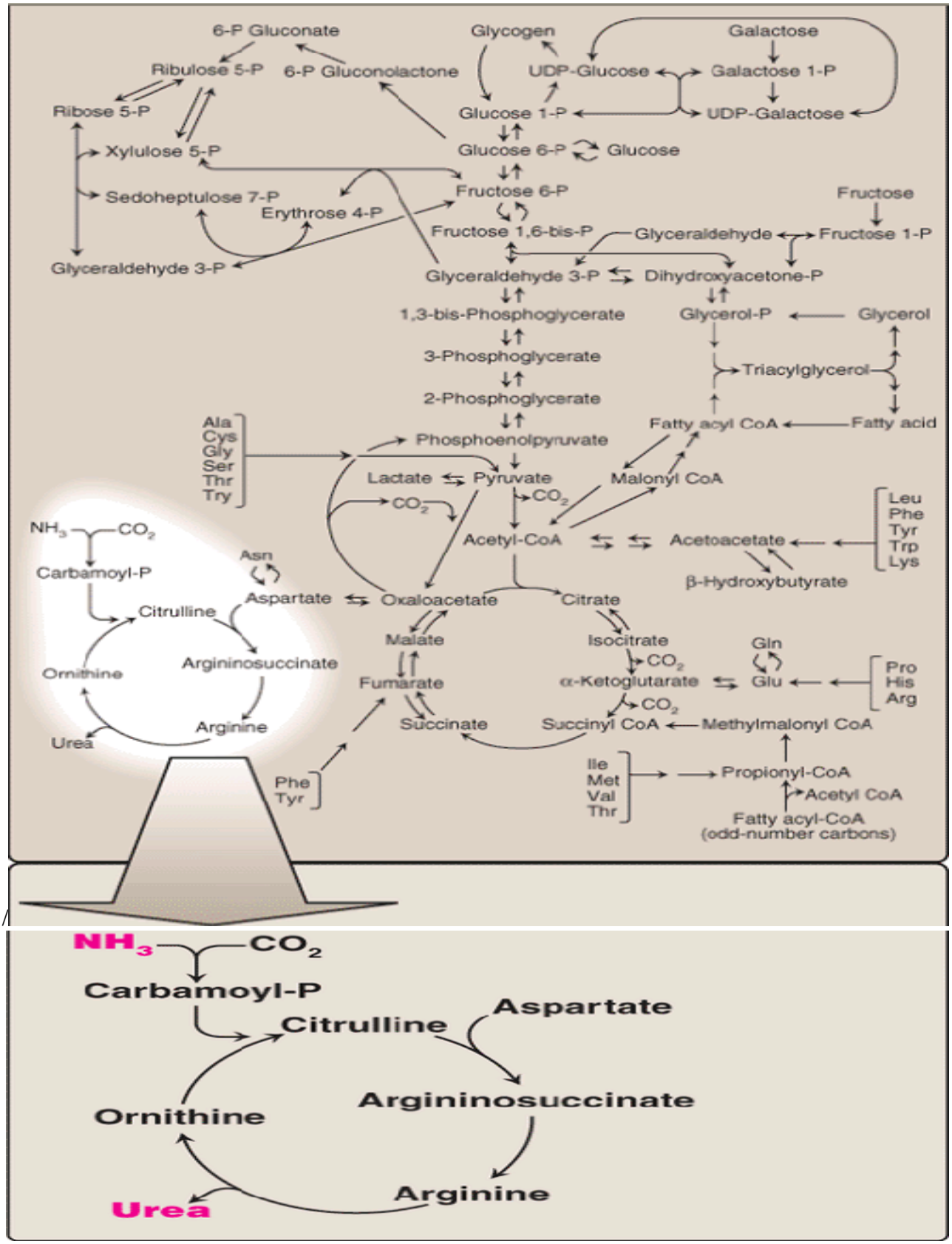

Figure 19.1 Urea cycle shown as part of the essential reactions of energy metabolism. (See Figure 8.2, p. 92, for a more detailed view of the metabolic pathway.)

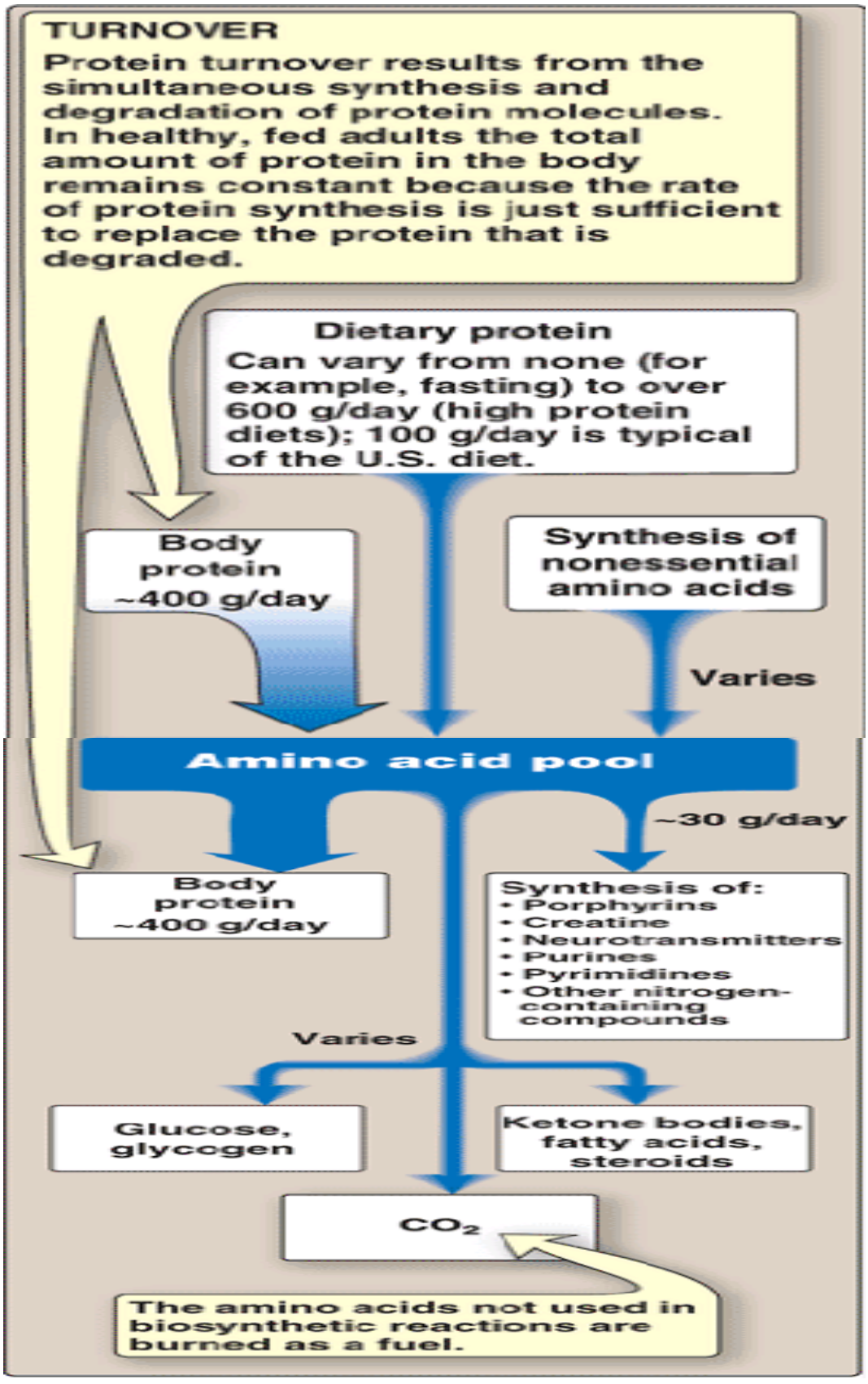

Figure 19.2 Sources and fates of amino acids.

