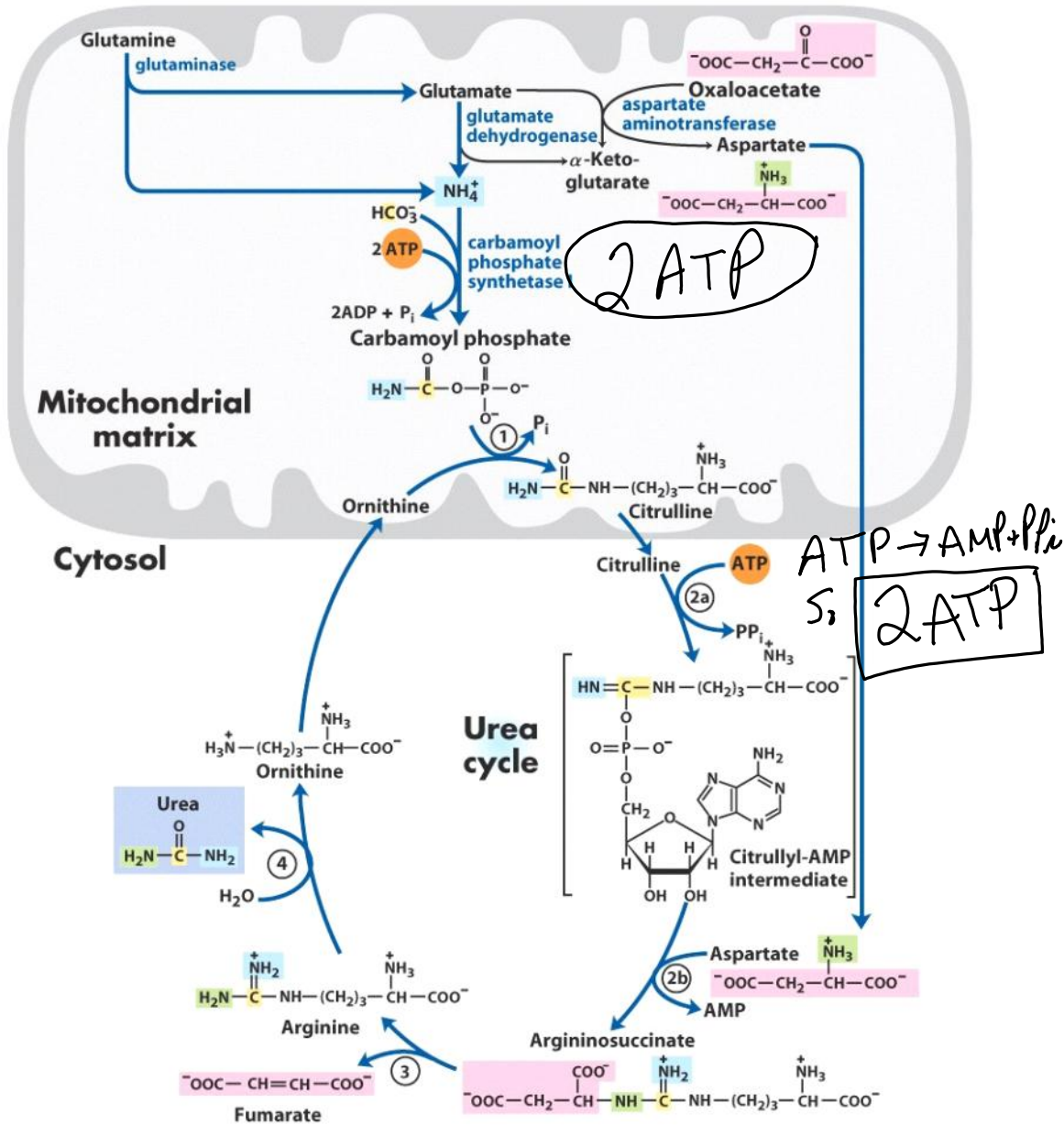


UREA CYCLE ATP COUNTING

Tuesday, May 13, 2008
8:30 AM

How many ATP are used to produce urea via the Urea Cycle from NH_4^+ in isolation?
How many ATP are used when considering the Urea Cycle in the context of the Aspartate-Argininosuccinate shunt?

