Glossary:
Terms Defined

Accuracy – occurs when measurements are close to a quantity's actual value.

Acid – a substance that ionizes in water to produce hydrogen ions (H+).

Active Cultures – also called a live culture; this is a colony of living microorganisms (e.g. bacteria), growing within a substance such as yogurt. Active cultures are responsible for turning milk into yogurt through fermentation.

Added Sugars – sugars such as sucrose (table sugar), corn syrups, and artificial sweeteners that are added to food to increase sweetness.

Aerobic – a chemical reaction that must have oxygen to occur.

Albumen – the white of an egg, which contains predominately water and proteins.

Allicin – an active enzyme component of garlic with a broad-spectrum of anti-bacterial properties.

Amino Acids – An organic compound that links together to build a protein. Amino acids have three different structural components: a side chain of carbon and hydrogen, a carboxylic acid group, and an amino group.

Amylose – a component of starch consisting of long, straight chains of glucose units.

Amylopectin – a component of starch that has a branched glucose structure and does not gel in aqueous solutions.

Anaerobic – a chemical reaction that functions best in an oxygen-free environment.

Anthocyanins – a natural pigment producing blue, purple, and red coloring in flowers and plants.

Antioxidants – a substance present in foods which is capable of decreasing the harmful effects of free radicals in the body. Several vitamins and minerals are classified as antioxidants (e.g. Vitamin E, Vitamin C, Zinc).

Auto-immune Diseases – disorders in the body when the immune system attacks and destroys health body tissues by mistake.

Bacteria – single celled organisms that can multiply through cell division.

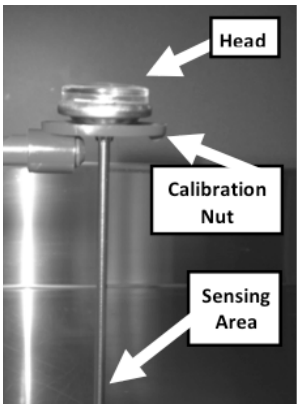
Baking Soda – a baking term for sodium bicarbonate that is used as a leavening agent in baking products.

Base – a substance that ionizes in water to produce hydroxide ions (OH-).

Beta-Carotene – a form of the pigment carotene that is found in dark green, dark yellow, and orange vegetables and fruits.

Betalains – a group of pigments parallel to Anthocyanins (betacyanins and betaxanthins) that occurs only in some families of Caryophyllales.

Bi-metallic Stemmed Thermometer – a specialized thermometer used for reading internal temperatures of meats and other food items. The thermometer consists of a head with a temperature dial connected to a stem. The distal end of the stem is the sensing area where the temperature is read from. The calibration nut is located underneath the head and is used to calibrate the thermometer by adjusting the dial for accuracy.



Boiling Water Thermometer Calibration Method – a method of calibration in which the thermometer is placed in boiling water and then adjusted to read 212°F.

Bomb Calorimeter – a vessel for measuring heat of combustion by igniting a sample.

Bran – the outer covering of a cereal grain; a source of dietary fiber.

Calcium – an abundant chemical element that makes up the body's bones, and is essential to most physiological processes in the body.

Calorie – a unit of heat energy; the amount of heat required to raise the temperature of one gram of water one degree Celsius. It is used to indicate the amount of energy that foods will produce in the human body.

Carbohydrate – an organic compound that is the main source of energy for the body; composed of carbon, oxygen, and hydrogen atoms.

Carotenoids – a group of pigments that are various colors from yellow to red.

Casein – a protein that makes up about 80% of milk.

Catabolism – the process of breaking down complex materials in the body, resulting in the release of energy.

Celiac Disease – a chronic disease of the intestines that occurs from the inability to absorb the gliadin portion of gluten, which results in an immune response that damages the mucosa layer of the intestines.

Cell Wall – the outer layer of a cell that provides structure and mechanical support.

Cells – the small structural unit for living things.

Cellular Respiration – the process by which the body breaks down sugar molecules for energy in the mitochondrial cells.

Celsius – a temperature scale characterized by a freezing point of 0 degrees and a boiling point of as 100 degrees.

Chemical Change – the change in a substance that alters its chemical identity, resulting in the formation of a new chemical with different physical properties. This type of change is usually not reversible.

