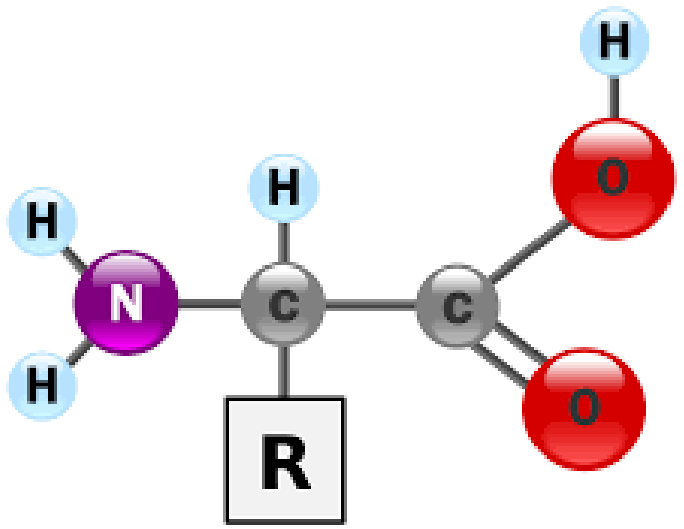
Amino Acids

By: Cat Beresnyak, Joey Potter, Lily Stumm, Rubie Goodman, Maggie Kong.

What are Amino Acids?

- Amino Acids are organic compounds containing amine and carboxyl. They are known as the building blocks of life. When the body breaks down proteins, amino acids are left. Then, the amino acids are used to create protein and break down food.



How are they useful to the human body?

- The human body needs 20 different amino acids to function properly
- Protein is broken down into amino acids
- They are known as the building blocks of protein

