Lesson 4- Designing a Model Membrane

- Review conclusions from Lesson 3 carefully. Continue to have them review their data from Lesson 3 throughout Lesson 4.
- Decide ahead of time if groups will be allowed to immediately try an improved model or will they wait the suggested 24 hours. Some students will immediately know the model they built doesn’t work and want to re-design right away. Or if it is clear immediately that a project let in too much water, ask the students what they will improve tomorrow.
- Encourage students to see what others are doing.
- If possible, have them do the imagine stage at the end of the previous lesson (overnight or longer). This will result in a wider variety of ideas.
- Emphasize that the first attempt is not the final product, and that they will get more than one attempt.
- Have time checks throughout the day and let them record what they see in a journal.
- If a group had a seemingly perfect amount of water on the first attempt, one option is to explore the rate of flow, e.g. how to have water drip steadily or have more at the end and little at the beginning.
- Spend time on dissecting and analyzing the projects, ask groups to share what happened and what they think they can do to improve.
- Review the testing data with the results and let the kids see the correlation between material properties and success.
- Some groups will just want to take someone else’s design for the second attempt (‘we tried yours yesterday, we’ll try mine today’). Emphasize the question ‘why is the second design better’.
- If a group is less successful on the second attempt, view it as a something learned for future attempts, not as a failure.
- Encourage students to continue designing at home, including the use of materials that were not supplied as part of the lesson.