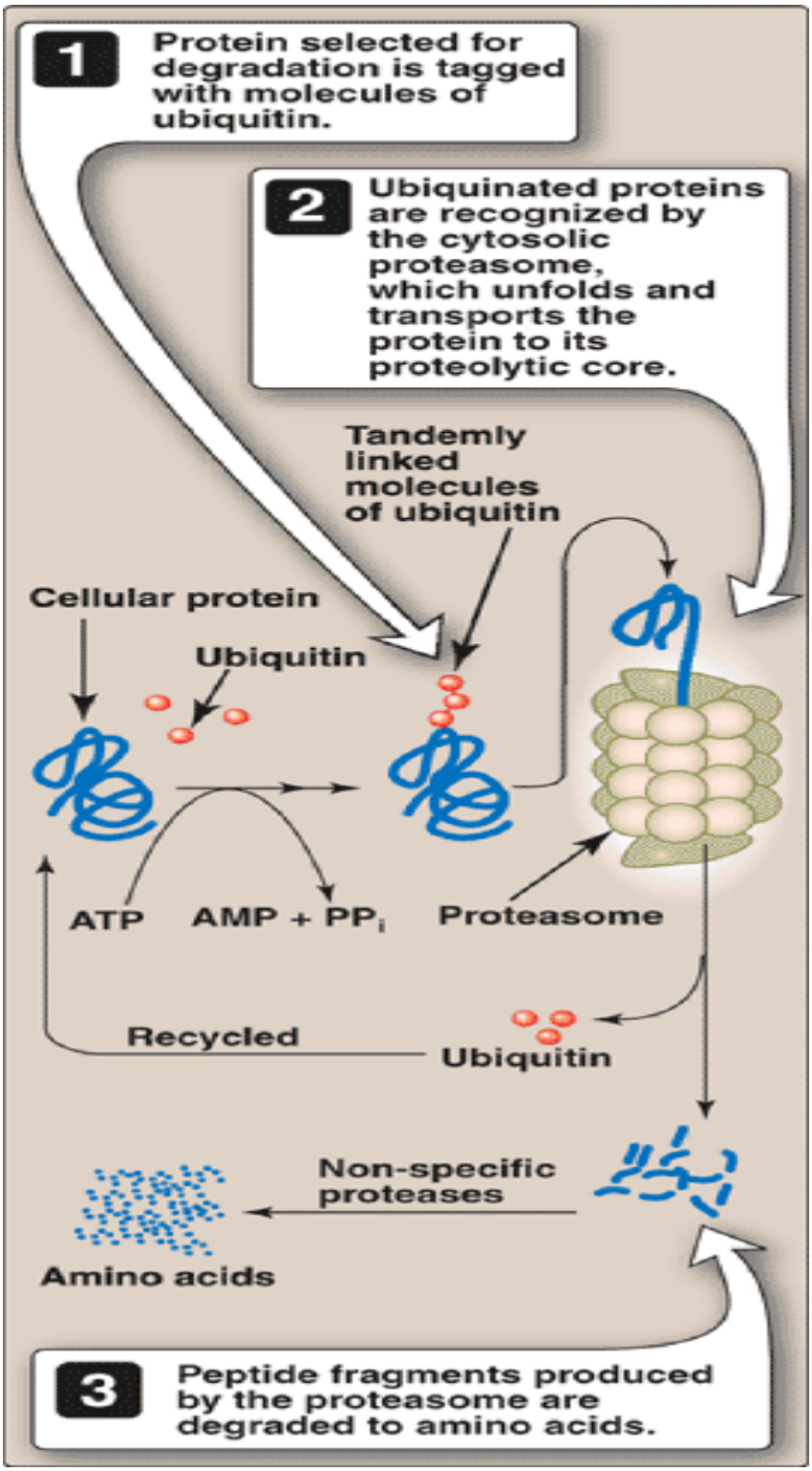

Figure 19.3 The ubiquitin-proteasome degradation pathway of proteins.

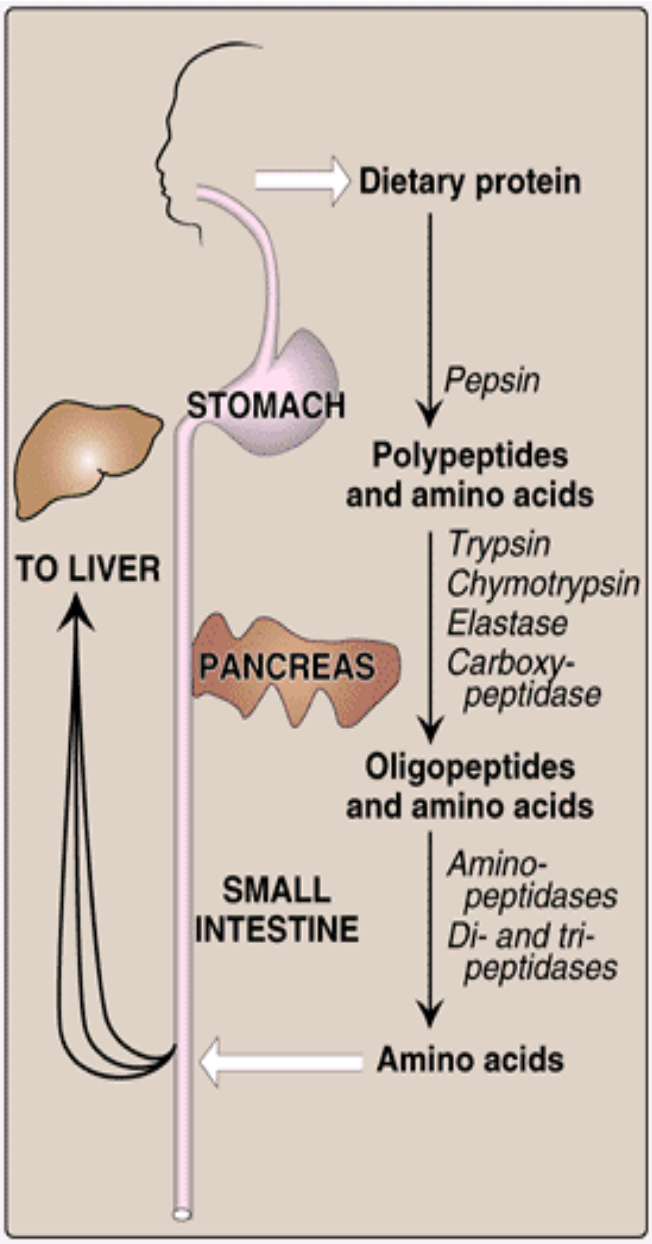

Figure 19.4 Digestion of dietary proteins by the proteolytic enzymes of the gastrointestinal tract.

