DEAMINATION OF AMINO ACIDS - THE UREA CYCLE

GLYCEROLYSIS: Pyruvate → Serine, Cysteine (?) → Glutamate

GLUCONEOGENESIS: Glucose → 2-Oxoglutarate

GLUTAMATE: Glutamate → 2-Oxoglutarate

MALATE: Malate → Glutamate

Fumarate: Fumarate → 2-Oxoglutarate

GLUTAMATE CYCLE: Glutamate → Ornithine

UREA CYCLE: Ornithine → Aspartate → Urea

UREA CYCLE EQUATION:

NH₄⁺ + HCO₃⁻ + "OOCCH₂(CH(NH₃)COO⁻)" + 3ATP → H₂NCONH₂ + "OOCCH=CHCOO⁻" + 2ADP + 2Pi + AMP + PPi

Pyrophosphate (PPi) is rapidly hydrolysed so 4 high-energy phosphates from ATP are needed to form 1 urea.

Red and Blue arrows denote pathways of amino groups from amino acids to urea.