

Everyday, old cells in  
the body are replaced  
with new ones



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" Quantum physicists have proven that 98% of the atoms in your body are replaced within one year. In three months your body produces an entirely new skeleton. Every six weeks, all the cells have been replaced in your liver. You have a new stomach lining every five days. Every month you produce an entirely new skin"(20). To make new tissues, the body must have new protein.

There are 100, 000 different proteins in the human body (20); each consists of many amino acids bonded together to create long chains. Proteins serve two main purposes in the human body, structural and functional. Structural proteins form most of the human body by creating keratin and collagen, which make up muscles, skin, tendons, and hair. Functional proteins are used in bodily functions. An example is hemoglobin, a protein that transports oxygen through the bloodstream. Insulin and enzymes are more examples of functional proteins.

There are 20 amino acids that form proteins; these are divided into three groups: essential, conditionally essential, and non-essential. When a protein is created, or synthesized, the needed amino acids combine at the point of synthesis. If the amino acids are not present, then synthesis cannot occur. Without protein synthesis, the body lacks proteins needed for growth(20).

What are essential amino acids and why do we need them?

The essential amino acids are tryptophan, lysine, methionine, phenylalanine, threonine, valine, isoleucine, and leucine. These amino acids are essential to the human diet because they are never provided in enough amounts by the metabolism. These amino acids are useful in other ways besides forming  
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protein. Tryptophan relaxes and lowers anxiety and depression. It helps the immune systems and lessens migraines and artery and heart spasms (12).

Lysine forms collagen and increases beneficial antibodies, hormones, and enzymes; when combined with tryptophan, it lowers cholesterol (15)

Methionine protects the liver, kidneys, and bladder and helps keep hair, skin, and nails healthy (12). Phenylalanine produces chemicals that act as go-betweens to the brain and nerves, resulting in increased awareness and memory (15). Threonine increases collagen and elastin. It also helps the digestive tract function more efficiently (12). Valine increases muscle coordination and calms (12). Isoleucine and leucine produce biochemicals and energy (12).

Conditionally essential amino acids are amino acids that are often, but not always, provided by the metabolism: Tyrosine, Serine, Arginine, Asparagine, Histidine, Glycine, Glutamine, and Proline(9). The non-essential amino acids- Glutamic acid, Alanine, and Aspartic acid (9) - are completely supplied by the metabolic system.

What happens if we don't get them?

Adequate amino acid amounts are needed for creating almost every tissue and bodily fluid in the human body, along with healing, growing, and replacing them. Protein makes up most of the weight of the human body, second to water (15). Without enough amino acids, the central nervous system will cease to function, since amino acids are needed to send and receive information back and forth between the brain and the nerves (15).

Protein also keeps the immune system running smoothly, by assisting in the <https://assignbuster.com/everyday-old-cells-in-the-body-are-replaced-with-new-ones/>

creation of antibodies (15). Amino acids and proteins are important for bodybuilders as well, since the human body will not build muscles until it has completely repaired them(20).

What are complete and complementary proteins?

There are two types of proteins: complementary and complete.

Complementary proteins come from plant sources. Certain plant sources contain certain amounts of protein. One source may be low in one type of amino acid but abundant in another. When two plant sources, one high in a certain amino acid, one low in that amino acid, are combined, they form a complete protein source (19). Complete proteins contain all the essential amino acids in all the right proportions and can therefore complete protein synthesis (19). An example of complementary protein sources combining to form a complete protein source is combining grains, which are low in the amino acid lysine, and beans, which contain high levels of lysine (19). When eaten together, these two types of food supply complete protein of the amino acid lysine.

### Vegan History and Cultural Dishes

Throughout history, many cultures have adapted the vegan lifestyle. Some cultures may be vegan because of religious beliefs. Others become vegans simply for the health benefits, like more vitamins and minerals and less saturated fat.

The history of vegetarianism goes way back for 3, 200BC in Egypt, when the Egyptians believed in karmic reincarnation (19). Many of the famed Ancient

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Greek thinkers followed the vegetarian lifestyle, like Socrates, Plato, and Aristotle. Buddhism, the Essences (a Jewish sect), and early Christianity had several unorthodox groups that did not believe in animal sacrifices (19). Mahatma Gandhi was also a great influence to vegetarianism through his writings (19). During World War 2, many people were told to grow their own foods and to "Dig for Victory" (19). More recently, the population of the world has become aware of the food borne illnesses in animal products, causing a great rise in the number of vegetarians in the world (19).

Accidentally created vegan dishes come from a variety of different cultures. Mochi, a Japanese dish, is a steamed pastry filled with a type of red bean. Another example of a Japanese vegan food is Miso, a fermented bean paste that is used in such dishes as Miso Shiru. Miso Shiru is kelp broth and Miso, and the dish also often contains tofu and green onions. Thracian-style beans, which are beans in a tomato sauce, and Bulgarian spinach burgers, both originating in Bulgaria, supply adequate amounts of protein.

