

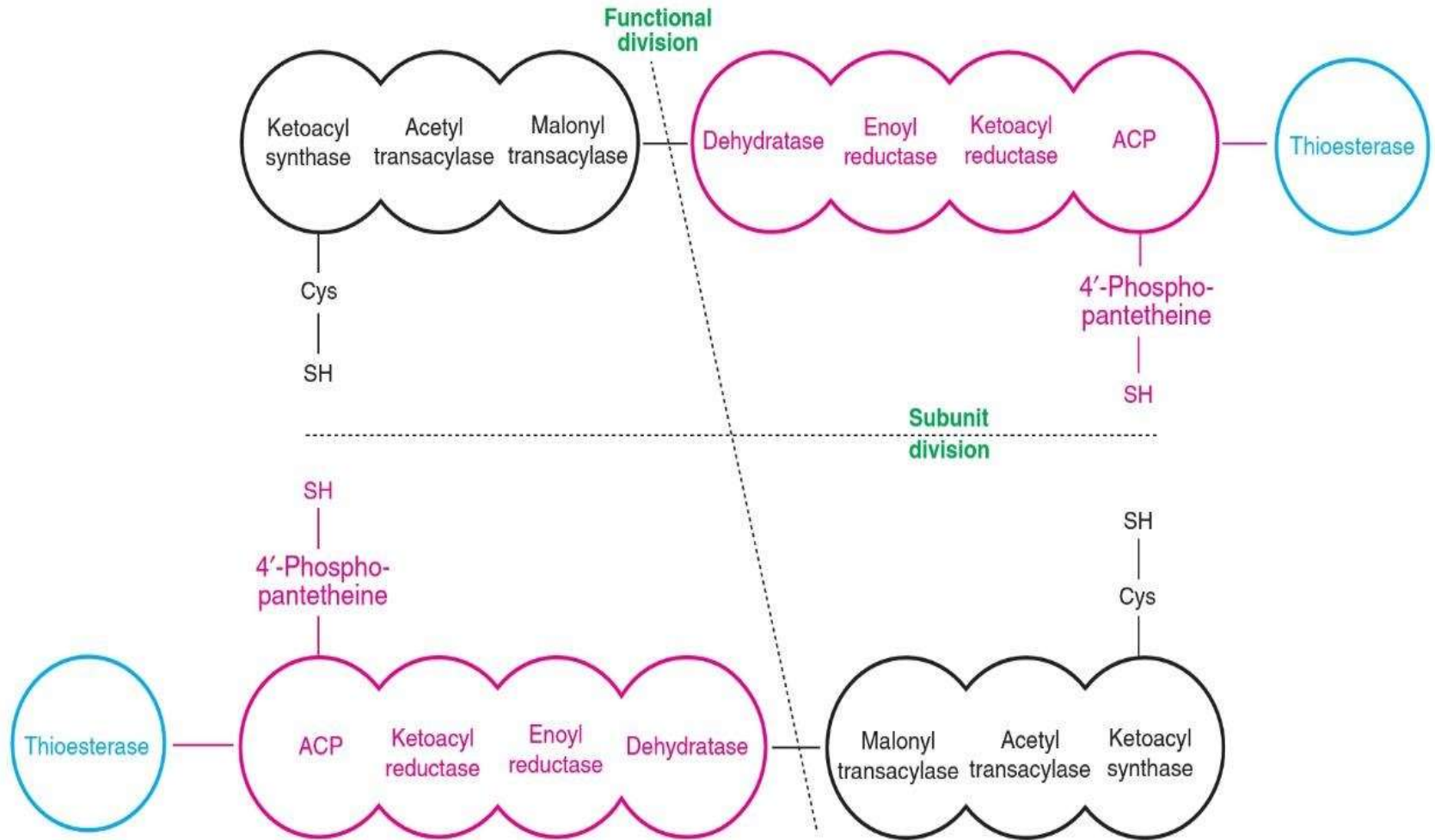
DEPARTMENT OF BIOTECHNOLOGY
TOPIC – FATTY ACID COMPLEX SYNTHASE AND REGULATION

BY – MAYURI S. BHAD

FATTY ACID SYNTHASE COMPLEX

- It is a multi enzyme complex
- It is a dimer composed of two identical subunits (monomer)
- Each with a molecular weight of 240,000.
- Each subunit contains the activities of 7 enzymes of FAS and an ACP with 4'-phosphopantetheine SH group.
- The two subunits lie in antiparallel (head to tail) orientation .

FATTY ACID SYNTHASE –MULTIENZYME COMPLEX



SIGNIFICANCE OF FAS COMPLEX

- FAS complex offers great efficiency that is free from interference of other cellular reactions for the synthesis of fatty acids.
- There is a good coordination in the synthesis of all enzymes of the FAS complex .
- Since the entire process of the metabolic pathway is confined to the complex , there are no permeability barriers for the various intermediates .

REGULATION OF FATTY ACID SYNTHESIS

- Acetyl CoA Carboxylase :

- i. Citrate (allosteric activator)
- ii. Palmitoyl CoA (feedback inhibition)

- Hormonal Influence:

- i. Glucagon (inhibits)
- ii. Insulin (promotes)

- Dietary regulation :

- i. Consumption of high carbohydrates or fat free diet
- ii. Fasting or high fat diet

- Availability of NADPH:

- i. Reducing equivalent for fatty acid synthesis