Chemical Digestion – the breakdown of food molecules by digestive enzymes and chemicals.

Chemical Energy – energy that is stored in the bonds of chemical compounds and can be released in chemical reactions as heat.

Chlorophyll – the green pigment found in plants that absorbs light energy in the process of photosynthesis.

Chlorophyllin – the bright green plant pigment which is the product of the breakdown of chlorophyll by an alkaline, such as baking soda.

Cis Molecular Configuration – the formation of a double bond on a fatty acid chain when both hydrogens are on the same side of the double bond; creates a v shape in the chain.

Coagulation – changing a liquid to a soft semi-solid or solid mass.

Colloidal Dispersion – a substance in which particles are evenly dispersed within a medium (e.g. milk, because milk proteins and fat are dispersed in water).

Complementary Protein – two or more proteins that work together to provide adequate amounts of the essential amino acids.

Complex Carbohydrates – polysaccharides that contain hundreds or thousands of monosaccharide units. They are found in foods such as starch and fiber and have to be broken down completely for absorption.

Conversion – the process of changing one unit of measurement to another.

Cream of Tartar – an acidic compound (potassium hydrogen tartate) used in baking to make the product rise.

Cross-Contamination – the process by which bacteria is unintentionally transferred from one substance or contaminated object to another.

Cup – a unit of volume that is most commonly used to measure most liquids, but can also measure dry ingredients.

Curds – clumps of casein (coagulated protein) that separates from the liquid when milk coagulates.

Cured – a method of food preservation and flavoring that uses salt and nitrates to dehydrate meat; also called adding/ripening in cheese production.

Cytoplasm – the water based substance inside of a cell, which contains the nucleus and organelles of the cell.

DNA – (Deoxyribonucleic acid) – a complex molecule that encodes the genetic information used in the development and functioning of all known living organisms and many viruses.

Density – the mass of a substance per unit of volume.

Diabetes – a disorder of the body that effects insulin production or the body's response to insulin.

Digestion – the chemical and mechanical breakdown of food, resulting in the release of nutrients for use by the body.

Disaccharides – two monosaccharaides bonded together.

Dry Measurement – a unit of measurement designed for dry ingredients, such as flour and sugar.

Elongation – the step in translation where the correct amino acids are brought to the ribosome and joined to the new polypeptide chain. This process repeats as the entire assembly moves along the mRNA strand.

Emulsion – a mixture of two immiscible liquids where one is dispersed in the other in droplet form.

Endosperm – the part of the grain seed that contains primarily starch with protein and other nutrients.

Energy Balance Equation – the biological homeostasis of energy in a living system; relation between intake of food and output of work. When balance is positive, the body stores extra energy as fat; when balance is negative, the body uses stored energy (fat), resulting in weight loss.

Enzymatic Browning – the changes observed in fruits and vegetables caused by a reaction between enzymes and oxygen.

Enzymes – proteins that help chemical reactions proceed without it being changed by the reaction.

Essential Amino Acids – certain amino acids that cannot be synthesized in sufficient quantities in the body to meet the demands of the body's normal processes.

Evaporation – the process of liquid becoming vapor and dispersing into the air due to increased temperature.

Fahrenheit – a temperature scale characterized by a freezing point of 32 degrees and a boiling point of 212 degrees.

FATTOM – mnemonic device used in food service to describe the six conditions bacteria needs to grow: Food, Acidity, Time, Temperature, Oxygen, and Moisture.

Fermentation – a food-based reaction caused by the action of enzymes that breaks compounds into simpler substances; used for food preservation and preparation.

Fiber – plant material that cannot be digested, but that aids in digestion.

Flavonoids – a broad category of biological pigments that emits a yellow to red color, including anthocyanins and the anthoxanthins.

Flour – a powdery substance obtained by grinding grain (usually wheat), which is used to make bread and many other products.

Foam – a frothy mass of tiny bubbles formed from a liquid, such as egg whites.

Food-borne Illness – also known as food poisoning; consumption of food contaminated with pathogenic bacteria, resulting in illness such as nausea, vomiting, or diarrhea.

Food Safety – the practice of handling, preparing, and storing food in a way that prevents food-borne illness.

