Our last Q-discussion. Thanks for helping us develop this form of engaged understanding

We have mentioned the “Schiff Base” often in the class, when discussing the gymnastics of amino groups being added to or removed from carbon skeletons to turn alpha-keto acids into amino acids, and vice versa. There is an element of Schiff base mediated transamination that can make things confusing, and that is the oxidation-reduction aspects of these reactions. As a minor study of Schiffbasery (the wizard like mastery of Schiff bases), write the reaction of ammonia with pyruvate, to form the Schiff base.

What is the cognate amino acid of pyruvate (I am hoping you know this cold)? __________________________

How is the product from your reaction above different from the cognate amino acid of pyruvate? Draw the two next to each other.

What chemical occurrence do you need to covert the product of ammonia and pyruvate above into the cognate amino acid of pyruvate that you know and love?

Write that reaction, using NADPH or NADH as the needed substrate to bring about that conversion

How is the reaction you just wrote reminiscent, similar, or related to the glutamate dehydrogenase that we studied as one of the ways that glutamate serves as a “funnel” for ammonia from the metabolism of many amino acids? Break the reaction catalyzed by glutamate dehydrogenase into two steps: production of a Schiff base from glutamate by reaction with NAD+, and the hydrolysis of the Schiff base into our old friend αKG.