learners. As students share, be sure to capture these ideas using student language. It is important that these initial ideas are recorded authentically using students' exact wording. For more information about the purpose of capturing students' ideas, consult the *Attempt to Make Sense* section on page 15 of the inquiryHub Curriculum Front Matter.

Connect - Extend - Question

Thinking routines allow students to engage in a structured exploration of materials. The most important aspect of any thinking routine is that it allows students to make their thinking visible so they can go public with their ideas. The Connect, Extend, Question routine asks students to engage with the following questions:

- Connect. How are the ideas and information presented connected to what you already know? (Did it answer any prior questions?)
- Extend. What new ideas did you get that extended or broadened your thinking in new directions?
- Question. What new questions arise after reading the new material?

Developing an Initial Model

Focusing on what is known allows for a starting point in developing a model. Once students have some components, encourage them to think about interactions. Explain that it is acceptable to use question marks when we don't know what exactly is going on, but we know there is some kind of relationship among the components.

Explain that they are creating these initial models just to help them get their thinking on paper, and they will only have 5 minutes. Tell students you want to see their ideas about what they think is happening in the body during these different types of responses.

Stick to a time limit and set expectations.

- It is expected that all students develop a model within the time limit.
- Assure students that they do not have to worry about the artistic quality of their model, and they are not expected to have a complete explanation in the first lesson. They will return to and revise their models throughout the unit.

Note that the Food Allergy Model Tracker provides sample models or explanations that students might develop in each lesson. This is a teacher-facing resource that should not be used as an answer key or considered the one correct model. Students should be allowed to choose how to represent the science ideas explained in their model.

Driving Question Board

The driving question board (DQB) is a strategy that allows students to make their questions public in a low-stakes situation, as students are only asked to share a single question based on their observations. This task does not require students to have background knowledge or prior experience with the science ideas of the phenomena. Having students share a question they want to learn about also helps them build confidence in sharing publicly and promotes agency in their learning.

There are several different ways to facilitate the construction of a DQB, and construction can be done using adhesive notes or digitally using a tool like Jamboard or Padlet.

- Walk-n-talk
- Snowball
- Bunding

Regardless of how the DQB is developed, it is important that each student shares a question and all questions are represented on the DQB, as this promotes equity and access to the science ideas being figured out during the lesson. Also, note that students are only engaged in asking questions based on observations. They are not yet trying to answer these questions.

Gallery Walks

1 stay—3 stray

This strategy gives students an opportunity to see one another as sources of knowledge in the classroom. It also helps students deepen their thinking about disciplinary core ideas. In this gallery walk, one person from each group stays to answer questions while the other group members visit and learn from other groups. At the end of the gallery walk, students reconvene with their original groups, share what they learned, and consider new questions they have.

Types of Discussions

Allowing students time to share initial ideas helps to surface their prior knowledge and provides opportunities for them to notice the thinking of their classmates to recognize similarities and differences. This type of discussion is called an Initial Ideas Discussion. At this point, students should only be discussing and sharing ideas, and not trying to figure out the answers to their questions.

During an Initial Ideas Discussion, it is important for the teacher to acknowledge all student ideas and not try to correct any misconceptions or incomplete science ideas at this time. Use this discussion as a formative assessment opportunity and to guide instruction. Throughout the storyline, students will use science and engineering practices, which gives them opportunities to change their thinking based on new evidence.

Additional types of discussions include **Building Understanding Discussions** and **Consensus Discussions**. For information about each type of discussion, consult the OpenSciEd resource 3 Discussion Types.

Genome DIY Exhibit
The unit's final project asks students to create an exhibit that shares the information they learned with their community. You and your students may choose to use the NIH and National Museum of Natural History (NMNH) Genome DIY Exhibit resources to build your exhibits. If you plan to use the NIH and NMNH materials, we recommend you apply to access the Genome DIY Exhibit resources at least two weeks before you plan to teach the unit.