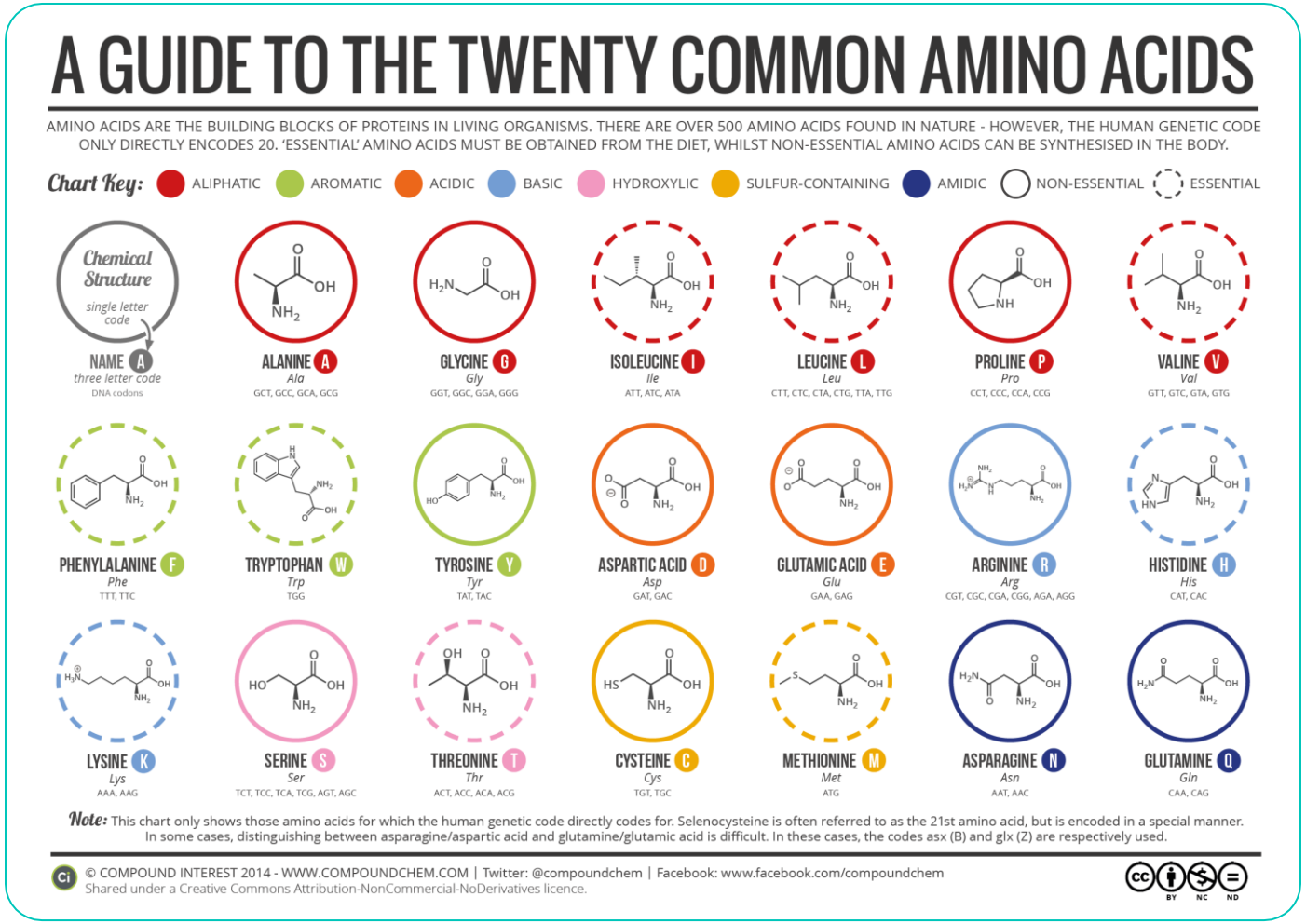
Amino Acid Classification

- Amino acids are classified into 3 different groups. Essential, nonessential, and conditional amino acids. Essential amino acids cannot be made by the body; therefore they must be obtained by food. Nonessential amino acids are made by the human body, which means they are not essential to one's diet. Conditional amino acids are not essential to one's diet except under the conditions of illness and stress.

Essential	Conditionally Non-Essential	Non-Essential
Histidine	Arginine	Alanine
Isoleucine	Cystine	Asparagine
Leucine	Glutamine	Aspartate
Lysine	Glycine	Glutamate
Methionine	Proline	Serine
Phenylalanine	Tyrosine	
Threonine		
Tryptophan		
Valine		

What foods contain amino acids?

- Leucine
  - Cheese, soybeans, beef, pork, chicken ect.
- Isoleucine
  - Meat/fish, dairy products, oats, brown rice ect.
- Lysine
  - Eggs, meat, poultry, beans, cheese, avacodos ect.
- Methionine
  - Meat/fish, cheese, oats, whole grain, ect.
- Phenylalanine
  - Dairy products, beans, oats, whole grain rice, onions, ect.
- Threonine
  - Cheese, nuts, pumpikn, soybeans, avacodos, figs, raisins, ect.
- Tryptophan
  - Chocolate, milk, turkey, red meat, yogurt, sunflowe seeds, bananas, peanuts, ect.
- Valine
  - Cheese, red meat, chicken, pork, broccoli, blueberries, apricots, ect.
- Histidine
  - Red/white meat, cheese, seafood, soybeans, potatoes, ect.



How many amino acids are there?

- There are twenty different amino acids in a human's protein. However, only nine are essential to a human's diet because the body cannot manufacture them. They include histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine.

Why are they essetnial?

- Leucine: helps to stimulate muscle growth
- Isoleucine: helps regulate blood sugar which burns into engery
- Lysine: muscle growth and repair
- Methionine: important for the growth of blood vessels/muscles
- Phenylalanine: needed to make proteins and brain chemicals – impacts our mood/mental health
- Tryptophan: helps us feel happy and relaxes the body, promoting healthy sleeping patterns
- Valne: essential for endurance and overall muscle health
- Histidine: supports brain health
- Threonine: helps our immune system, liver, heart and central nervous system function properly

How can Amino Acids be harmful?

- Most high protein diets contain more Amino Acids.
- If you were to obtain only high protein for a lengthy period it could cause acidic side effects in your kidneys.
- The kidneys help regulate your body's acid and base balance.
- When you have more Amino Acids it's hard for your kidneys to keep it balanced.
- This may cause gastrointestinal distress, such as bloating, abdominal pain and diarrhea. It could also increase the risk of gout and lead to an unhealthy drop in blood pressure.

What to do if you have too many Amino Acids?

- Drink plenty of water to clean out kidneys.
- Monitor Potassium and Sodium levels as well as blood pressure.
- Cut back on protein for a while.

Why are they needed?

- Amino acids are needed to help build proteins
- They are categorized as essential

Works Cited

https://www.healthline.com/nutrition/essential-amino-acids

https://en.wikipedia.org/wiki/Amino_acid

https://medlineplus.gov/ency/article/002222.htm

https://www.livestrong.com/article/500895-side-effects-of-too-many-amino-acids/

https://bareblends.com.au/blog/the-9-essential-amino-acids-what-are-they-and-why-do-we-need-them/