CASE I: UREA cycle in isolation

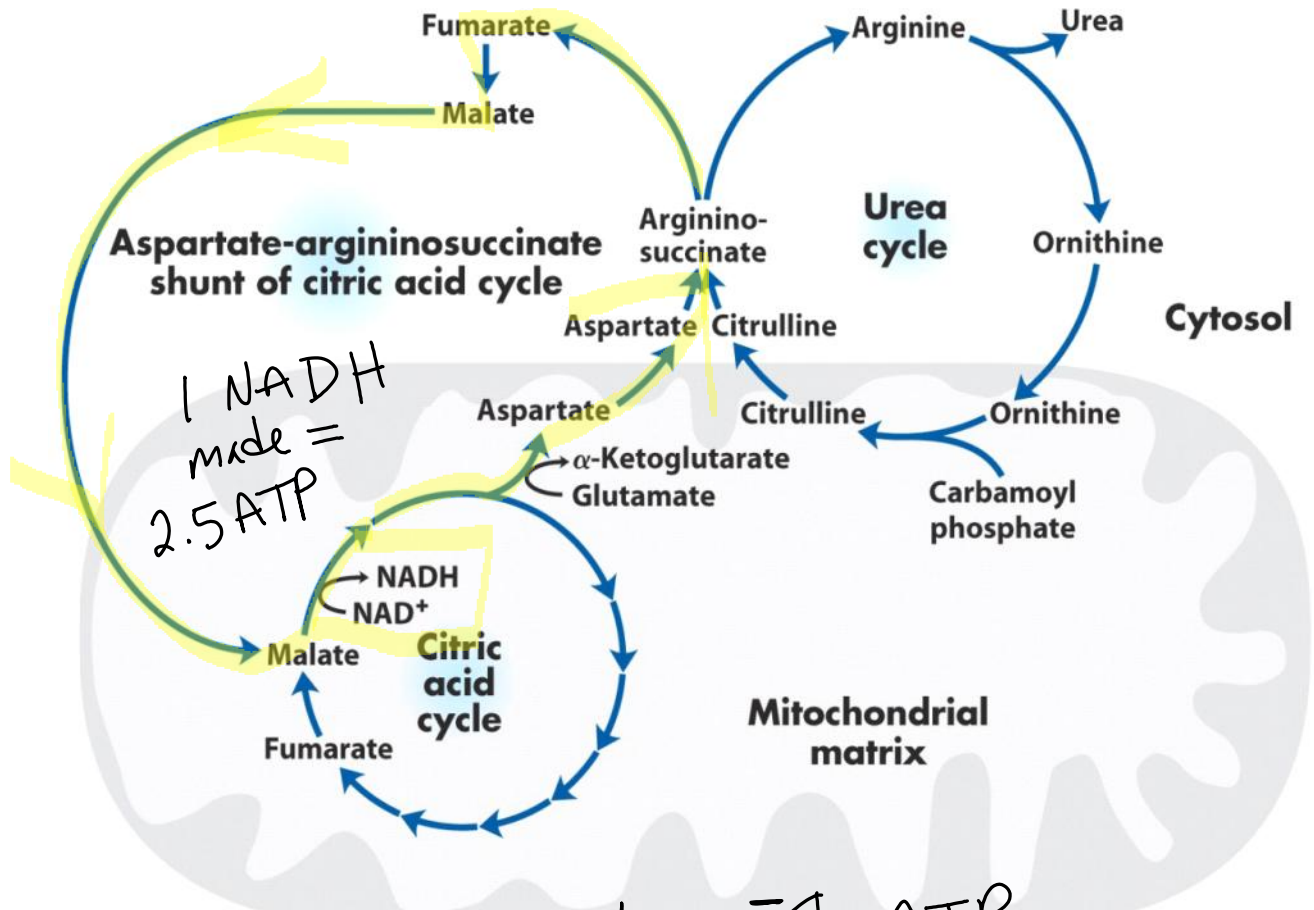


Thus 4 ATP are spent to make each urea from $1 \text{NH}_4^+ + 1 \text{Asp} + \text{HCO}_3^-$

CASE II:

UREA Cycle + Aspartate-Argininosuccinate Shunt

UREA Cycle + Asp-Argininosuccinate Shunt



Case I: urea cycle alone -4 ATP
 Case II: -4 ATP + 2.5 ATP = -1.5 ATP