To investigate the action of the enzyme phosphorylase you will need:

Phosphorylase solution.

Phosphorylase is extracted from potato tubers.

It is important that the process removes any starch.

Glucose-1-phosphate.

This is the substrate of phosphorylase.

It is a form of glucose that can be built into starch molecules.

Iodine solution.

We use this to test for starch.

Iodine solution turns from red brown to blue black in the presence of starch.

A dimple tile.

Water.

A timer.

Let's start the experiment:

In each dimple of row A put three drops of phosphorylase and three drops of glucose-1-phosphate.

In each dimple of row B put three drops of distilled water and three drops of glucose-1-phosphate.

This is a control.

In each dimple of row C put three drops of distilled water and three drops of phosphorylase.

This is a second control.

Start the timer and wait five minutes.

After 5 mins add two drops of iodine solution to each sample in column one.

After 5 more minutes, add two drops of iodine solution to each sample in column two.

After 5 more minutes, repeat for column three and after 5 more minutes, repeat for column four.

Remember iodine reacts with starch, the solution colour changes from orange brown to blue black.

This experiment tells us about the activity of phosphorylase.

Phosphorylase is an enzyme that speeds up the synthesis of starch from glucose-1-phosphate.

The enzyme is found in potatoes which take the glucose formed from photosynthesis and synthesise starch that can be stored in the potato tuber.

Let's re-cap on the key steps involved in the experiment.

Row A has the substrate glucose-1-phosphate and the enzyme.

Row B is a control with only the substrate present.

Row C is a control with only the enzyme present.

Iodine is added and changes colour from orange brown to blue black when starch is present.

This only happens in Row A, where both the substrate and enzyme are present.

From this we can see that the enzyme speeds up this synthesis reaction allowing it to take place during our experiment.