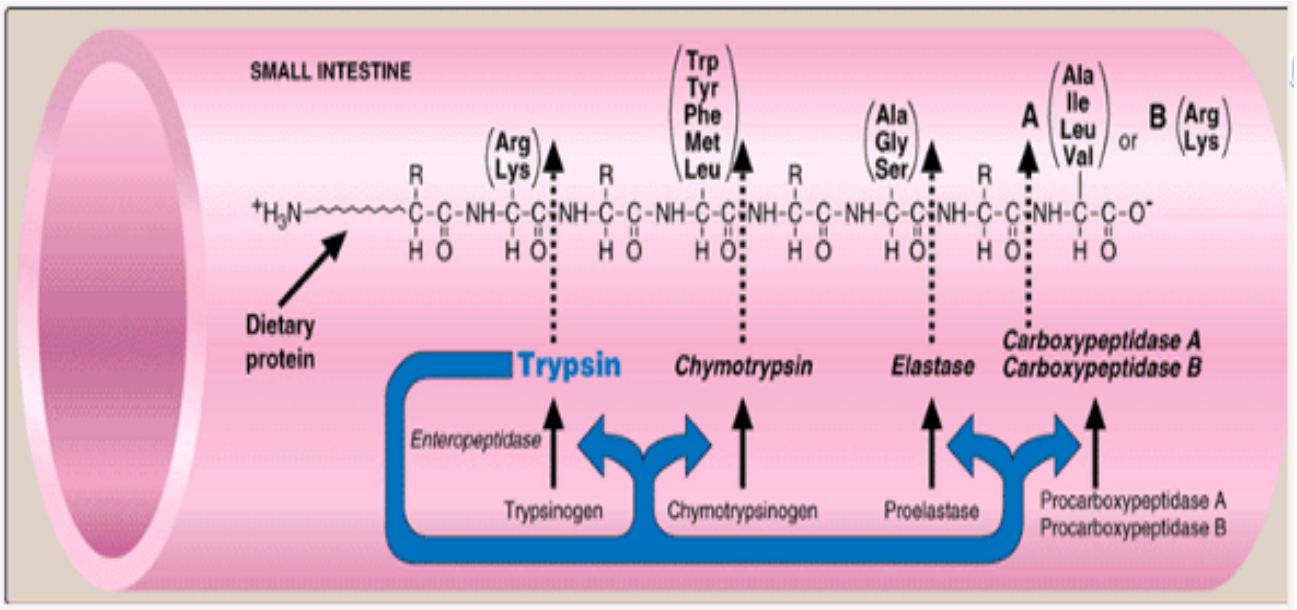

Figure 19.5 Cleavage of dietary protein by proteases from the pancreas. The peptide bonds susceptible to hydrolysis are shown for each of the five major pancreatic proteases. [Note: Enteropeptidaseis synthesized in the intestine.]

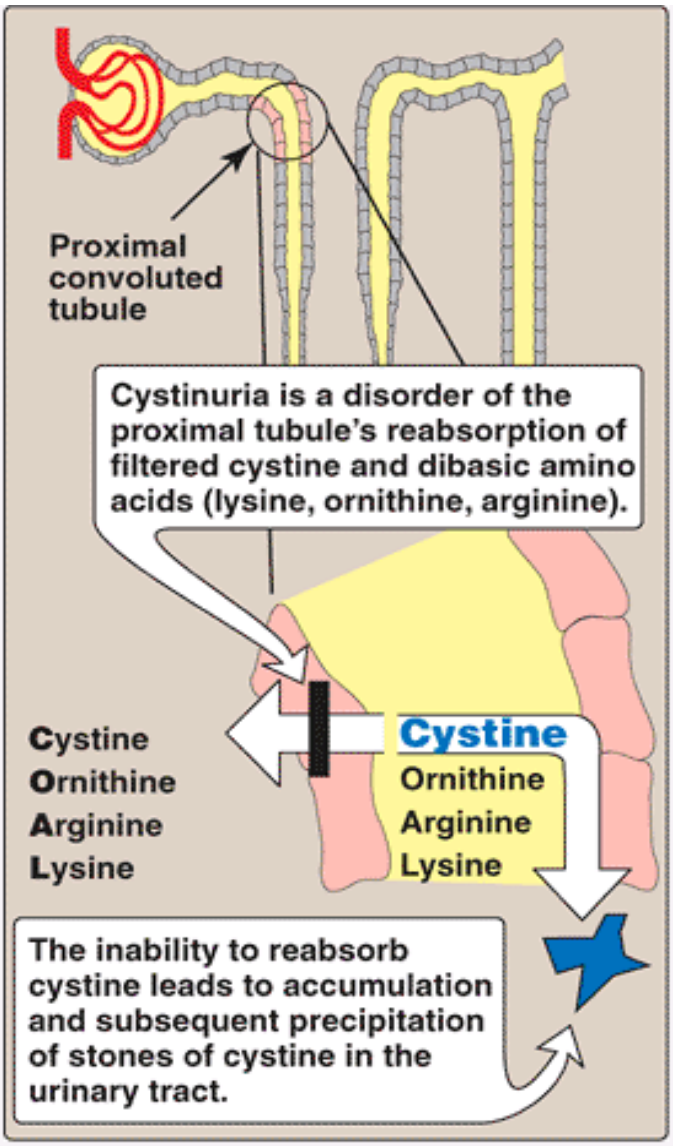

Figure 19.6 Genetic defect seen in cystinuria.

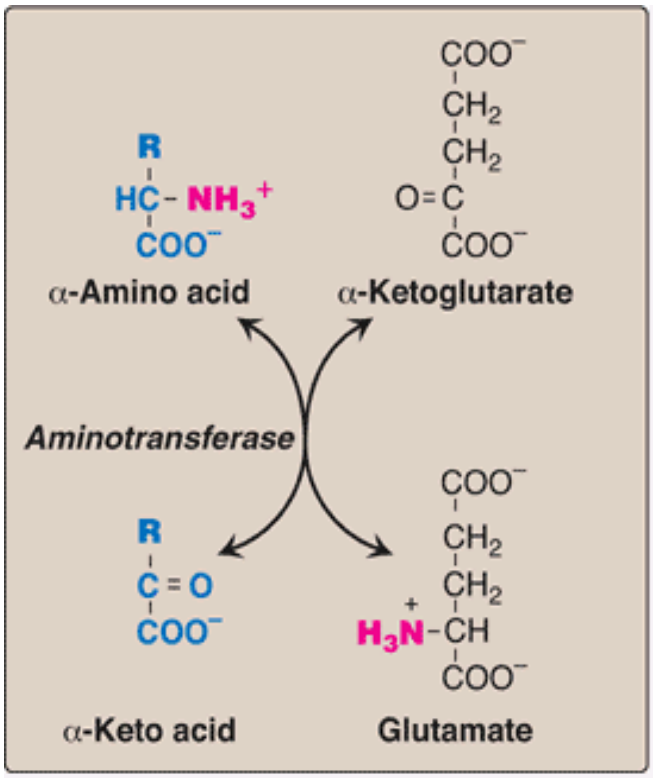

Figure 19.7 *Aminotransferase* reaction using α-ketoglutarate as the amino-group acceptor.

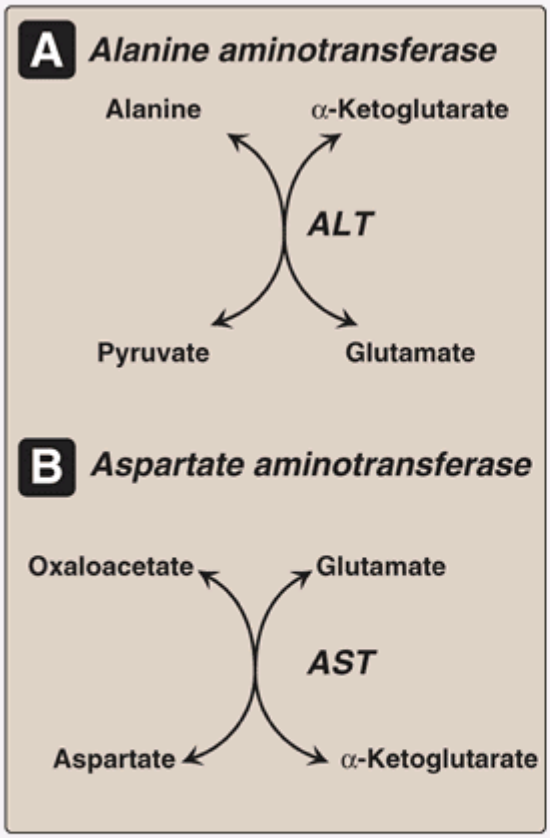

Figure 19.8 Reactions catalyzed during amino acid catabolism. A. *Alanine aminotransferase* (*ALT*). B. *Aspartate aminotransferase* (*AST*).

