THE NUTRIENTS

This is just a summary, we will learn more about nutrients later in the course.

As our focus now shifts to nutrients, remember that all 'real' plant and animal foods (not extracts or ingredients) contain a mix of different nutrients and other substances.

We first examine the 3 macros, or 'macro'-nutrients, so-called because together they make up around 95% of the dry-weight of the human diet.

After that we look at the 'micro'-nutrients. There are several dozens of these minerals and vitamins, all essential for human life in various ways, but needed in far smaller amounts than carbs, proteins and fats.

MACRONUTRIENTS

CARBOHYDRATES

Carbs are the largest component of many staple foods and for most people across the globe form the bulk of the overall diet and provide most of its energy. The calories in carbs come as STARCH and SUGARS. Only 1-2 kilos of carbs can be stored in the body (in muscles and liver, as glycogen).

PROTEINS

Proteins provide amino acids, the building blocks our body uses to construct its own proteins. Aside from water, most of our body is made of protein - structural components of cells and tissues (e.g. muscle, bone, skin, connective tissue, nerves, blood vessels), plus functional components such as enzymes, hormones and neurotransmitters. **The body does not have a store or reserve of protein as such.** Protein can be used to produce energy if carbs and fats are in short supply.

FATS

Fats and oils are a vital energy source, along with carbs, and the main form in which the body stores a reserve of energy (under the skin). The fat in this adipose tissue layer provides heat insulation and protects organs from physical damage. **Fats are the major component of all cell membranes. Nerve cells are particularly high in fats, and the brain is largely made of fat.** Cholesterol is a fat-like substance from which many hormones and other vital substances are made.

DIETARY FIBRE

Plants supply us with dietary fibre - the indigestible part of carb-containing foods. No animal foods contain fibre. Plant fibre cannot be broken down by human digestive enzymes; it is not absorbed from the intestine, nor stored. Nevertheless, fibre is extremely important for intestinal (mainly colon) and general health. Pre-biotics are a type of fibre that feed our intestinal bacteria.

MICRONUTRIENTS

VITAMINS

These are organic substances that we need in tiny amounts only, for various metabolic processes to occur, e.g. as enzyme co-factors in energy production. Some can be stored in the body for months or more. Note: here, 'organic' refers to a carbon-based substance produced within a plant or animal.

MINERALS

These are inorganic elements necessary for structure (e.g. calcium, magnesium, phosphorus in bones, teeth), as electrolytes (e.g. sodium, potassium, chloride in blood, cell and tissue fluid) and as enzyme co-factors, etc.

TRACE MINERALS

These, too, are inorganic elements (e.g. zinc, selenium, iodine), but needed in tiny amounts only, usually to activate certain enzymes and hormones.

MICRONUTRIENTS

In the jargon of nutrition, **essential** refers to substances that our bodies must have in order to function properly (or at all). *They need to be consumed in foods or drinks because the human body cannot make them from other substances.* The body manufactures almost all the substances it needs. The small number it cannot make itself are therefore referred to as 'Essential'. ('Indispensable' is a useful synonym).

Note: *Essential nutrients are essential for everyone! However, individual requirements can vary greatly from person to person, and even within the same individual over time, depending on e.g. current nutritional status, age, stress level, pregnancy/weaning, smoking, alcohol, etc.*