

Pentose Phosphate Pathway (PPP)



The Pentose Phosphate Pathway is a complex biochemical pathway, however it is not critical to memorize the minute details for testing purposes. Here are the basics to remember:

What?

The PPP is an alternate route of glucose oxidation that produces NADPH and sugars for biosynthesis

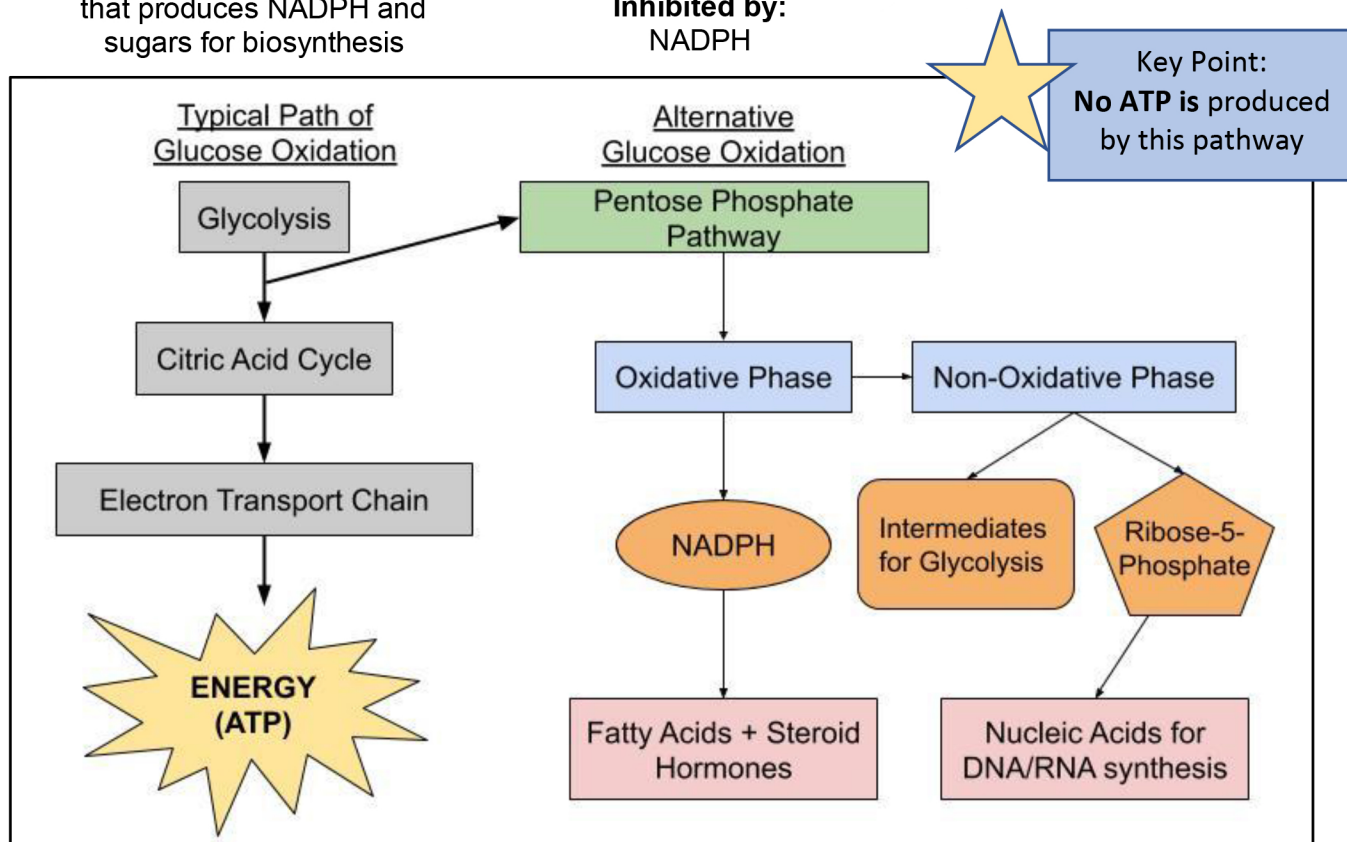
When?

Activated by:
glucose and insulin

Inhibited by:
NADPH

Where?

Cytosol of the cell



NADPH vs. NADH

NADPH: involved in **biosynthesis** of organic molecules and cellular detoxification.

NADH: provides energy and is a key component of **cellular respiration**.

Clinical Correlation:

The rate-limiting step of the PPP is catalyzed by the enzyme **glucose-6-phosphate dehydrogenase**. Deficiency of this enzyme causes red blood cells to break down in response to stress or other environmental triggers.