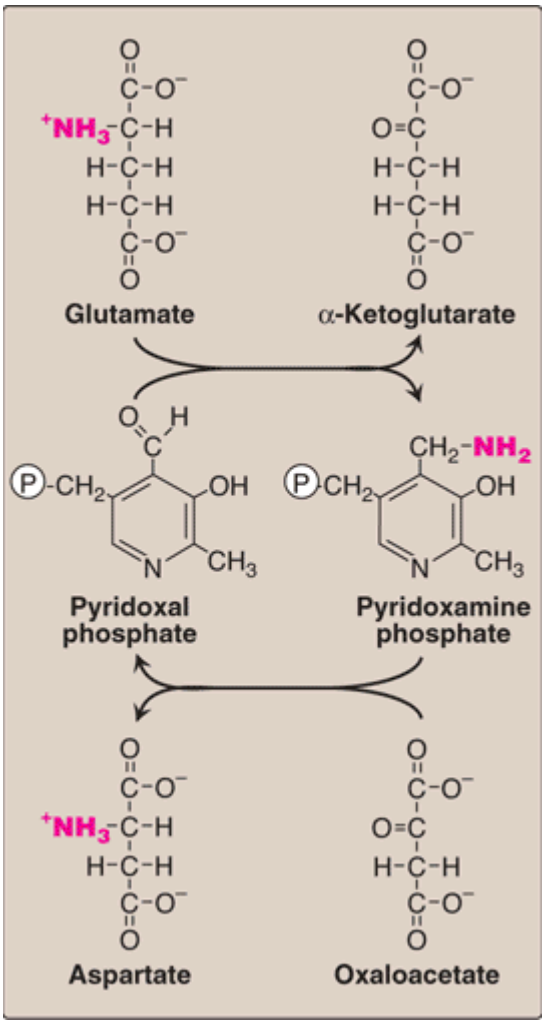

Figure 19.9 Cyclic interconversion of pyridoxal phosphate and pyridoxamine phosphate during the *aspartate aminotransferase* reaction. [Note: P = phosphate group].

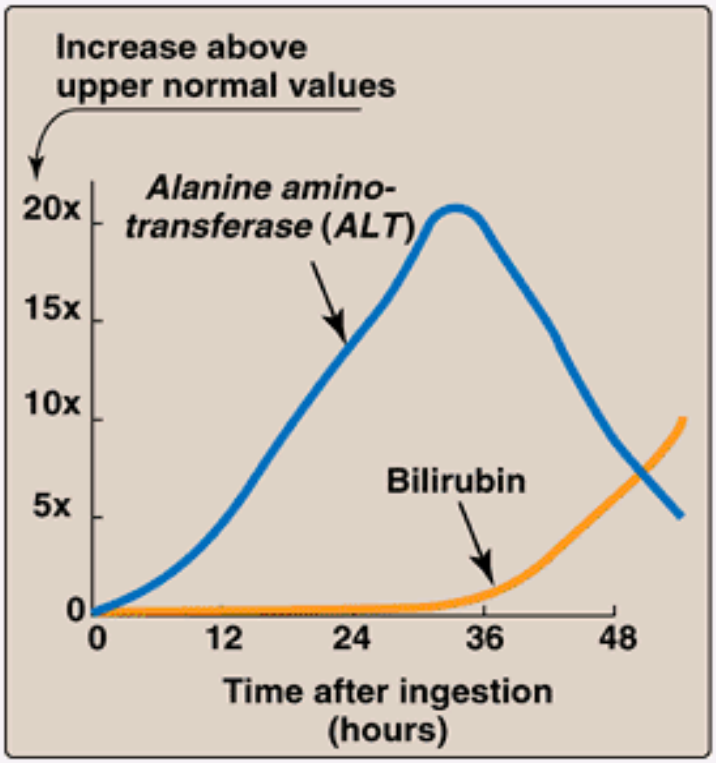

Figure 19.10 Pattern of serum *alanine amino-transferase* (ALT) and bilirubin in the plasma, following poisoning with the toxic mushroom Amanita phalloides.

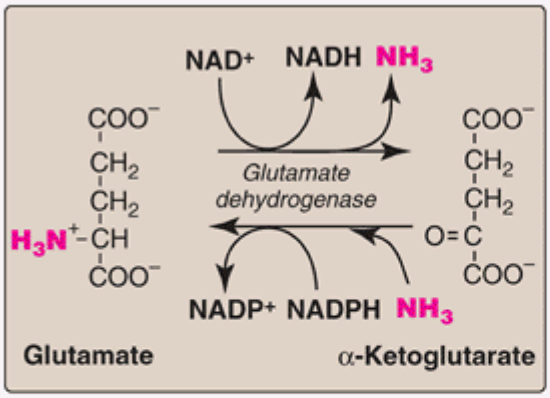

Figure 19.11 Oxidative deamination by *glutamate dehydrogenase*.

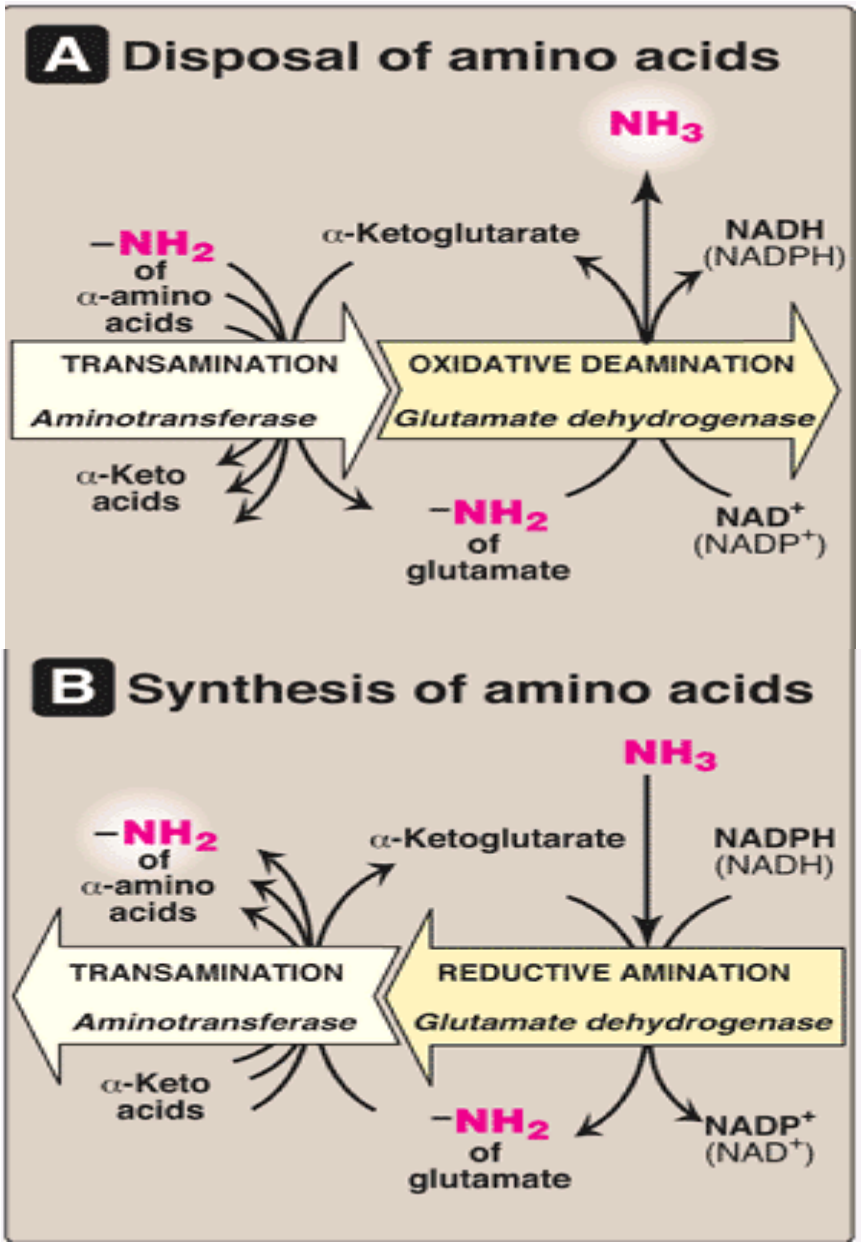

Figure 19.12 Combined actions of aminotransferase and glutamate dehydrogenase reactions.

