**Starch-Break It Down!**

A person needs to break down the large building blocks that make up food (proteins, carbohydrates, lipids) into their building blocks (amino acids, sugars, fatty acids) so we can use these building blocks to make our own macromolecules (and use the sugar for energy).

Enzymes are proteins that can carry out a specific reaction multiple times without getting used up. Amylase is an enzyme found in our saliva. It is responsible for the initial stages of breaking down starch into simple sugars. Amylase can break the bonds between glucose molecules over and over: if you have a single amylase protein, starch, and a lot of time, that amylase molecule could break down 100% of the starch.

A useful analogy is enzymes are like screwdrivers: you can a screwdriver for many screws without the tool, itself, changing.

Enzymes catalyze (facilitate) specific reactions, which is to say that they do one thing very well, and nothing else. Amylase can break the bonds between glucose molecules in starch but not in cellulose. Amylase can also not break down fats or proteins.

Your team will explore the effects of an enzyme called amylase, which is found in your saliva.

1. Each student should put half a cracker in his/her mouth and chew **but don’t swallow.**
2. Let the saliva mix in your mouth for at least 2 min. Report to your team if or when you start to taste something different from when you first put the cracker in your mouth. What does it taste like?
3. What do you think is happening to cause the different taste?
4. If there is a lot of starch in your diet, is it useful to have a lot of amylase?