1

AMD mctp inhibitors in corporation of a main groups into glutamine and see that this is related to as we going to the end of this chapter are very important in the transfer of amine groups to produce nuclear attack.

2

Understanding metabolism study in this chapter It is important if you go back in refresh your memory on the urea cycle at some of that will.

Tinder pop back up as we go through this into three different parts so first was take a look at the biosynthesis of amino acids and then our called a couple photo of lecturers were within look at the way nitrogen is handled as we incorporate into nucleotides by purine and pyrimidine.

The starting we want to take a look at amino acids.

3

Our body is going to do with amino acids sources of amino acids for metabolic processes. We can think about our dietary proteins dietary proteins are going to be digested with in a digestive tract and then transported into the blood in form of amino acids. There are often times as well when endogenous proteins will be broken down into individual amino acids to place into the bloodstream so regardless of what the source we want to think about what's going to happen to the amino acids in our blood.

One thing will be with me.

4

media player in the right placePretty some of our amino acids. Have also provided for you this table from your textbook, because you all of the amino acids with the star. They are going to be will be consider essential amino acids meaning as humans we don't like them, so don't get ripped off.

Pictures from your textbook are going to have some of you know acids and reactions and we can't make this human So far back to this table Amino acids we can make without a star.

5

Old aminotransferases depending on which amino acids its name for the amino acid in which we were moving that I mean group so in this particular example, this is a transfer of the amazing group from some amino When we do this transfer the Alta Sita glutarate will receive the amazing group becoming glutamate and be particular amino acid in which the donation Was made from will become its corresponding Alpha keto acid. So make sure you

6

First one we went over the transamination reaction. You're going to see with this the use of pyridoxal phosphate. Abbreviated PLP isn't actually a form of vitamin B6. So this is going to be This type of reaction that we just reviewed. The second reaction is the transfer of one carbon groups using a tetrahydrofolate derivative and we're going to see this anytime we're donating or moving one carbon units around. And then the last type will see is transfer of a main groups that are derived from Luna Bean the remembering class as well.

7

It should be clear to me that he's glued. I mean, I mean a drink phrases. Since we see the glutamine aminotransferase so much. Let's go ahead and actually look at the catalytic mechanism bracelet. If you look here at the catalytic mechanism, we see there's an important active site amino acid cysteine. This scene is going to start with a nucleophile helping to break this a my bond in our glutamate. The glutamine will come in by and see the binding site for glutamine.

8

Gone as you learn this amino acid biosynthesis is really what are your precursor molecules and what are some important step as we go along? This slide here gives you a lot of the information that you'll need So you see these that are shown here and kind of scorn tea peach color. It shows you that some of the intermediates of glycolysis can either directly or indirectly produce some of our amino acids. Also shown here in the purple color. We can have intermediates from the pentose phosphate pathway leading to the production of amino acids.

9

Molecular the molecule itself is similar enough. You should see the relationship and And then from searing the glycine this is simply an addition or actually the removal of one carbon from steering to glycine. Do you see that full light here becoming important? He produce. System We'll take a steering that we made combined it with a molecule that we obtained from the thionine. Several reactions and we can produce system. Getting more complicated. So we're going to look at our nice little

10

Really important control point so you can see that we have multiple amino acids. That will inhibit the transfer of the amine group from glutamate to glutamine. This allows our body to determine we have a lot of amino acids available. if we have a lot of amino acids available, let's go back and inhibit the production of glutamine if we If we leave the amine group in the form of glutamate that's going to trigger an increase in the urea cycle and further excretion of immune groups.

11

In chapter 22, we really want to focus and follow what is happening with nitrogen in the body in order to really understand nitrogen metabolism. We need to look at some of the processing of amino acids. We previously looked at breakdown of amino acids. So now we want to look at what we can do to build the amino acids. One thing you should notice is that a lot of the reactions involved in the breakdown of amino acids are actually also involved in the production of amino acids Because what we're doing is following the movement of nitrogen.

12

This is what I want you to pay attention. You should be able to visualize that a transamination from alpha ketoglutarate can directly give you glutamate. Of course, you should recognize that glutamate can become glue to me. This is one of our big

reactions. We just received. Arginine is another molecule that you should be able to remember we can produce strong here as part of our urea cycle. From 3 phosphoglycerate we can produce steering don't member.

13

Call this type of reaction. The second reaction that we did mention probably a little more briefly in our discussions was the glutamine synthetase now, this is an ATP requiring reaction in which we will phosphorylate a glutamate. Providing a good leaving group so that we can then add a free I mean to produce glue to me for my previous lectures that we use glutamate and glutamine quite a bit. The major role for glutamate is sort of a storage site for our a means because glutamate

14

They're binding site where whatever we are transferring the amine group is going to bind. The amine group can then bind to our substrate We will release the animated substrate. molecule as a product and we release glutamate form because the glutamine originally here lost it some mean group. as we go through the different amino acids synthesis slots You're going to see some repeat information trying to give you as many visual. Different Clues and ways to learn what's important

15

Glad that we do not need to preserve the nitrogen. So we'll take those amino acids remove the nitrogen excreted through the urea cycle and then use the corresponding keto acids, they can feed into our other metabolic pathways such as glycolysis and the TCA cycle. Of course he reactions we want to take a look at should be familiar as we looked at these when we studied the breakdown of amino acids, and our first reaction is using the enzyme Amino transferase. So you should recall that there are multiple.