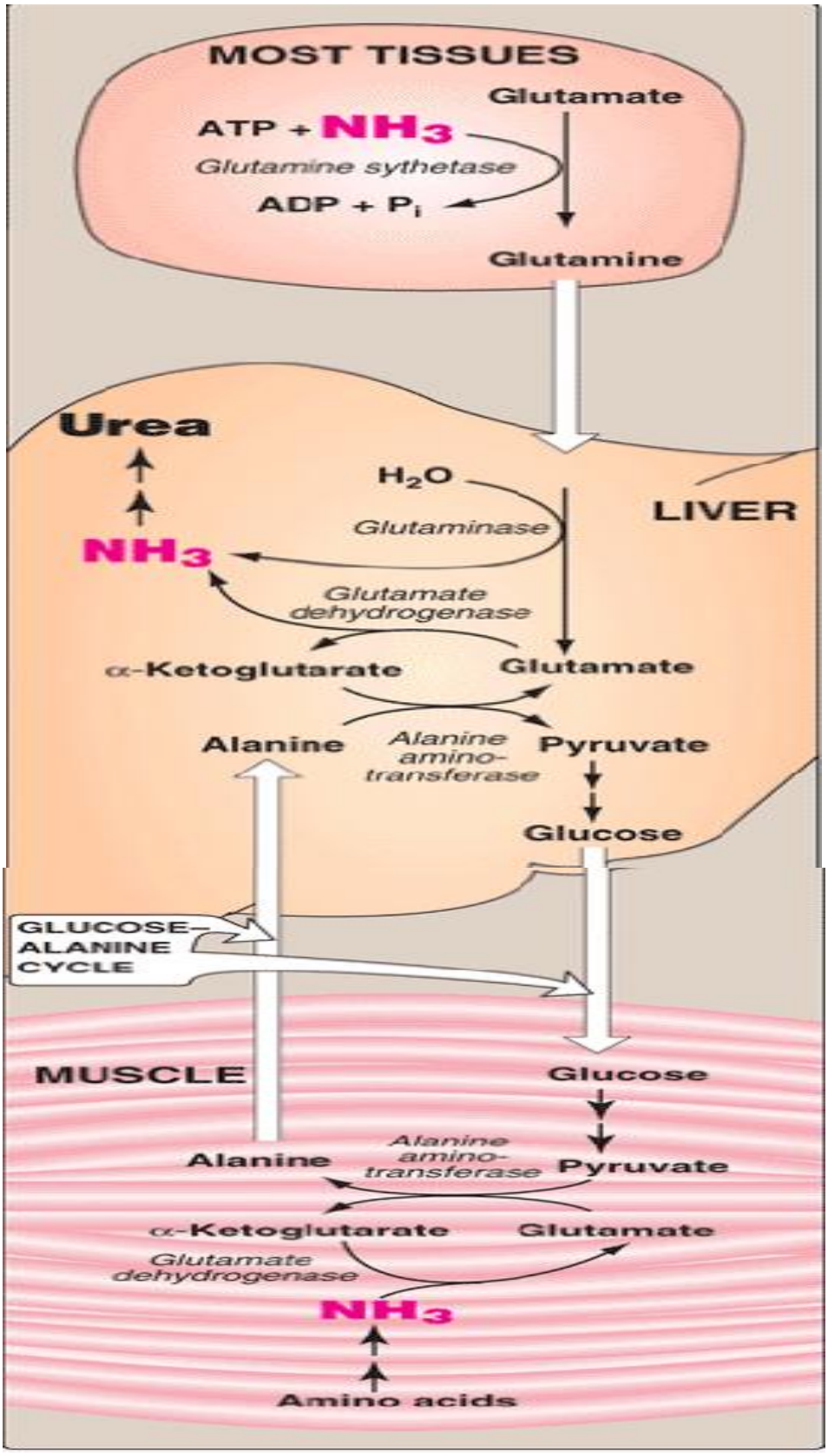

Figure 19.13 Transport of ammonia from perip
.heral tissues to the liver.

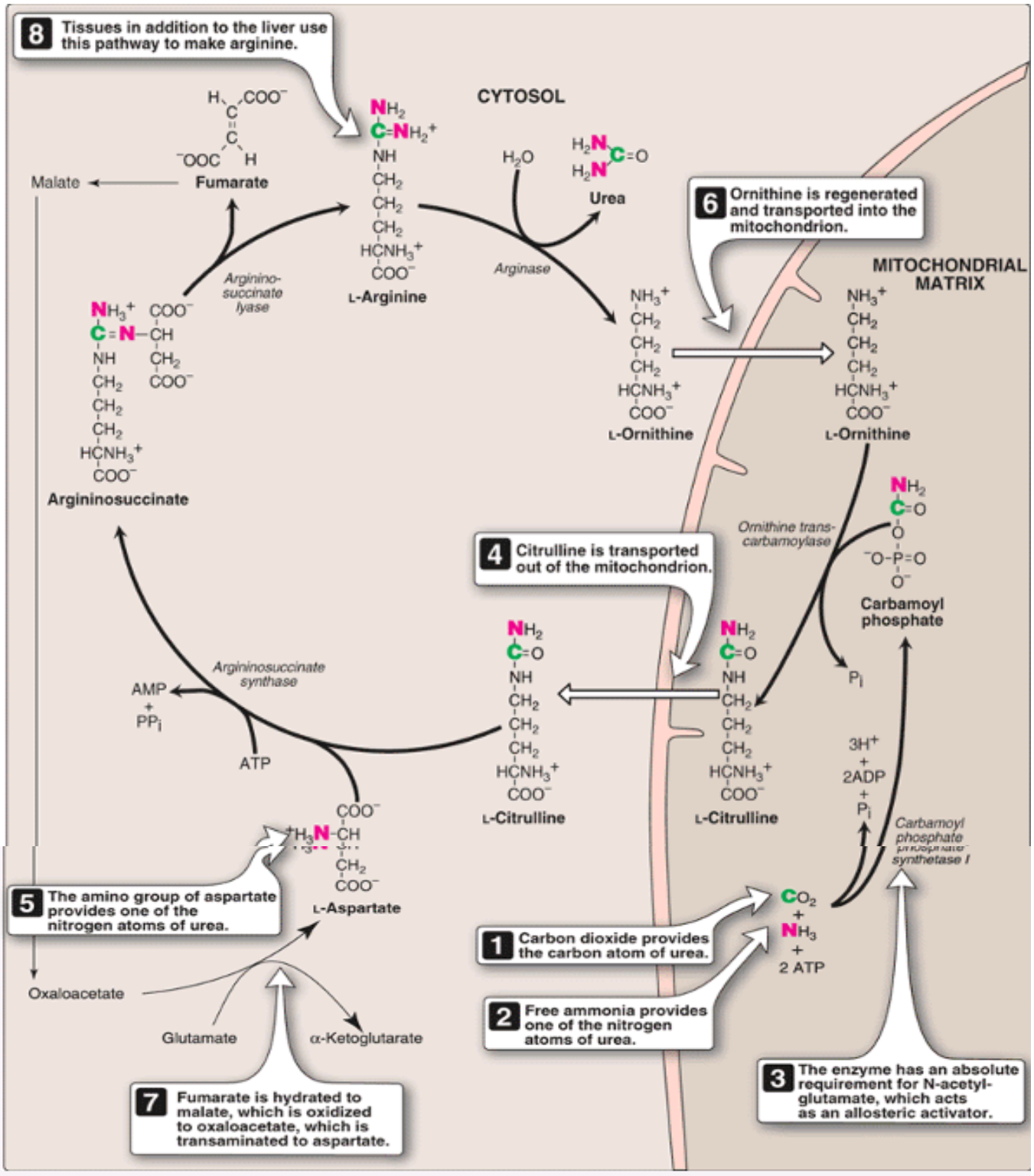

Figure 19.14 Reactions of the urea cycle.

