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La nutrición es muy importante para nuestro cuerpo. Nos ayuda a crecer fuertes y saludables. Una manera divertida de aprender sobre la nutrición es a través de los dibujos de nutrición. Los dibujos de nutrición son geniales porque nos enseñan sobre los diferentes tipos de alimentos que debemos comer todos los días. Podemos ver dibujos de frutas, verduras, cereales y lácteos. ¡Son como una guía visual para una alimentación sana! A los niños les encanta dibujar los dibujos de nutrición porque pueden usar su creatividad y colores para hacerlos aún más divertidos. Pueden dibujar una manzana roja y brillante, o una zanahoria anaranjada y crujiente. ¡Incluso pueden dibujar su comida favorita y hacerla lucir deliciosa! Una idea genial es colorear e imprimir dibujos de nutrición. Puedes descargar dibujos de internet o pedirle a un adulto que los imprima para ti. Luego, puedes utilizar tus colores favoritos para darles vida. Es una actividad divertida que te ayudará a aprender sobre los alimentos saludables mientras te diviertes. Recuerda que una buena alimentación es muy importante para crecer fuerte y saludable. Aprende sobre la nutrición a través de los dibujos de nutrición y diviértete dibujando y coloreando. ¡Buena suerte! Dibujos de nutricion para imprimir Curiosidades de nutricionCuriosidad 1: ¿Sabías que los vegetales de colores brillantes, como las zanahorias naranjas y las espinacas verdes, tienen muchas vitaminas y minerales que son muy buenos para nuestro cuerpo?Curiosidad 2: Algunas veces, cuando bebemos agua, ¡nuestro cuerpo realmente está diciendo que necesita más comida! Es importante escuchar a nuestro estómago y comer alimentos saludables cuando tenemos hambre.Curiosidad 3: ¿Sabías que la fruta fresca es mucho más dulce y sabrosa que los dulces y refrescos azucarados? Además, las frutas tienen muchas vitaminas y fibra que nos ayudan a estar sanos y fuertes.Curiosidad 4: A veces, cuando estamos muy ocupados jugando y divirtiéndonos, olvidamos comer. Pero es importante recordar que nuestro cerebro y cuerpo necesitan combustible para funcionar correctamente. ¡No te saltes las comidas!Curiosidad 5: ¿Sabías que los vegetales de hoja verde, como las espinacas y las lechugas, son una excelente fuente de calcio? El calcio es muy bueno para nuestros huesos y nos ayuda a mantenernos fuertes.Curiosidad 6: Muchas veces, cuando estamos aburridos, queremos comer cosas deliciosas como helado o papas fritas. Pero es importante recordar que los alimentos saludables también pueden ser deliciosos, como los batidos de frutas o las palomitas de maíz hechas en casa sin mucha grasa.Curiosidad 7: ¿Sabías que el aguacate es una fruta? ¡Y es muy especial! Está lleno de grasas saludables que nos ayudan a tener una piel y un cabello brillantes y fuertes.Curiosidad 8: A veces, cuando estamos tristes o enojados, podemos tener ganas de comer helado o chocolate. Esto se debe a que nuestro cuerpo libera sustancias químicas que nos hacen sentir mejor. Pero también podemos encontrar felicidad en comer alimentos saludables y mantenernos fuertes.Curiosidad 9: ¿Sabías que el agua es muy importante? Nuestro cuerpo está compuesto en su mayoría de agua, por lo que es esencial para mantenernos hidratados y ayudar a nuestro cuerpo a funcionar correctamente. ¡No olvides beber suficiente agua todos los días!Curiosidad 10: A veces, podemos pensar que las comidas rápidas y los alimentos procesados son deliciosos, pero es importante recordar que los alimentos caseros y frescos son mucho mejores para nuestro cuerpo. ¡Cocinar y probar nuevos alimentos puede ser muy divertido! The Motorsport Images Collections captures events from 1895 to today’s most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors’ Picks.Browse Editors' FavoritesExperience AI-Powered CreativityThe Motorsport Images Collections captures events from 1895 to today’s most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors’ Picks.Browse Editors' FavoritesExperience AI-Powered CreativityThe Motorsport Images Collections captures events from 1895 to today’s most recent coverage.Discover The CollectionCurated, compelling, and worth your time. Explore our latest gallery of Editors’ Picks.Browse Editors' FavoritesExperience AI-Powered Creativity Defining nutrition science means exploring the relationship between a vast amount of nutrients and how they impact growth, health, maintenance, and disease when interacting with a human being or any other living organism. The study of nutrition can be traced back to the 6th century BC. Nutrition science definition as we know it begins in the early 20th century, which brought about the scientific study of calories as units of expended energy. The field of Nutrition Science continues to evolve. Recent developments in the 21st-century research regarding the relationship between one’s dietetic habits and one’s health have made nutrition an important, relevant aspect of living healthy. Related: Given the above-noted refined nutrition science definition, more and more students are becoming interested in the nutrition field for career opportunities. Nutrition specialists help people take charge of their well-being, or to become a part of the food preparation portion of the nutrition field. There are many reasons to become a dietitian, but students often have questions regarding the education required to become a Registered Dietician or a Nutritionist: How long does it take to become a dietitian? Is becoming a registered dietitian worth it? Can a student earn their nutritional sciences degree online? All of these questions will be answered to line up the reasons to become a dietitian. First, though, let’s review how being a dietitian, pros and cons, add up. The nutrition field expands routinely as astounding technological techniques reveal new, relevant developments. As a result, career opportunities and nutrition specialties amount to rewarding careers. A nutrition