




# Glycolysis

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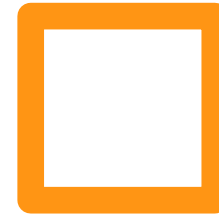


ILOs:

- 
- Introduction
  - Define glycolysis
  - Describe the process of glycolysis
  - Differentiate between aerobic and anaerobic glycolysis.
  - List function glycolysis
  - Summary

# Introduction

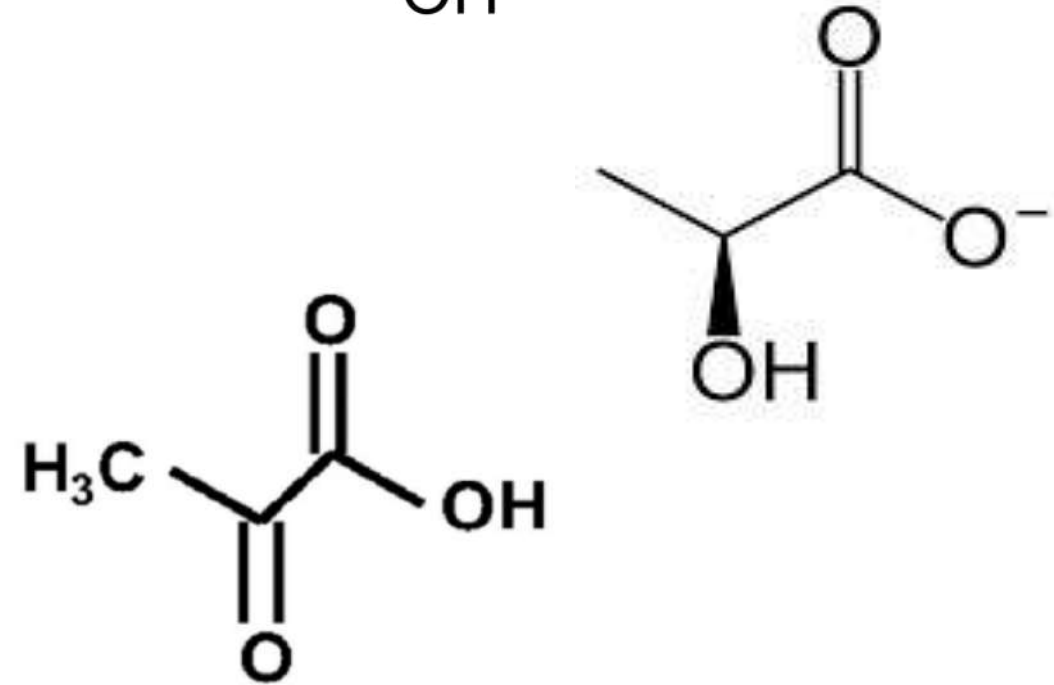
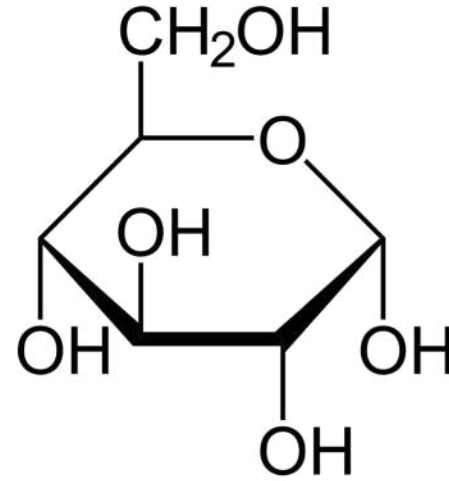
- Glycolysis, from Greek word glykys, meaning “sweet”, and lysis, meaning “dissolution or breakdown”
- Glycolysis is a cytoplasmic pathway which breaks down glucose into two three-carbon compounds and generates energy. It occurs in the cytosol of all cells.