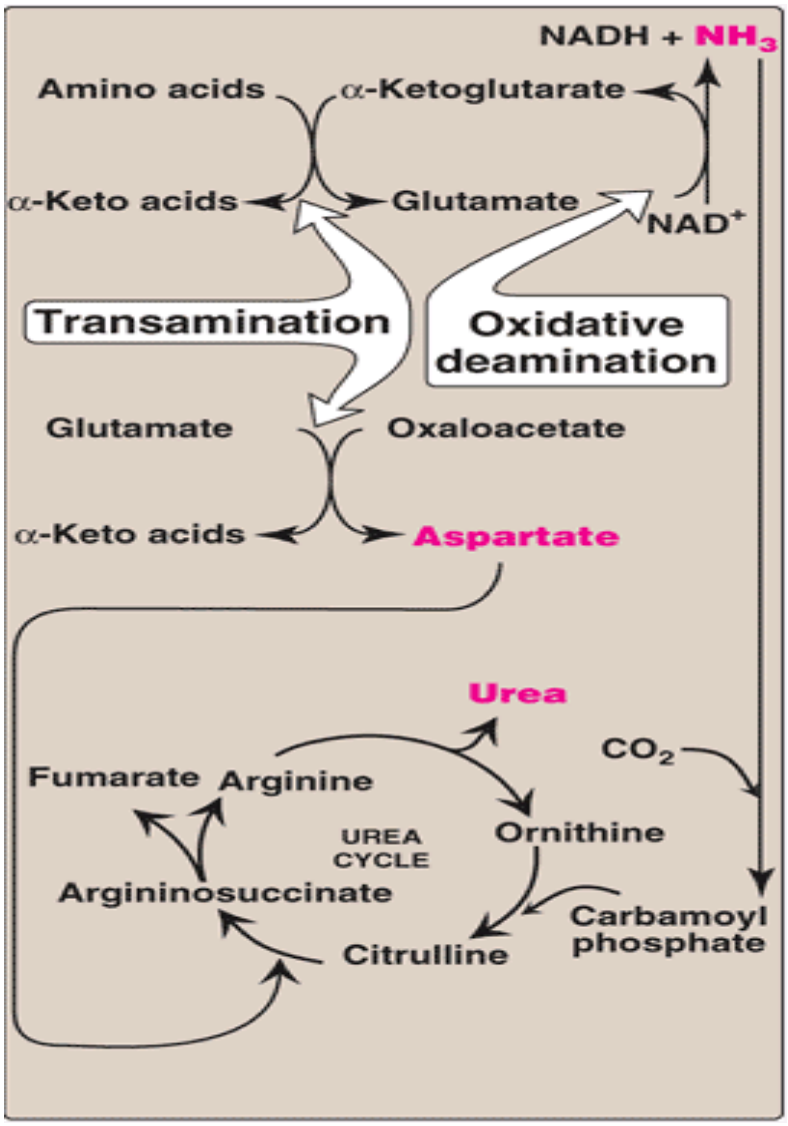

Figure 19.15 Flow of nitrogen from amino acids to urea. Amino groups for urea synthesis are collected in the form of ammonia and aspartate.

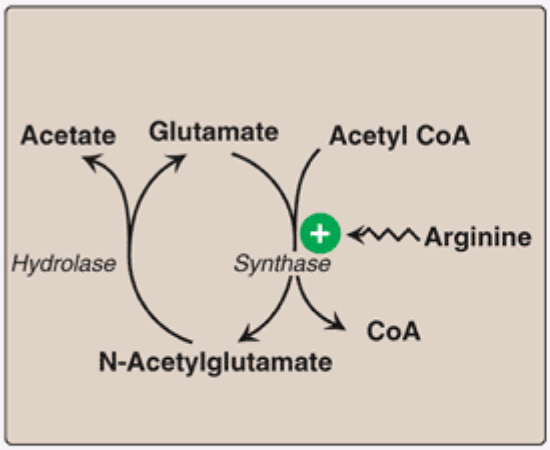

Figure 19.16 Formation and degradation of Nacetylglutamate, an allosteric activator of *carbamoyl phosphate synthetase I*.

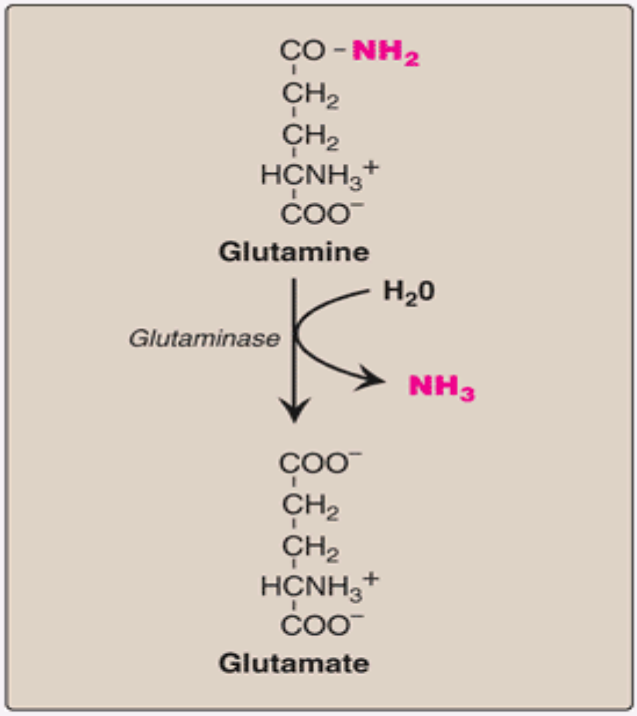

Figure 19.17 Hydrolysis of glutamine to form ammonia.

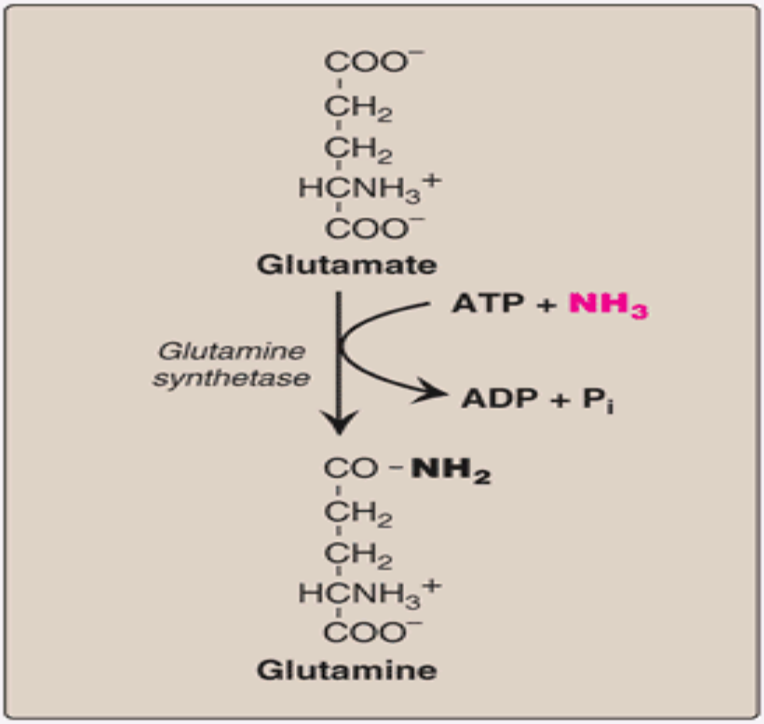

Figure 19.18 Synthesis of glutamine.