Freezing – the state of a substance, like water, having a temperature of less than or equal to 32°F and becoming solid.

Fructose – a monosaccharide found in honey and fruits.

Fungus – a broad category of eukaryotic organisms that lack plant chlorophyll; such as yeasts, rusts, smuts, mildews, molds, mushrooms, and toadstools.

Galactose – a monosaccharide sugar that typically combines with other sugars; i.e. lactose, which is glucose and galactose bound together.

Gaseous State – the state of matter in which particles have no defined size or shape and will expand to fill any enclosed container.

Germ – the vitamin-rich embryo of the wheat kernel; it is usually separated before milling and incorporated into cereal or other foods.

Germs – the common term used to describe a pathogen that can cause harm to your health

Glucose – a basic sugar molecule (monosaccharide) from which carbohydrate units are composed.

Gluten – a substance with elastic-like properties that is formed when mixing water with the proteins found in wheat, for example kneading dough.

Gram – a unit of weight equal to the mass of 1 cubic centimeter (cm3) of water at 4°C.

Heterogeneous Mixture – a solution in which one substance mixes with another but does not dissolve.

Homogeneous Mixture – a solution in which one substance is completely dissolved in another.

Household Measures – measurement techniques used at home that are not as accurate as weight measurements. These include dry cup and liquid cup measurements.

Hydrogenated Fats – fat produced from the industrial process of adding hydrogen molecules to unsaturated fat, which converts liquid fat into semisolid fat.

Hydrolysis – the chemical reaction that splits water (H2O) into hydrogen cations (H+) and hydroxide anions (OH-).

Hydrophilic – any molecule that is attracted to or dissolves in water.

Hydrophobic – any molecule that is not attracted to or does not dissolve in water.

Ice Water Thermometer Calibration Method – the method of calibration in which the thermometer is placed in ice filled water and then adjusted to read 32°F.

Incomplete Protein – an amino acid chain that does not contain all of the essential amino acids.

Indoles – an organic compound that is used by the body in the process of making tryptophan, an essential amino acid.

Insulin – a hormone, produced in the pancreas, which regulates the concentration of sugar (glucose) in the blood.

Insulin Resistance – the condition when the body produces insulin but the cells cannot use it efficiently. As a result, glucose builds up in the blood. This is the cause of Type 2 Diabetes.

Investigation Control – the group or object in an investigation which is used as a comparison and undergoes no experimental treatment.

Iodine – the chemical element used in medicine as a topical antiseptic. Iodine can be used to identify starch in foods because it reacts with the starch and changes color from brown to purple. It can also be used to identify Vitamin C in a solution due to the following chemical reaction where iodine turns from brown to clear.

$$C_6H_8O_6 \text{ (Ascorbic acid)} + I_2 \text{ (Iodine)} \rightarrow 2\ I^- \text{ (Iodide)} + C_6H_6O_6 \text{ (dehydroascorbic acid)}$$

Joule – a unit of work or energy equal to the work done by a force of one newton.

Kilocalorie – the standard unit used to describe the amount of energy that foods will produce in the human body and is reported on Nutrition Facts Labels.

Lactic Acid – an acid that is produced in milk during the fermentation process.

Lactobacillus bulgaricus – a probiotic bacteria, which is common in the digestive system and helps to regulate bad bacteria and neutralize toxins in the intestines.

Lactose – milk "sugar" or carbohydrate, composed of one glucose and one galactose molecule.

Lecithin – a phospholipid containing choline; commonly found in egg yolks and is used to emulsify water and fat together.

Limiting Amino Acid – an amino acid that cannot be synthesized in the body and can limit protein synthesis when deficient.

Liquid Measurement – a unit of measurement designed for liquids, such as water and oils.

Liquid State – the state of matter in which particles have no defined shape, but do have a defined volume.

Lipoproteins – the molecular structure in the body formed by both phospholipids and proteins; used to transport triglycerides and cholesterol in the blood.

Lutein – a xanthophyll carotenoid pigment of yellow that is important for eye health.

Lycopene – a carotenoid pigment that is the red coloring matter of the tomato.

Macronutrient – a chemical substance that is required in relatively large amounts in nutrition (carbohydrates, protein, and fat).

Maltose – a disaccharide that contains a galactose and glucose molecule; found in the milk of all mammals.