degree graduate has a variety of skills that impact many lives in endless ways. A Registered Dietitian may work independently or in clinical settings advising clients as to how their nutritional intake can boost their health. How long does it take to become a dietitian? It can take quite a while, depending on what kind of degree you choose. A nutrition degree, by itself, may limit career advancement, as knowledge gained from the degree is comprehensive but somewhat limited. Professional Registered Dietitians have found that combining a nutrition degree with another related degree is the key to the door of career possibilities and growth. Potential degrees that enhance a nutrition degree include chemistry, counseling, and even business. When it comes to being a dietitian, pros and cons are pretty clear; if you’re interested in food and believe in helping people improve their health, the pros far outweigh the cons. Still asking yourself: How long does it take to become a dietitian? Is becoming a registered dietitian worth it? Read on to discover the reasons to become a dietitian. If it is to influence and motivate people to reach for a healthy version of themselves, then a Registered Dietitian career might be the perfect fit. Choosing to earn a college degree by enrolling in nutrition science courses can be a life-impacting decision. How does one know if the school they choose will provide an education that is worth the cost of tuition? The purpose of a university and program accreditation can be likened to a company’s quality assurance division. Academy of Nutrition and Dietetics accreditation denotes that a school and/or degree program meets national educational standards as well as elite standards. An ACEND accredited didactic program in dietetics, for instance, signifies that a dietetics program teaches everything required for the Registered Dietitian exam. The same is true of ACEND accredited online programs. The process of accreditation for nutrition science courses seriously studies each school’s programs and curriculum to determine if the school and coursework meet pre-determined academic, faculty, competency, and credibility standards. A government or a professional organization grants accreditation to a college or university through their qualification processes. There are only seven United States Department of Education (USDE) Regional Accreditation Agencies in the United States. And while the USDE does not actually accredit colleges and universities, they are tasked with the responsibility of overseeing the country’s accreditation processes conducted through the seven approved agencies. As such, regional accreditation is considered the preeminent form of accreditation. A United States Department of Education regionally accredited school provides each student with a level of certainty should they need to transfer credits or want to earn a more advanced degree. Specialized degree programs, like an undergraduate or graduate degree in nutrition science, often opt for specialized accreditation as this type of certification speaks to the program or the degree with a curriculum that exceeds even the strictest e general accreditation programs. Students who earn a degree from a specialized accredited program will find colleges and universities respect the specialized accredited nutrition degree earned. For those seeking an ACEND accredited didactic program in dietetics, the Academy of Nutrition and Dietetics (AND) provides accreditation to nutrition science-oriented programs and degrees. The Academy of Nutrition and Dietetics is a trusted source of nutrition-based college-level certificates and degree programs, including ACEND accredited online programs. Additionally, students interested in a specialized accreditation degree program may also see a certification granted by ACEND Accreditation Standards for Didactic Programs in Dietetics. The Accreditation Standards for Didactic Programs in Dietetics delineate clear educational standards that prepares students to sit for the Commission on Dietetic Registration’s (CDR) exam. When nearing a final decision about where to earn a degree requiring nutrition science courses, make an informed decision by selecting a specialized accredited program with certification granted by the Academy of Nutrition and Dietetics, or, for distance learning nutrition science degrees, look for ACEND accredited online programs. Nutrition science degree programs from the best colleges for nutrition usually take four years to finish. Students studying for their nutritionist degree have the opportunity to select an area of focus that meets the requirements of one’s desired career path. Nutrition may sometimes be a Bachelor of Science or a Bachelor of Arts, but Dietitian bachelor’s programs are usually BS. The top schools for nutrition and dietetics will often have more than one specialization available, as well. A nutritionist degree offers several degree program options for those with a passion for a didactic program in dietetics. A bachelor degree in nutrition and dietetics offered by some of the best universities for dietetics and nutrition offer students a variety of specialties for those seeking a degree as a nutrition science major. It’s important to note that, while a bachelor’s degree usually takes 4 years, many schools are now offering 5-year programs that allow students to earn a bachelor’s and master’s in only 5 years. Some of the basics you’ll learn in nutrition courses include: medical nutrition therapy disease prevention life cycle and lifespan health integrative health sciences human nutrition community health promotion nutrition counseling Your program might also include prerequisites like microbiology and organic chemistry. Consider these broad specialty categories offered by some of the best colleges for nutrition. Food & Business Nutrition Food Service Administration Nutrition Degree in Education Physiology & Metabolism Public Health Nutrition & Policy Earning a bachelor’s in nutrition provides a student with the option to select from many types of nutrition degrees. A nutritionist degree, a coordinated program in dietetics, and a dietitian education provide the educational backdrop, experience, and knowledge to find a degree program offered by one of the best colleges for nutrition. Dietetics degree vs nutrition degree usually depends on the focus the program takes; if it is not intended for students to earn the Registered Dietitian license, a bachelor’s in nutrition is more focused on the nutrition itself. Fundamental coursework for most types of nutrition degrees includes: Biochemistry Biology Chemistry Community Nutrition Diet & Disease Food Science Human Anatomy & Physiology Professional Issues in Nutrition Research Methods in Nutrition The Principles of Nutrition This classwork, offered by some of the best universities for dietetics and nutrition, focuses on the varied programs noted above required to earn a degree as a nutrition science major. Those who choose from accredited programs provided by colleges offering nutrition degrees, often choose wisely. Obtaining a bachelor’s in nutrition degree is a prudent place to begin for students who wish to reach for a career as a nutrition science major researcher or educator. Note that the above-mentioned programs are just a sampling of the available dietitian education offered by the top schools for nutrition and dietetics. This is where a dietetics degree vs nutrition degree really makes a difference. While a nutrition degree is more focused just on nutrition, the dietetics degree is designed to prepare students for the CDR exam. Students graduating from a didactic program in dietetics or from a coordinated program in dietetics both earn a bachelor’s degree. In the best universities for dietetics and nutrition, the difference between the didactic program in dietetics and the coordinated program in dietetics is that a Didactic Program requires coursework over a four-year period; that does not include a practicum or internship. Upon graduation, students complete a dietetic internship that includes supervision for a minimum of 900 hours. When the internship is complete, the bachelor’s in nutrition degree holder becomes eligible to sit for the Registration Examination for Dietitians, the national credential required to legitimately practice as a Registered Dietitian. In a Coordinated Program in Dietetics, a student completes the coursework required over the four-year period. A student completes their supervised internship of 900 hours during the four years it takes to complete the degree program. Essentially, the coursework and internships are similar, the difference is the amount of time required to be eligible to sit for the Registration Examination for Dietitians. Registered Dietitians can opt to attain a board-certified specialty in the areas of pediatric nutrition, sports nutrition, oncology nutrition, and geriatrics nutrition, among others. The top schools for nutrition and dietetics tailor their curriculum to the exam, making for a high pass rate. Remember! Graduating as nutritionist does automatically license someone who has graduated with a nutritionist degree; however, if they have completed the clinical hours, graduates of a bachelor degree in nutrition and dietetics program are eligible to sit for the Registered Dietitian exam. A Nutritionist and a Dietitian share similar career aspirations and objectives and attend similar nutrition major colleges. Both seek to teach families and communities how to create nutrition-savvy lives that bring about healthful living. Both degree holders are trained in similar nutrition science major colleges that promote researched nutritional standards. However, their educational background and certification requirements differ. The Academy of Nutrition and Dietetics credentials a dietitian as a Registered Dietitian. This dietitian designation requires a bachelor’s degree through an accredited program, the completion of a supervised internship and passing the Registration Examination for Dietitians. A nutrition science major operates without the same regulations as a Dietitian. In addition, state laws differ as to the acceptable education and experience required to define oneself as a nutritionist. So while a dietitian is a national certification, a nutritionist is usually defined by state-level regulations, if at all (some states have no regulation). The Center for Nutrition Advocacy manages a database regarding state laws. Check out their website for specific information regarding the laws in the state you wish to practice. Aspiring professional nutritionists and dietitians must be certain of their state’s license requirements before selecting from the many nutritionist online programs. It is counterproductive selecting a bachelor’s in nutrition online degree program that does not meet licensure requirements. Nutritionist and Dietitian education has kept pace with the explosion of online distance-learning platforms. Students who need flexible scheduling and affordable online courses can access some of the best online nutrition degree programs across the country. Additionally, students have the opportunity to select from the following partial list of programs. Bachelor’s in Nutrition online Didactic Program in Dietetics online Dietetics Degree online Online Holistic Nutrition degree Online Nutrition Associates degree Post Baccalaureate Dietetics online Registered Dietitian programs online Nutritionist online programs offer students various levels of online degrees. An online nutrition associate’s degree can be completed in about 2+ years for those who want a formal introduction into the nutrition industry. Students can also choose from some of the best online nutrition certification programs. A nutrition distance learning bachelor’s degree is generally completed in four years, but accelerated degrees can cut down the time