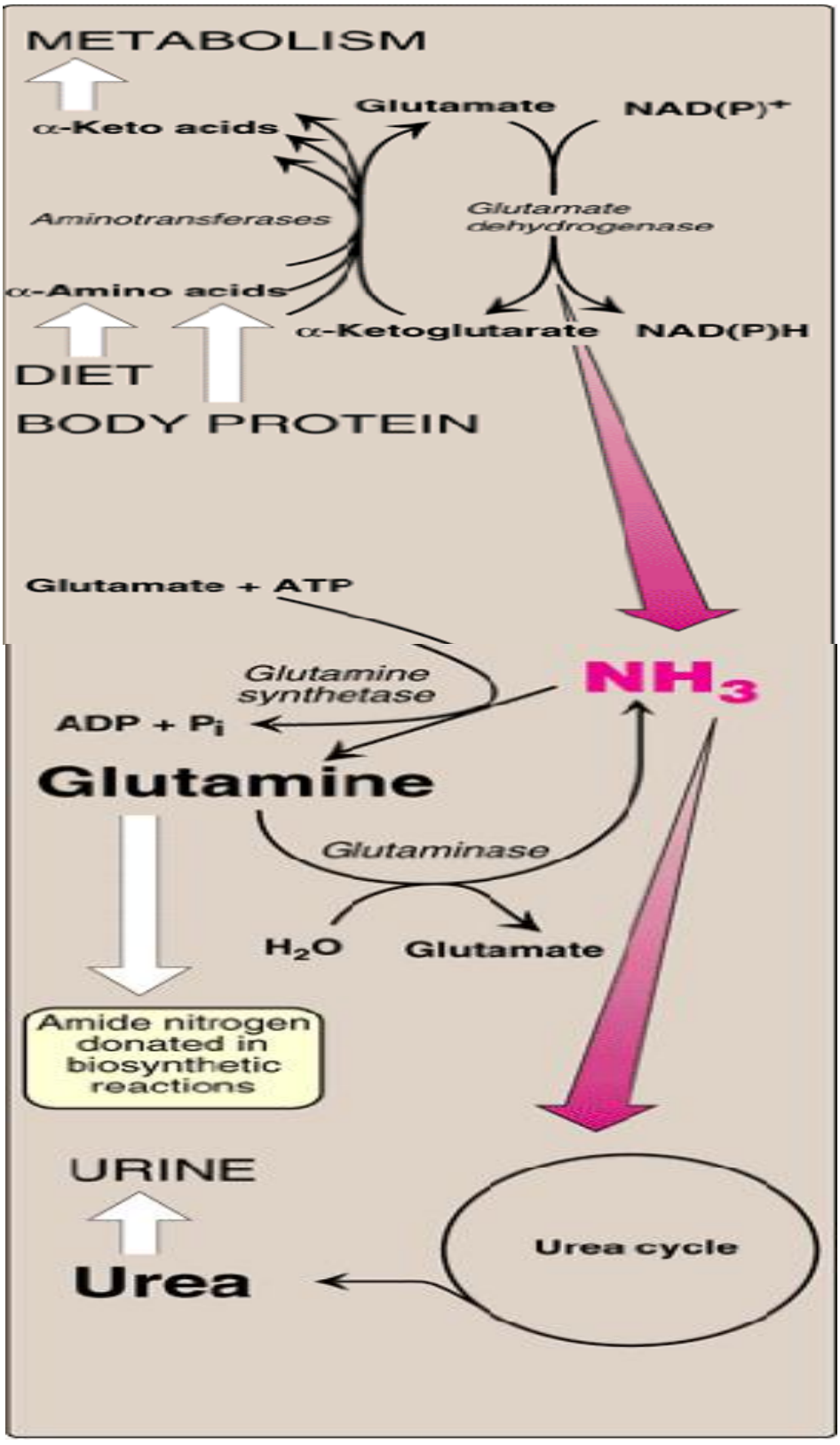

Figure 19.19 Metabolism of ammonia.

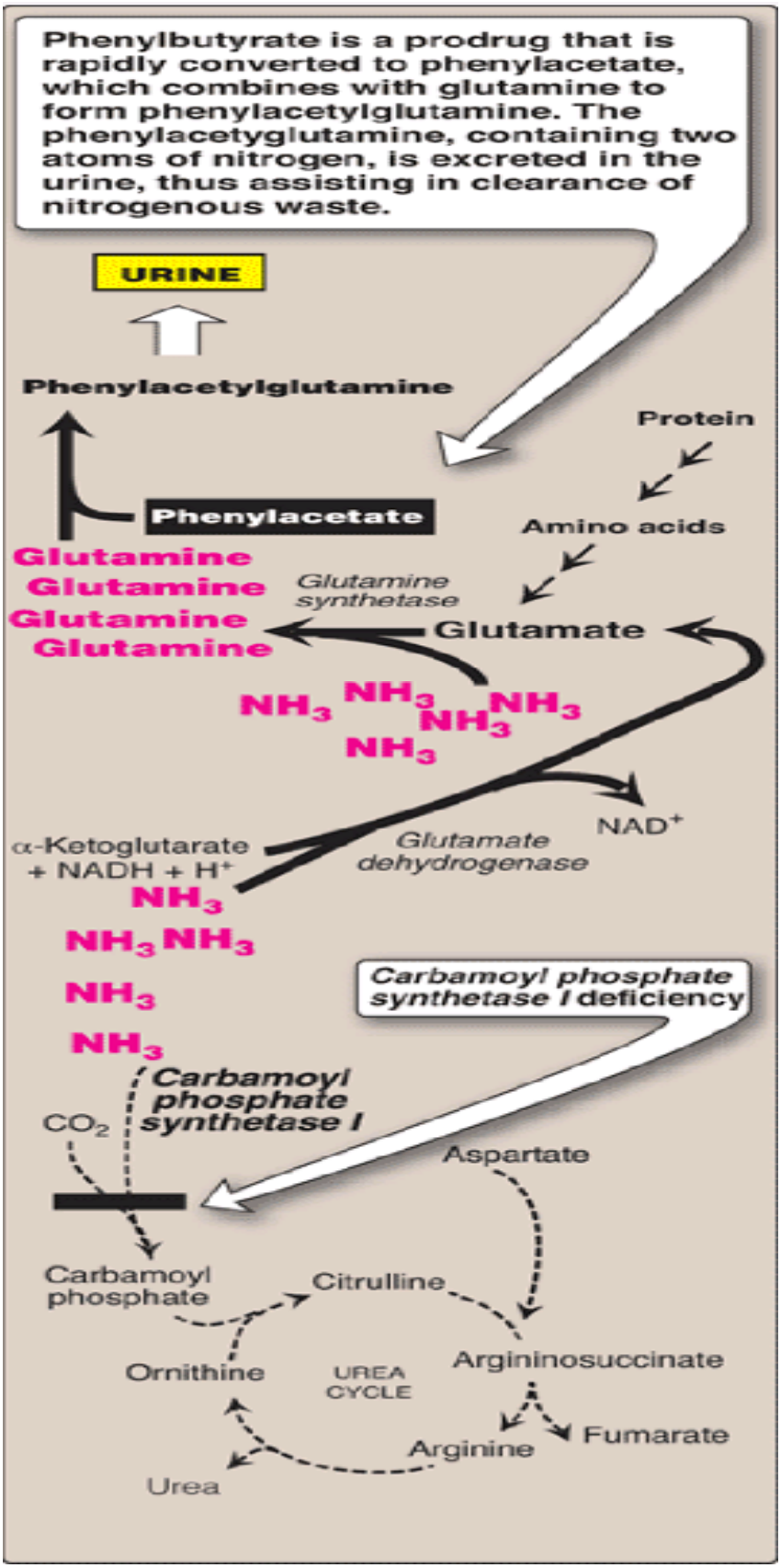

Figure 19.20 Metabolism of nitrogen in a patient with a deficiency in the urea cycle enzyme carbamoyl phosphate synthetase I. Treatment with phenylbutyrate converts nitrogenous waste to a form that can be excreted.