Mass/Weight – a measure of the amount of matter, or a measure of the force of gravity between two objects.

Matter – a material substance that makes up all physical objects and occupies space.

Mechanical Digestion – the physical act of breaking up food particles through chewing and contractions of the stomach and intestines.

Meniscus – the curved upper surface of a column of liquid.

Melting Point – the temperature at which a solid changes to a liquid.

Metric Measures – the measure of length, weight, and volume using metric units. These units include meters, grams, and liters.

Microscope – a scientific instrument used to observe very small organisms or objects typically magnified several hundred times.

Miscible – capable of being mixed or blended together.

Mold – a fungus that grows in warm, damp conditions and appears fuzzy. Mold can grow most anywhere but commonly grows on food as it ages.

Monosaccharide – a simple sugar molecule that cannot be broken down further into smaller molecules.

Monounsaturated Fats – a fatty acid with one double bond.

Natural Sugars – sugars that are naturally found in carbohydrate foods, such as fruits, starch, pure honey, etc.

Nucleus – the central part of most cells that contains the genetic material; usually enclosed in a nuclear membrane.

Nutrition Facts Label – the label on packaged food depicting its nutritional content.

Organelles – structures within a cell, such as ribosomes, mitochondria, the endoplasmic reticulum, and lysosomes.

Osteoporosis – a medical condition that affects older women and is characterized by decreases in bone mass with decreased density and enlargement of bone spaces producing porosity and fragility.

Ounces – the unit of weight that is 1/16 of a pound or a unit of volume that is 1/8 of a liquid cup.

Oxidation – a chemical reaction between oxygen and other compounds.

Pathogen – any bacteria, virus, or other microorganism that can cause disease.

pH – a scale that ranges from 0 to 14 indicating the level of acidity (concentration of H+ ions) with substances closer to 0 being more acidic, substances closer to 14 more basic, and substance close to 7 being neutral.

pH Indicator – a substance that indicates the degree of acidity or basicity of a solution through characteristic color changes. Cabbage juice is an example of a pH indicator that changes from neutral purple to pink under acidic conditions and green/blue under basic conditions.

Pheophytin – a gray-green plant pigment which is the product of the breakdown of chlorophyll by an acid, such as cream of tartar.

Phosphorus – a chemical element that is found in bone and teeth and is also important to chemical body processes.

Phospholipids bi-layer – a barrier, such as the cell membrane of human cells, which is composed of two layers of phospholipids which line up end to end with their hydrophobic fatty acids in the center of the layer and their hydrophilic phosphorus end on the outside of the barrier.

Phospholipids – a compound similar to a triglyceride, but with a phosphorus-containing acid in place of one fatty acid; the structure is a glycerol with two fatty acids and a phosphorus-containing acid attached.

Physical Change – a change in a substance that does not alter its chemical identity, including changes in shape, physical state, size, or temperature. This type of change is usually reversible.

Phytochemicals – the broad term for a chemical compound that is naturally produced by plants.

Pigment – the chemical compound that produces color.

Polysaccharide – a long chain of sugar consisting of three to thousands of monosaccharides that makes up many carbohydrate-containing foods.

Polyunsaturated Fats – fatty acids with two or more double bonds.

Potential Energy – stored energy; energy that something has because of its position or the arrangement of its parts.

Percent Error – the percentage difference between the approximate value and the exact value. Found using the equation: (Approximate-exact)/exact= percentage error.

Phase (State) Change – the change from one state (solid, liquid, or gas) to another without changing the chemical composition of the substance.

Precision – occurs when measurements are close to each other but not necessarily accurate.

Protein – a class of organic compounds containing Nitrogen, Hydrogen, Oxygen, and Carbon that consist of molecules composed of one or more chains of amino acids.

Protein Synthesis – the process by which a protein is made through transcription of DNA and translation of RNA into amino acid chains, and then proteins.

Refined Grains – made from wheat or other grains that have been significantly modified by removing the bran and germ of the grain.

Ripened – the step in cheese production in which the cheese is matured to develop flavor, odor, body, texture, or color.

RNA – (Ribonucleic acid) – a family of large biological molecules that perform multiple vital roles in the body's cells, including DNA translation into proteins and gene expression.

