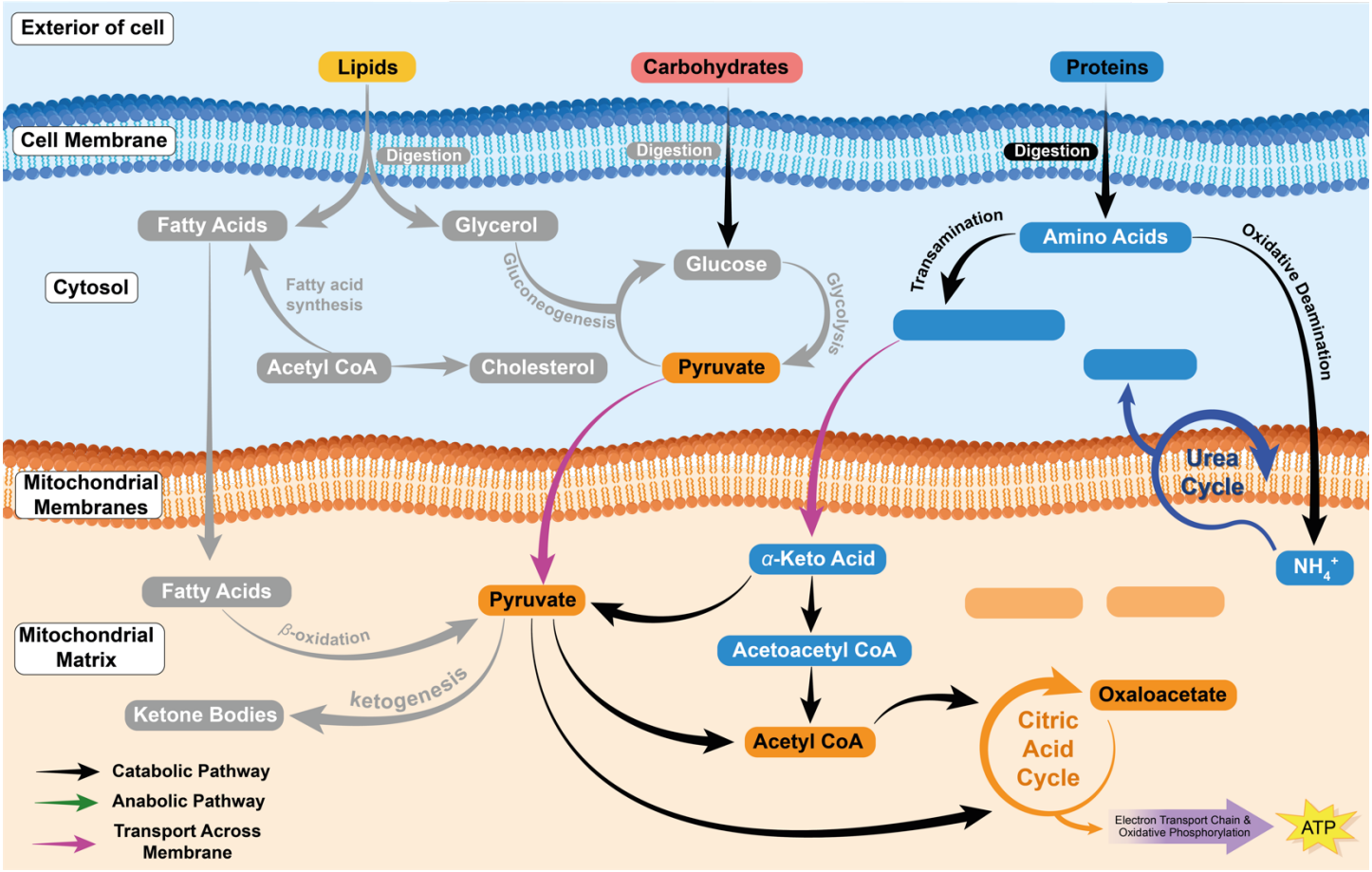
CONCEPT: REVIEW OF METABOLISM

- Overall, metabolism is seen as _____ (degrading larger molecules) and _____ (synthesize larger molecules).
  - These different macromolecules have metabolic pathways that are _____ by common metabolites.



EXAMPLE: Which of the following statements is true?

a) Lipid and Protein metabolism provide the only catabolic pathways to acetyl CoA formation.

b) A transaminase is the class of enzyme that catalyzes transamination reactions.

c) When glycogen stores are at max levels, fatty acids are degraded for energy.

d) Alanine and α-ketoglutarate reacting to form pyruvate and glutamate represents an oxidative deamination.

PRACTICE: Which of the following statements is incorrect?

a) Ammonia molecules are converted to carbamoyl phosphate before entering the Urea Cycle.

b) The production of urea requires the reaction between water and a glutamate molecule.

c) The Urea cycle excretes urea as a waste material by using NH_4^+ and aspartate as the sources of nitrogen.

d) It requires 4 total ATP molecules to produce one urea molecule.

CONCEPT: REVIEW OF METABOLISM

PRACTICE: In the synthetic pathway of serine, 3-phosphoglycerate must first be converted into 3-phosphohydroxypyruvate.

3-Phosphoglycerate 3-phosphohydroxypyruvate

Identify the type of reaction represented by this conversion.

a) Condensation b) Reduction c) Transamination d) Oxidation

PRACTICE: Which of the following statements is incorrect?

a) The products of a transamination reaction are a new amino acid and an α-keto acid.

b) The ammonium ion produced in the liver must immediately be excreted as urea because of its toxicity.

c) Glutamate converting to α-ketoglutarate and an ammonium ion represent an oxidative deamination reaction.

d) Ammonia molecules directly enter the Urea Cycle to serve as the only nitrogen source.

PRACTICE: Determine whether each of the following is involved in Glycolysis (A), β-Oxidation (B), Transamination/ Oxidative Deamination (C), or Urea Cycle (D).

I. _____ Using alanine transaminase on alanine and α-ketoglutarate to form pyruvate and glutamate.

II. _____ Phosphofructokinase or fructose-1,6-bisphosphate.

III. _____ The continuous regeneration of Ornithine.

IV. _____ Cleavage of a 2-carbon acetyl group.