

# Welcome to Biology Tuesday 9/28/21

Phones away and things out  
of ears please -  
Masks covering face holes  
Thank you!!



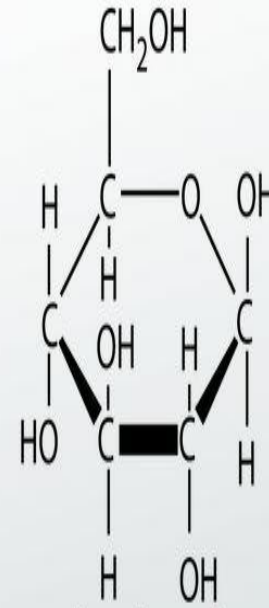
# Daily Agenda

## 1. Observing Enzyme Activity on a Carbohydrate

- ❖ Activity Sheet
- ❖ Background
- ❖ Lab
- ❖ You Explain It



*proteins*



*carbohydrates*



*lipids*



*nucleic acids*

# Observing Enzyme Activity on a Carbohydrate

Title your activity sheet as shown above; place identifier info in upper righthand corner (9/28/21)

Copy the boldfaced lines written below...

## **Objective**

**Understand aspects of enzyme activity and carbohydrate structure**

**Partners:**

**Background Info:**



# What are you going to do?

1. Create a starch solution by dissolving a starch packing peanut in water.
2. Mix an orangish polysaccharide-indicator dye with the clear starch solution, which will turn it dark purple.
3. Mix an enzyme with the purple starch solution that will cause it to not be purple it to not be purple
4. You will then tell me what happened, showing me you understand what is happening with the different biomolecules.

# Observing Enzyme Activity on a Carbohydrate

Listen in amazement as I tell you why the liquid changes colors!!



Subtitle 1<sup>st</sup> section  
“Background Info”

Take notes that you can  
refer to later



1. Create a starch solution by dissolving a starch packing peanut in water.
2. Mix an orangish polysaccharide-indicator dye with the clear starch solution, which will turn it dark purple.

An indicator dye changes the color of something if that “something” is present.

Our dye is called iodine.

In the presence of a polysaccharide the orangish dye turns purple.

If there is no polysaccharide the dye remains orangish.



# What is happening??

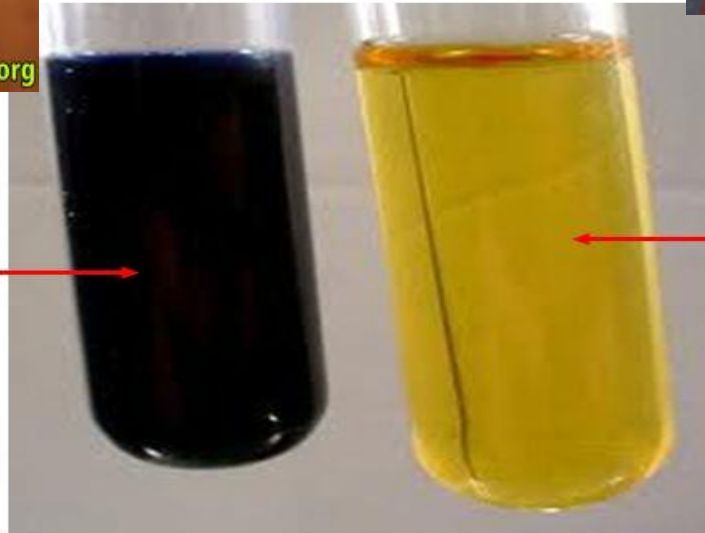
Chemicals doing stuff!!



Why does starch with iodine turn purple?



Iodine solution turns **blue-black** in the presence of starch



Iodine solution (**yellowish brown**)

