

## **Lichen Study and Course Review – Day 7**

### *Biology*

For the last piece of our lichen study and course review, you and your partner will be working together to conduct research into the genetics and evolution of lichens. This research will cover our units on the Central Dogma (DNA transcription and translation into proteins), genetics, and evolution.

In your notes, answer the following questions. You should discuss your research with your partner but you need to make sure you each understand the questions and answers individually.

1. Since lichens are a symbiosis between a fungus and an alga, it has two complete sets of DNA and the accompanying proteins. However, we know that sugars are shared between the two organisms – the alga make sugar through photosynthesis, and the fungus is able to use that sugar as food. Are there other shared substances? Specifically (related to the Central Dogma), are proteins shared between the two organisms? If so, how are they shared? If not, what are the barriers (physical and or chemical) to protein sharing?
2. How many chromosomes and genes do each of the organisms have that make up a lichen? How does the presence of each organism affect the gene expression of the other? (For example, we know that the fungus in a lichen takes on a different shape when it is part of a lichen compared to when it grows on its own. How does this happen?)
3. How and when did lichens evolve? Do they all have a common ancestor? How quickly did individual lichen species evolve?

After you have completed your research, place it into a final slide in your Google Slides document. Your slide should meet the following criteria:

1. A title that describes what your slide is discussing (1 point)
2. The answers to all of the questions above – in short sections, either using bullet points of complete sentences. You do not need to include the questions themselves but the information you present should stand alone so that it would make sense to someone who didn't know the specific questions you were asked to answer. Spelling, grammar, and punctuation will count. (3 points)
3. There should be at least 3 relevant pictures (one each for lichen proteins, genetics, and evolution), correctly captioned. (3 points)
4. Your slide should be attractive, well-designed, easy to read, and uncluttered. (3 points)

When you and your partner are done with your slide, turn it in through Showbie (only one of you needs to turn it in).