Now a popular dish enjoyed throughout the world, the bean burrito originated in Mexico. Some great vegan dishes from the Middle East are Hummus and Tabouli. Hummus is pureed chickpeas combined with tahini. It is often served on pita bread. Tabouli consists mainly of bulgur, black beans, and vegetables (1). Traditional Asian ingredients, such as bean sprouts and tofu, contain protein. Vegetable Tofu Stir Fry, from China, supplies a large amount of protein. Asian Tofu and Vegetable Salad with Brown Rice supplies 21 grams of protein (2). Another Asian recipe is Asian Rice and Lentil Patties (18).

## Diet Analysis

The Recommended Daily Allowances, the official government guidelines set by the nutritional research council, currently says that humans need 0.8 grams of protein per kilogram of body weight. This means that the average man will need 60-80 grams per day and the average female will need 40-60 grams daily. Although new research, such as the study Plant proteins in relation to human protein and amino acid nutrition by V. R. Young and P. L. Pellett (21), suggests vegetarians do not need to be worried about combining foods to provide amino acids, many other sources insist foods must be combined to provide adequate amounts of amino acids.

Michael Klaper M. D. states that varying foods results in 30% more protein absorption than eating the same thing day after day (7). Also, foods do not need to be combined to form complementary proteins at every meal and most vegetables are complete proteins by themselves, because they contain all needed amino acids in order to grow the plant in the first place (7). The previous theory that plant amino acids have different patterns than the ones humans need has become widely unaccepted (7). Some plants contain less of certain amino acids, but soybeans rank just beneath animal products in amount of amino acids (7). Therefore, they are an important staple in the vegan diet.

For breakfast on day one, we chose an oat bran muffin and 1 cup soy milk. When these two foods are eaten together, they create a complementary protein (7). This meal provides 16 grams of dietary protein (17). For lunch, 1 corn taco and 1/2 cup pinto beans create a complementary protein, as well

as 1/2 cup brown rice with 2 ounces tofu (7). This adds 24 grams of diet to the daily total(17). Two tablespoons (tbsp) guacamole adds flavor and 1 gram of protein (17). For dinner, a 2 ounce Tempeh burger with a sesame seed bun contains 18 grams of dietary protein (17). 2 ounces tofu yogurt with 1 ounce walnuts contains 10 grams of dietary protein (17) and is a source of complementary protein (7). Five ounces of collards provide 4 grams protein(17). Added together, day one's menu provides 73 grams of dietary protein and four sources of complete protein.

For breakfast on day two, we chose 3/4 cup oatmeal and 1 ounce sunflower seeds and 1 slice whole wheat toast with 1 tbsp peanut butter. These are complementary proteins (9) and together make up 19 grams of dietary protein(17). For lunch, we chose 1/2 cup brown rice with 1/2 cup green peas along with 4 tbsp avocado, 2 ounces bean sprouts, and 2 tbsp almond butter on one whole wheat pita. All together, this makes up two complementary proteins, plenty of complete protein (9) and 27 grams of dietary protein (17). One 3 ounce tofu cutlet and 2 oz green beans with 1 ounce almonds make a complementary protein(9), and provide 19 grams of dietary protein (17). 1/2 cup whole wheat noodles with 1 ounce sesame seeds add another complementary protein(9) and provide 9 grams of protein (17). Day two's meal provides 74 grams of dietary protein and five sources of complementary protein.

Day three's breakfast consists of 2/3 cup wheat flake cereal with 1/2 cup soy milk and 2 ounces chopped almonds and filberts. This breakfast provides a source of complementary protein and 19 grams of dietary protein(17). For lunch, 2 tbsp sunflower paste and 2 ounces bean sprouts on a pita provide a

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complementary protein (7) and 13 grams of protein(17). Asparagus provides a complete protein (7) and 4 grams of protein(17). A protein shake helps achieve the needed amount of protein for the day, supplying 19 grams of protein(17). For dinner, we chose 1/2 cup meatless TVP loaf and 1 cup broccoli. This meal contain 14 grams of protein(17). Day three provides 69 grams of dietary protein.

### Protein Producers and Consumers

Since most of the world's non-protein producing nations are third world countries, these countries are not usually our leading protein consumers either (21). Many of the same nations that produce a significant amount of protein products are also heavy consumers of other protein sources. The major protein producing countries are the United States (as the leading producer and exporter), Brazil, China, Argentina, India, Paraguay, and the European Union (14). The United States is a huge producer of cattle and other protein-packed animal products (14). European countries are also heavy producers of protein-rich products, both animal and plant (13). Soybean is the primary global protein source that isn't an animal product (13).

Besides soybean, other major sources of plant protein produced in these countries are cottonseed, rapeseed, sunflower seed, peanuts, copra (dried coconut meat), and palm kernel (14). The countries most heavily involved in the soybean trade are the U. S., Brazil, Argentina, Paraguay, and China (14). Similar to the major producers, the majority of protein consumers are found in the U. S., European Union, Japan, Taiwan, Mexico, Korea, China, Canada,



Indonesia, Malaysia, and Thailand (14). In general, the leading countries in both production and consumption of protein products are our wealthiest nations, because they are such costly activities. (14).