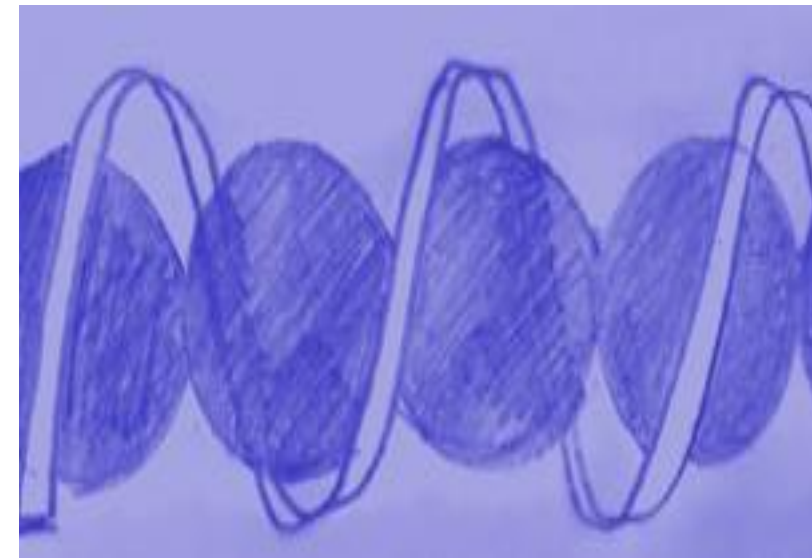
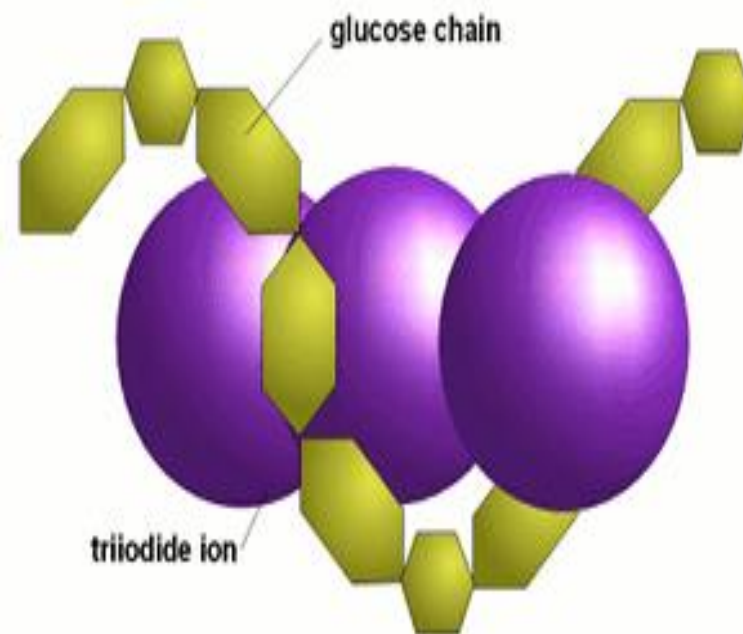
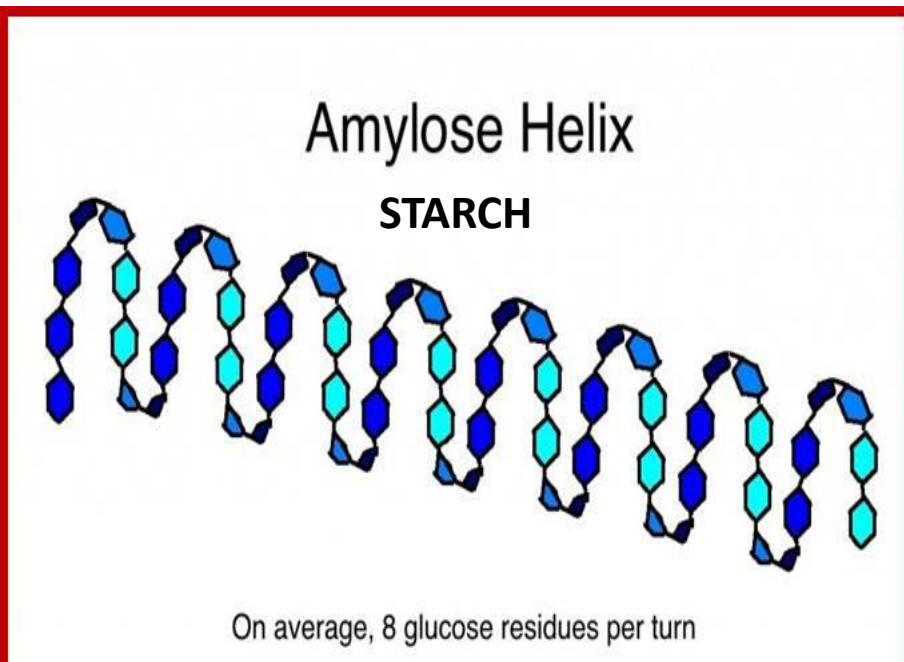
# Why does starch with iodine turn purple?

Think of iodine as tiny balls. When the balls are floating around randomly we see them as orangish.

Think of starch as a long spring.

The spring has an inside that is just big enough to hold a whole bunch of single file, lined up iodine balls.

The balls in a straight line reflect certain wavelengths of light so that they appear purple in solution.