Salivary Amylase – the enzyme found in human saliva that aids in the breakdown of starch in the mouth.

Salmonella – genus of rod-shaped, gram-negative pathogenic bacteria that commonly infect contaminated food and cause food poisoning.

Saturated Fats – a fat in which most of the fatty acids are saturated; the fatty acids contain all the hydrogen atoms their structure can hold.

Saturated Solution – a solution containing the largest concentration of the dissolved material attainable under normal conditions of pressure and temperature.

Simple Carbohydrates – carbohydrate products that contain only one or two sugar molecules; these are the quickest sources of energy because they are easily absorbed.

Solid State – state of matter in which particles have a defined shape and volume.

Solidification – the process by which a liquid changes into a solid.

Solute – a substance that is dissolved in a solvent.

Solution – a homogenous mixture in which one substance is dissolved in another.

Solubility – the degree of which a substance (solute) is able to dissolve in another (solvent).

Solvent – a substance, ordinarily a liquid, in which other materials are dissolved to form a solution.

Starch – a complex carbohydrate produced in plants as a storage form of glucose.

Streptococcus thermophiles – a non-pathogenic gram-positive bacteria and facultative anaerobe that is found in fermented milk and used in the production of yogurt.

Sublimation – the transition of a substance directly from the solid to the gas phase without passing through an intermediate liquid phase.

Sugar – a general term for multiple disaccharide carbohydrates characterized by a sweet taste.

Super-Saturated Solution – an unstable state in which the concentration exceeds the saturated level; achieved by dissolving a solvent at a high temperature, then allowing the solution to cool slowly.

Sucrose – table sugar; a disaccharide containing one molecule of glucose and one molecule of fructose.

Surface Tension – cohesive forces between liquid surface molecules cause them to adhere more to each other than to those below the surface. This causes the surface to resist being broken and is what causes bubbles to form.

Synthesis – the chemical production of a substance by changing or combining similar substances.

Tare – an allowance made for the weight of a container when trying to determine the net weight of a substance.

Temperature – a measure of kinetic energy of a group of molecules; indirect measure of molecular motion.

Thermometer – an instrument used for measuring and indicating the temperature of a substance.

Transcription – the process of constructing a messenger RNA molecule using a DNA molecule as a template.

Translation – the process of forming a protein molecule from information contained in messenger RNA, which organizes amino acids into the appropriate sequences.

Trans Fats – fatty acids produced from hydrogenation in which hydrocarbon chains are in the "trans" configuration instead of the natural "cis" form.

Trans Molecular Configuration – the formation of a double bond on a fatty acid chain when each hydrogen atom is on a different side of the double bond; creates a flat shape in the unsaturated chain.

Triglycerides – large class of lipids, including almost all fats and oils in the human diet; structure is a glycerol with three fatty acids joined at the hydroxyl site.

Unsaturated Fats – a fat in which the fatty acids contain one or more carbon-carbon double bonds; the fatty acids do not contain all the hydrogen atoms their structures can hold.

Vaporization – the transition from the liquid phase to a vapor, which occurs through evaporation or boiling of a liquid substance.

Virus – an infectious agent that replicates only inside the living cells of other organisms. (e.g. the common cold).

Vitamin D – a family of compounds derived from cholesterol; essential for normal bone, tooth, and blood health, and is found especially in fish-liver oil, egg yolk, and milk.

Volume – the amount of space an object occupies.

Whole Grain – a food made from wheat from which no part (such as the bran) has been removed.

Whey – a by-product of cheese production; protein found in the liquid that remains after fat and casein are removed from milk. Whey has a watery appearance and is primarily composed of water-soluble proteins, lactose, and minerals.

Yeast – a single celled fungi that is used in bread production to make dough rise.

Yogurt – a milk-based food product that is prepared from the bacteria of fermented milk.

Yogurt Culture – the bacteria that are used to change the milk into yogurt.

Yolk – the yellow part of an egg that feeds the developing embryo in animals. The yolk contains protein, fat, cholesterol, and carbohydrates as well as many fat soluble vitamins.

Resources

FoodMASTER Middle Curriculum
Encyclopedia Britannica
Merriam Webster Dictionary
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH)
Medline Plus, NIH