

# Amino Acids Intermediates

## - Pyruvate

- What are the amino acids that can produce Pyruvate:
  - Alanine
  - Cysteine
  - Glycine
  - Serine
  - Tryptophan
  - Threonine

### Points to take to help memorize the amino acids :

- Use the beginning of the alphabet to remember the first 3 (Read the following point)
- The first 4 amino acids are not cross-linked to other metabolic pathways that can give another one of the 7 intermediates (This point is critical so that the first point works)
- Double T for the last 2

Hold up! what makes you so sure that I won't mix up one of the T's with tyrosine? Because there is a rule which is wherever there is tyrosin, there is phenylalanine. No phenylalanine here so no tyrosin 😊

## - Acetoacetate

- What are the amino acids that can produce Acetoacetate:
  - Leucine
  - Lysine
  - Tyrosin
  - Phenylalanine
  - Tryptophan

### Points to take to help memorize the amino acids:

- What is so special about the first 2 amino acids?  
They are the only amino acids which are exclusively ketogenic and not glucogenic.
- What about the last 3 AA's, what's so special about them?  
They are the only amino acids which have a ring structure as part of their sidechain.

## - Acetyl-CoA

- What are the amino acids that can produce
  - Ile
  - Leu

Points to take to help memorize the AA's  
The Leucines!!!

## - $\alpha$ -ketoglutarate

- What are the amino acids that can produce ketoglutarate

- Glutamate
- Glutamine
- Proline
- Histadine
- Arginine

Points to take to help memorize the AA's

- All of them are not cross-linked in the formation of the other intermediates
- Double G's
- You know how when you have glutamate you can make both glutamine and proliine.
- Oh wait, glutamine!! Let's just add another nitrogen group to make arginine

## • - Succinyl-CoA

- What are the amino acids that can produce Succinyl CoA

- Valine
- Isoleucine
- Methionine
- Threonine

Points to take to help memorize the amino acids?

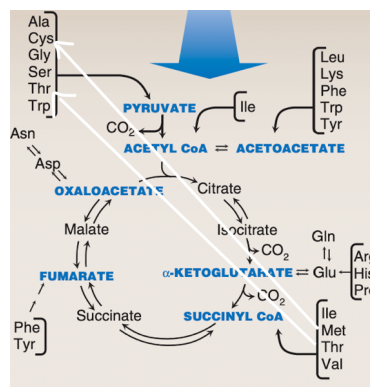
- Here we have 2 non-polar groups and 2 polar groups  
Should I choose Leucine?

No!! Leucine is only for acetoacetate and Acetyl-CoA formation

Okay, so no Leucine family?

You know what, take Isoleucine.

- Valine isn't mentioned anywhere but here.
- Cross link in the diagram that you have in mind to the amino acids of pyruvate, you get threonine and a product of methionine which is cystine. The diagram:



## - Fumarate

- What are the amino acids that can produce Fumarate

- Tyrosin
- Phenylalanine

Points to take to help memorize the AA's

The Duo! Phenylalanine and its hydroxylated version Tyrosin

## - Oxaloacetate

- What are the amino acids that can produce Oxaloacetate

- Aspartate
- Asparagine

Points to take to help memorize the AA's

The 2 amino acids that start with "As"

Random caveman 30,000 BC



"Evil spirits"? Gotchu  
fam lemme just drill a  
hole in your skull.  
"Wounds"? Just use this  
herb bro

First year medical  
student



I know the Krebs cycle