**Mix an enzyme with the purple starch solution that will chop up the starch polysaccharide, causing it to not be purple (cause you don't have polysaccharide anymore).**

**In a way you see the enzyme in action, by witnessing the color changes.**

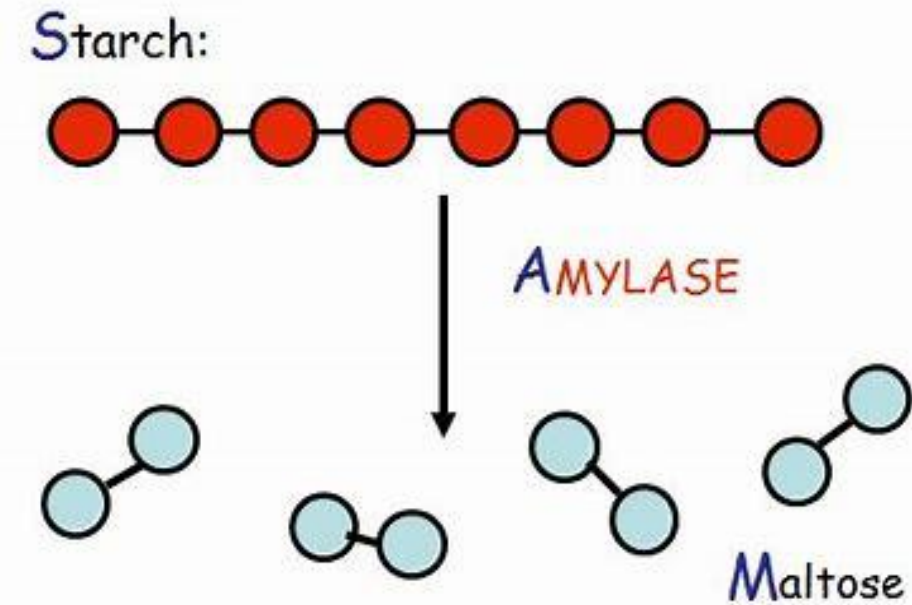
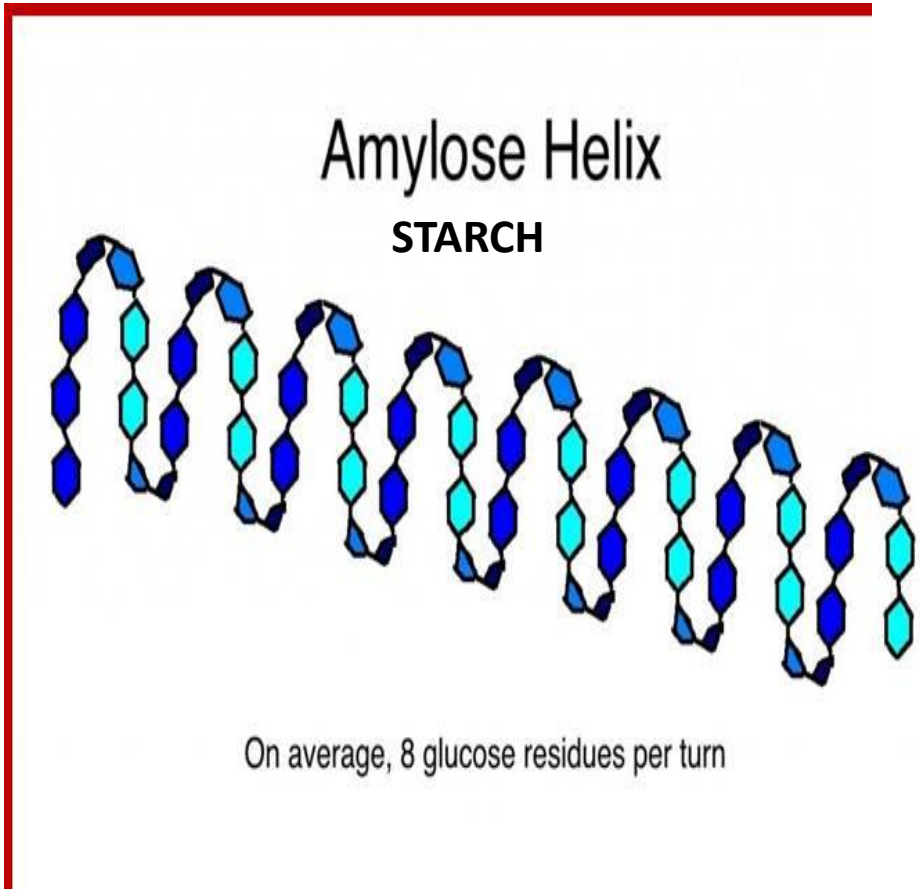


**Our enzyme is produced by seeds as they hydrate and start to germinate. The enzyme leeches out into the water.**

Why does the enzyme, from bean seeds, make the starch solution lose its purple?

Bean juice contains an enzyme that chops up the starch spring so it can't hold the iodine balls. Left over is maltose, a disaccharide.

Now the dispersed iodine does not reflect the light in the same way, and we no longer see the purple.



So the enzyme amylase is able to make the chemical reaction happen that chops up starch.

Enzymes make chemical reactions happen