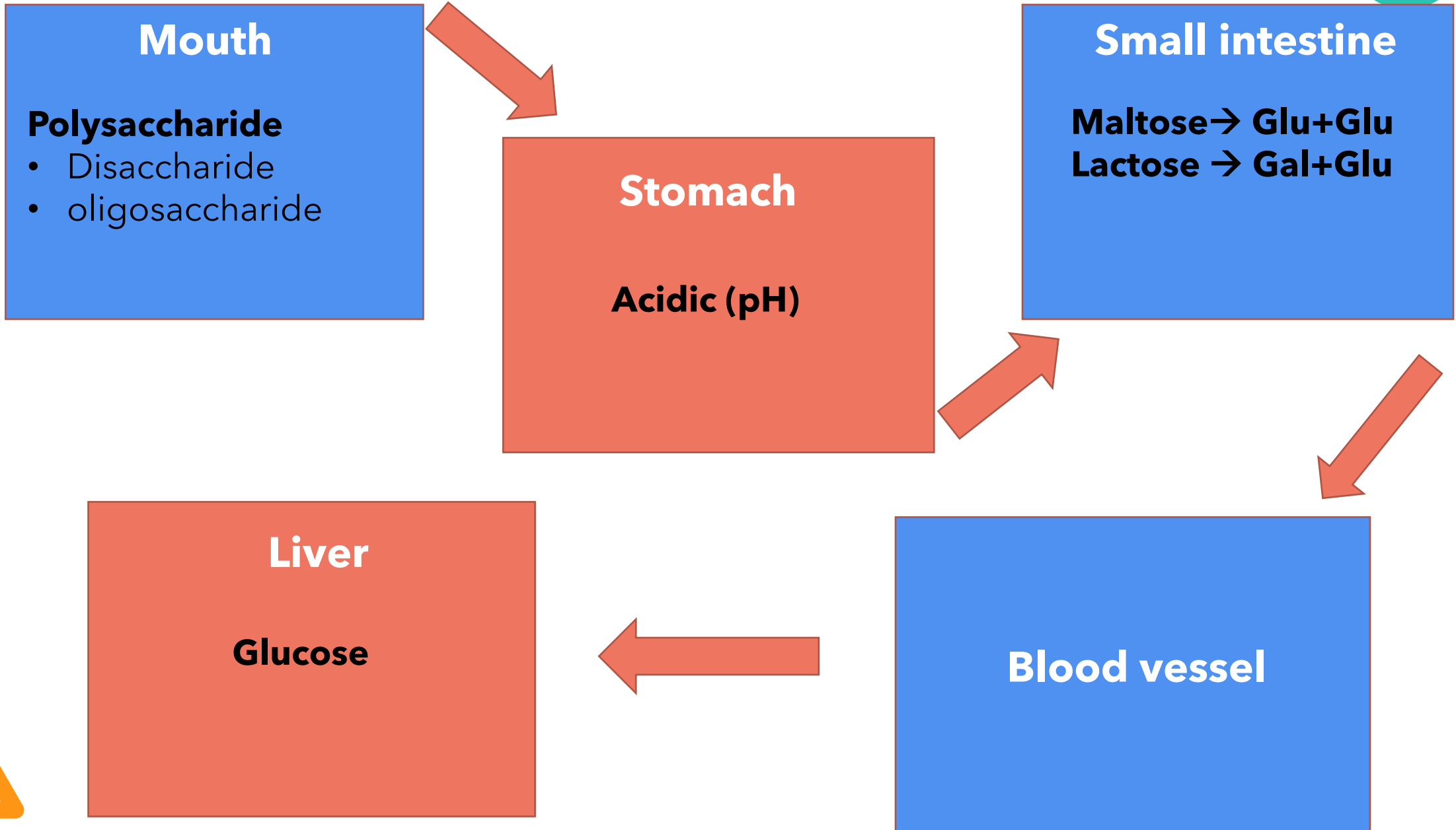
# Definition of Glycolysis

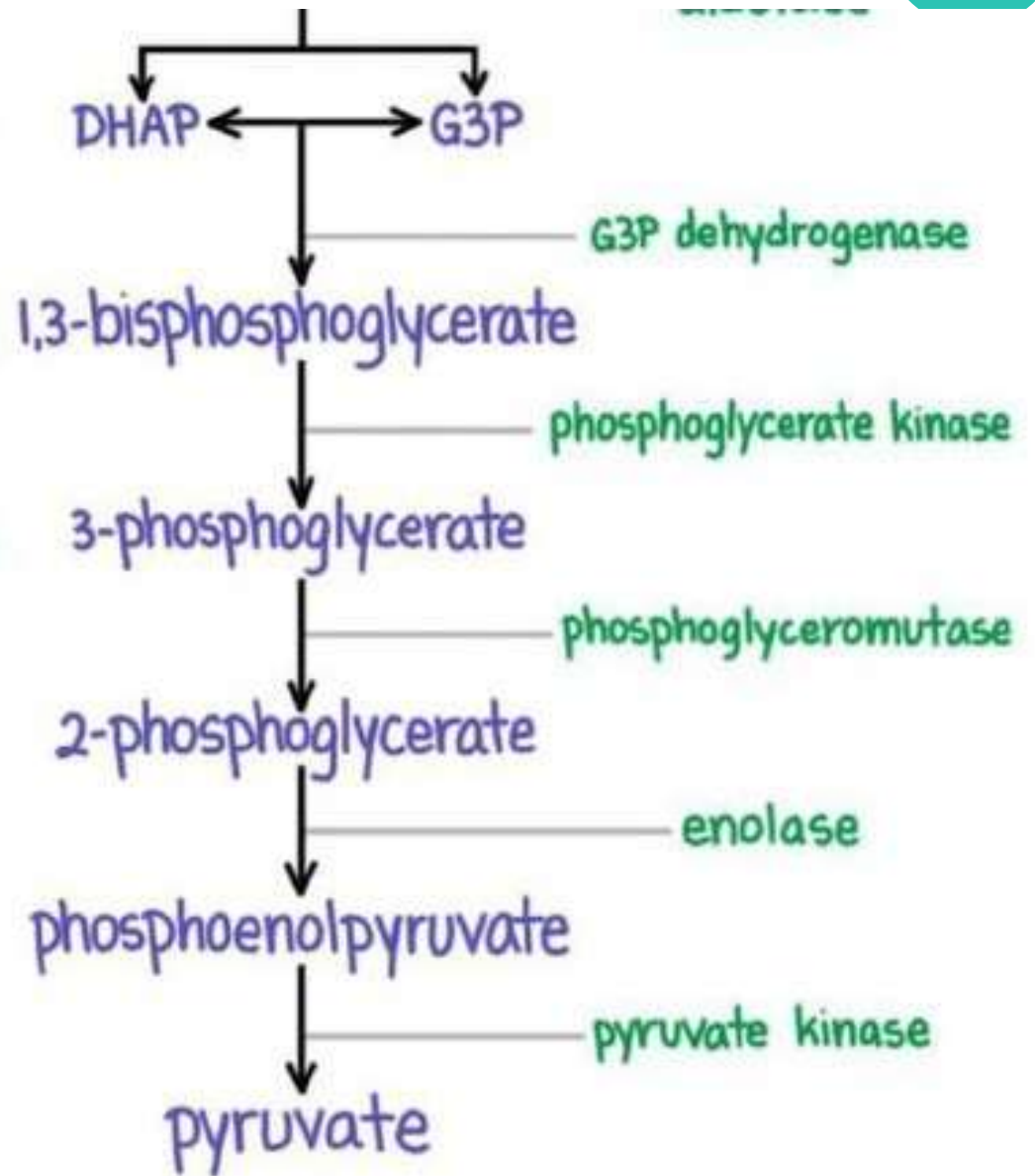
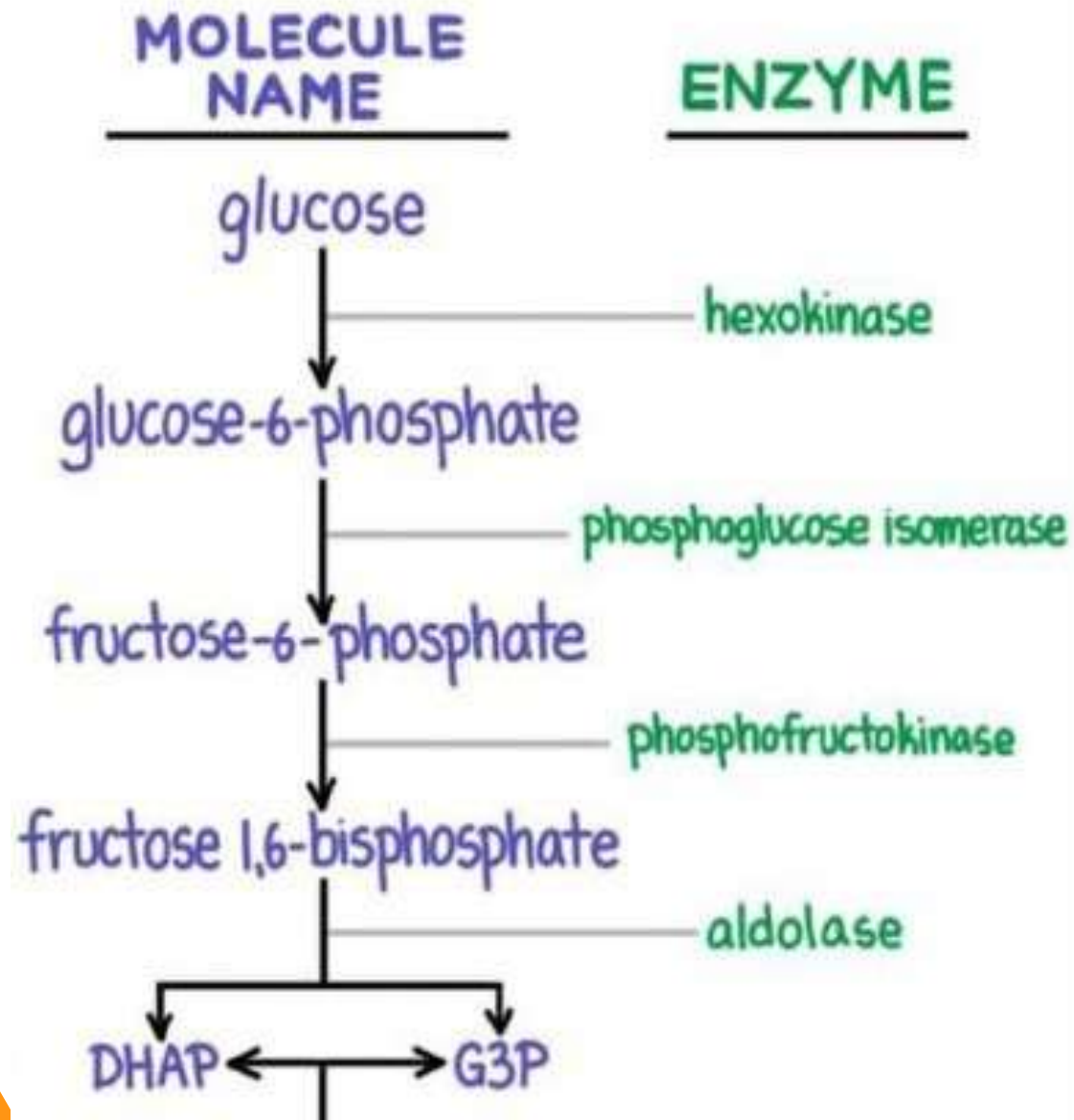
- Glucose is trapped by phosphorylation, with the help of the enzyme hexokinase.
- Adenosine triphosphate (ATP) is used in this reaction and the product, glucose-6-P, inhibits hexokinase. Glycolysis takes place in 10 steps, five of which are in the preparatory phase and five are in the pay-off phase
- Glycolysis is used by all cells in the body for energy generation. The final product of glycolysis is pyruvate in aerobic settings and lactate in anaerobic conditions.
- Pyruvate enters the Krebs cycle for further energy production.