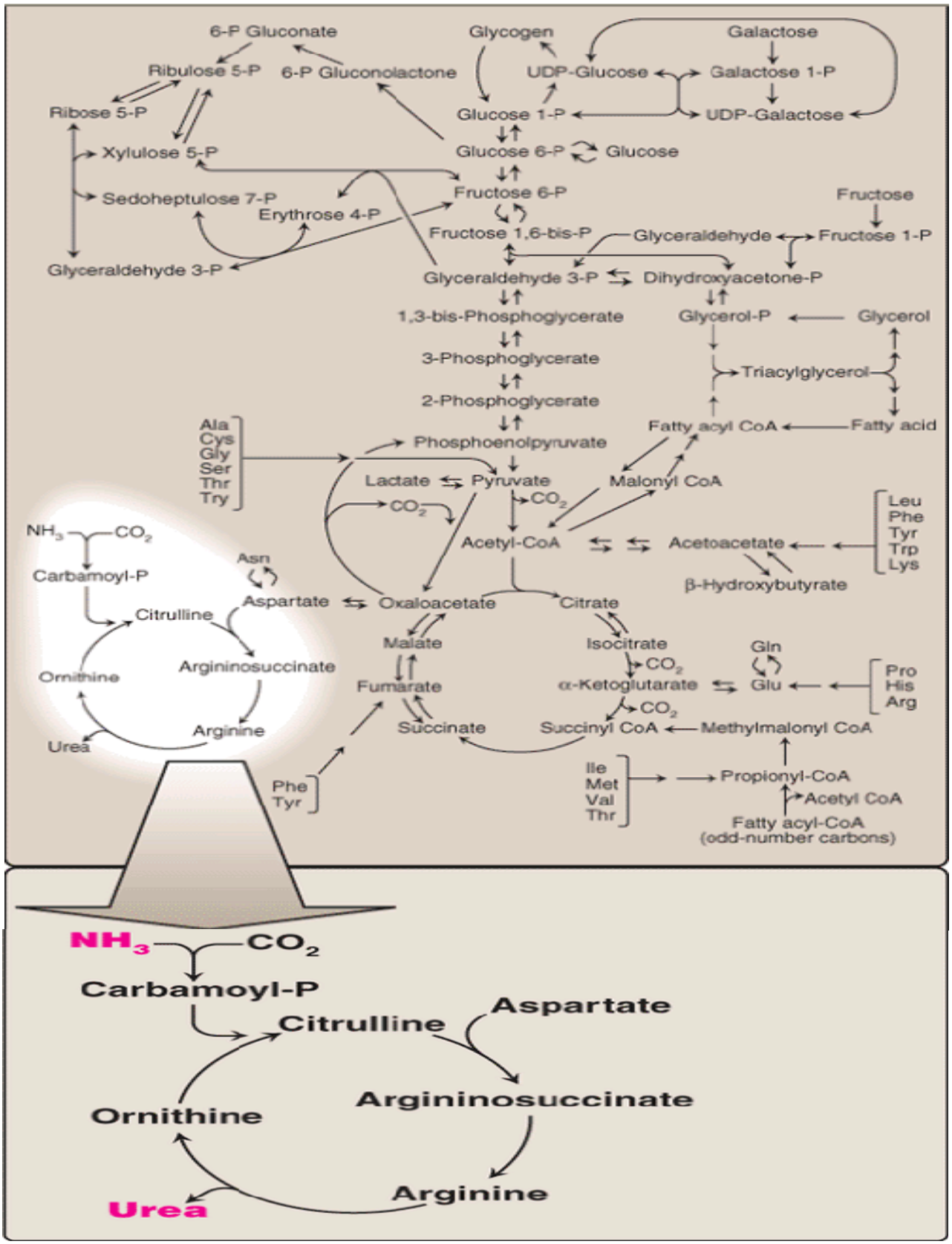

Figure 19.1 Urea cycle shown as part of the essential reactions of energy metabolism. (See Figure 8.2, p. 92, for a more detailed view of the metabolic pathway.)

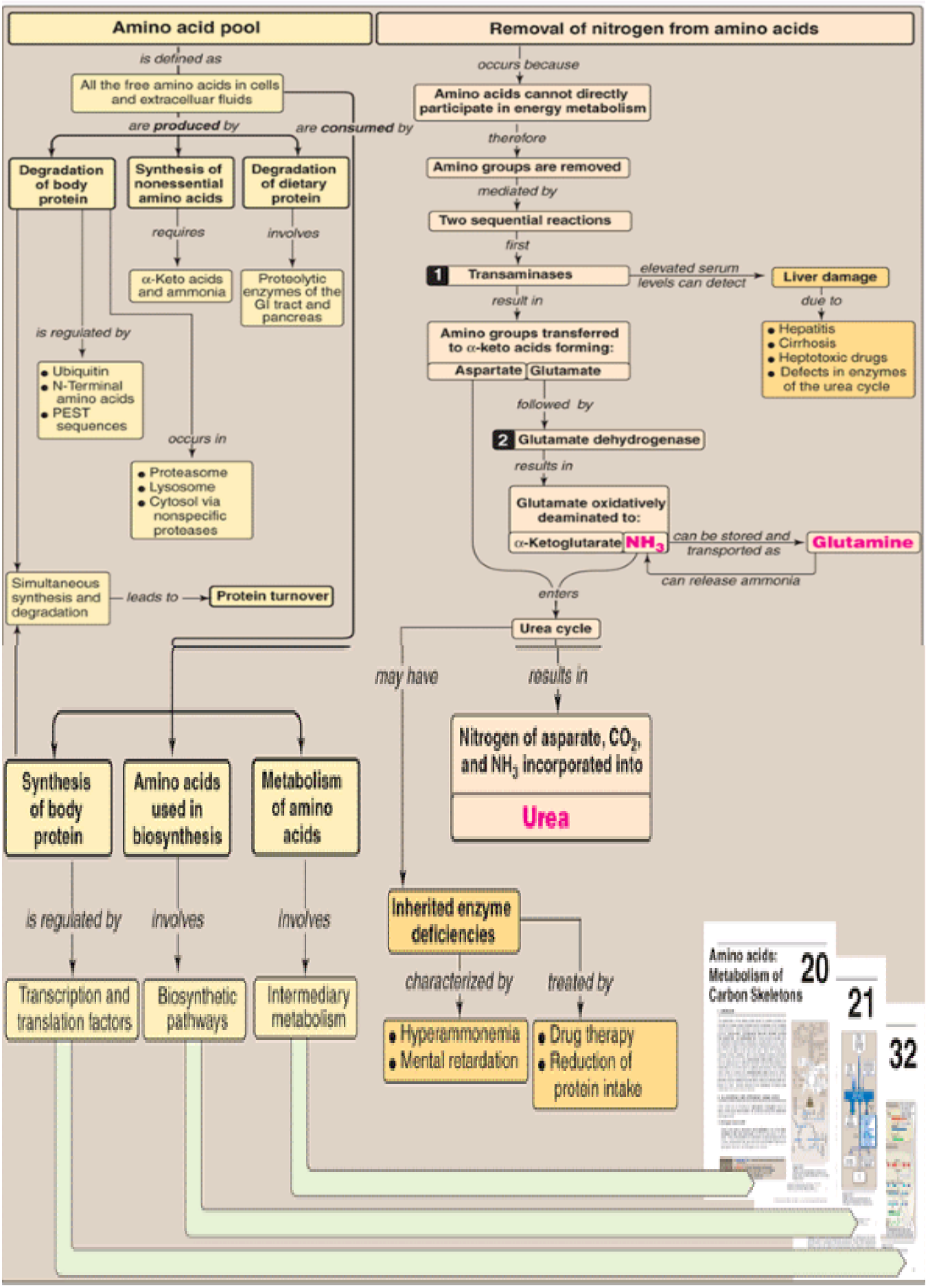

Figure 19.21 Key concept map for nitrogen metabolism.