CHAPTER 18

UREA CYCLE

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Function: To provide a route to dispose of the amino groups from amino acids during their metabolism.
Location: Liver, kidney
Connections: *From* amino groups of amino acids through glutamate and glutamate dehydrogenase
From amino groups of amino acids through aspartate and argininosuccinate synthase
From ammonia through carbamoyl phosphate synthetase
To urea
Regulation: Primarily by availability of amino groups and ammonia
Equation:

$$NH_4^+ + CO_2 + Asp + 2ATP \longrightarrow NH_2C(=O)NH_2 + fumarate + 2ADP + 2P_i$$

$$Glu + NAD^+ + CO_2 + Asp + 2ATP \longrightarrow NH_2C(=O)NH_2 + \alpha\text{-ketoglutarate} + fumarate + 2ADP + 2P_i$$

(See Fig. 18-1.)

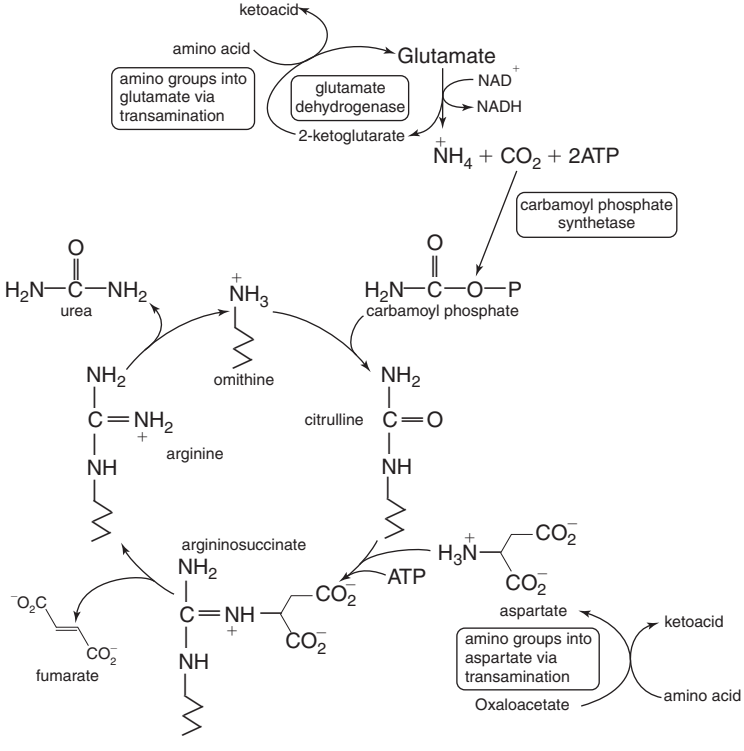

Figure 18-1 The Urea Cycle