# Glycolysis Process







The image features a white background with several abstract geometric elements. In the top left, there are two vertical teal dashes. To their right is a large purple circle. Further right is an orange L-shaped line. In the top right corner, a teal circle is partially visible. On the left side, there is an orange square outline. In the bottom left, a dashed teal line curves upwards. A large blue semi-circle occupies the right half of the image, containing white text.

**Differentiation between aerobic  
and anaerobic glycolysis**

## AEROBIC GLYCOLYSIS

The type of glycolysis, which occurs in the presence of oxygen

Proceeds through the Krebs cycle and oxidative phosphorylation

Further proceeds inside the mitochondria

Leads to a significantly efficient ATP production pathway, which produces 32 ATPs per glucose molecule

## ANAEROBIC GLYCOLYSIS

The type of glycolysis, which occurs in the absence of oxygen

End products: Lactic acid or ethanol

Further proceeds in the cytosol

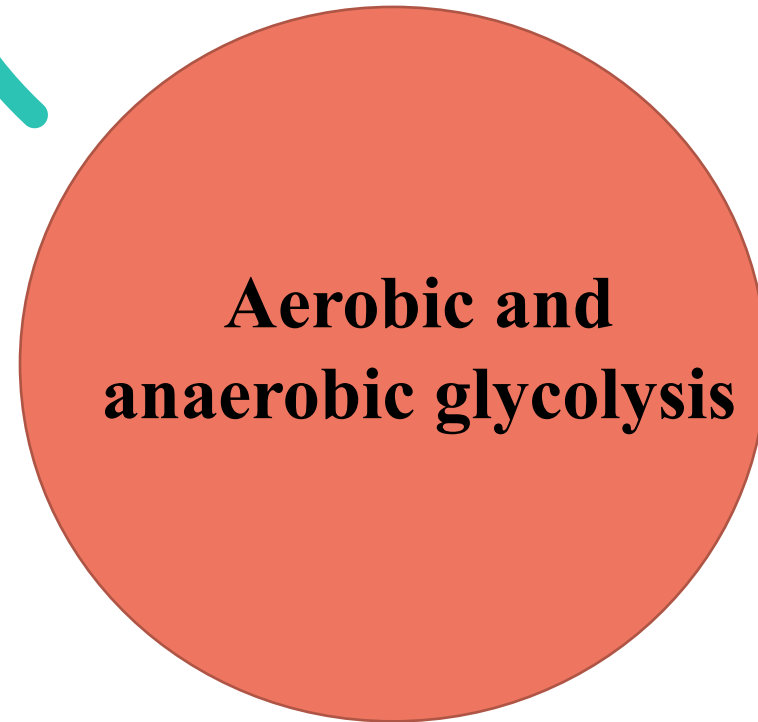
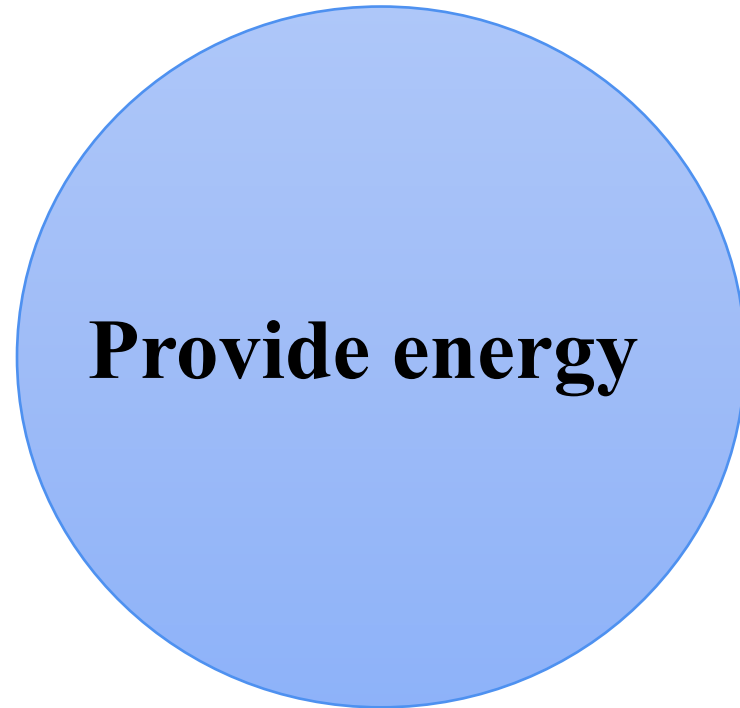
Leads to a less efficient ATP production pathway, which produces 2 ATPs per glucose molecule



# Functionss of Glycolysis

- A production energy:
  - ❖ Step 6,8
  - ❖ Kreb's cycle.
- B Not for energy production:
  - ❖ HMP for synthesis of phospho-pentoses & NADPH + , H+.
  - Synthesis of non essential amino acids. EX: alanine
  - Synthesis of ketone body, fatty acid, sterols
  - give (DHAP) → glycerol-3-phosphate
  - On red cells :
  - Gives red cells ATP

# Summary



# References

- <https://www.tuscany-diet.net/2018/02/06/glycolysis/#Reaction-1-glucose-phosphorylation-glucose-6-phosphate>
- (*Champe C. pamela, Richard A. Harvey, Third edition*)



*Thank  
you!*