tremendously. Registered Dietitian programs online offer convenience and flexibility to students who face time limitations. From an online holistic nutrition degree to Registered Dietitian programs online, students now have the opportunity to study for their degree through a Didactic Program in Dietetics Online from some of the best online nutrition degree programs across the country. Students enrolled in a bachelor’s nutritionist online program will find that they study general core education classes during their freshman and sophomore years. While each school differs slightly, the first two years’ coursework includes: Arts & Humanities Biology Chemistry Foreign Languages Psychology among other general education classes. During a student’s junior and senior years, the best online nutrition degree programs require the completion of: Anatomy & Physiology Dietary Planning Food Science Nutrition Therapy Nutrition’s Social Aspects among other core courses and electives. A Registered Dietician and a professional with a Nutritionist Certification are required to follow state-specific educational mandates, as well as examination guidelines set forth by each state’s relevant oversight agency. Guidelines for a Registered Dietitian or a Nutritionist Dietitian vary from state to state. Students should understand the state-mandated requirements for their state before selecting a school or an online nutrition program. When a student understands their state’s requirements, it is easy to envision the commitment and time required to complete their educational objective. As the world faces the growing epidemic of obesity (and the serious maladies obesity causes), the various facets of the medical community have a powerful renewed interest in the mechanics of healthy eating and healthy lifestyle choices. This is where a Nutritionist Dietitian or a professional with a Dietetics Certification can make a world of difference. One prominent example of a national initiative was the Let’s Move program initiated by the Obama White House. The Registered Dietitian (RD) credential is earned when a nutritionist degree holder passes the national RD examination — the exam that tests their knowledge against the Commission on Dietetic Registration’s (CDR) criteria. The Registered Dietitian (RD) or the Registered Dietitian Nutritionist (RDN) licenses are designations that are awarded by the Academy of Nutrition and Dietetics. According to legal experts, the RDN variation is one and the same as the RD designation. It simply communicates a more comprehensive awareness of the nutritional aspect of what a licensee can offer. Remember that all RD’s are nutrition experts but not all nutritionists are Registered Dietitians. Those interested in a career in nutrition can opt for a Nutritionist Certification, a Dietetics Certification or nutrition careers without RD. The eligibility requirements for the RD national exam follow three primary pathway options. The first eligibility option refers to bachelor’s degree graduates who have completed the Dietetic Internship through a regionally accredited school, and a degree program accredited by ACEND — Accreditation Standards for Didactic Programs in Dietetics. The second eligibility option for the Registered Dietitian examination is for those who have graduated from Coordinated Nutrition Program that is ACEND accredited, and a college or university that has been granted regional accreditation. The third eligibility option is open to Didactic Program in Dietetics graduates from a regionally accredited school, and an ACEND accredited program. Additional RD examination options are available for Doctorate Degree graduates, Reciprocity of Eligibility, the Canadian RD, and International Dietetics graduates. Is nutrition and dietetics a good career move? Careers in nutrition are plentiful, and the job market is expanding far faster than the average (15% by BLS stats). Bachelor’s in Nutrition jobs are available in a variety of clinical and non-clinical environments. Careers in nutrition, careers in nutrition and wellness, careers in nutrition and food science, or careers in nutrition and health offer graduates various career options, capacities, and settings that include: Government agencies Hospitals Nursing homes Schools These careers in nutrition require professionals to set meal plans in accordance with nutrition guidelines and to track the progress of clients over time. Additionally, nutritional science jobs can be found in clinics, gyms, or counseling programs. For those who want to work independently, consider the following careers in nutrition and wellness or careers in nutrition and food science: dietary consultant private dietary coach weight loss counselor The United States and the world have finally begun to recognize the dangers of poor eating habits and the lifelong negative impact that poor eating habits cause. Fitness and health have become front-and-center issues. As a result, there is a surge in the demand for those who wish to follow a career in nutrition and dietetics. The 21st century has brought about renewed interest in a career in nutrition and dietetics. Many careers in nutrition and health are available in the public and private sectors as policy setters and nutritional plan developers. These bachelor’s in Nutrition jobs include: Chief dietitians Clinical dietitians Nutrition Educators Pharmaceutical Representatives Public health nutritionists For graduates who wish to focus their career on the relationship between nutrition, health, and exercise, consider these career options in the following situations: Advocacy healthcare groups Education communities Fitness facilities Government Health food stores and organizations Public relations Research facilities Entry-level nutrition professionals with a bachelor of science in nutrition may find themselves working in the food industry, in a nutrition education program, or other health professions. You may also wish to go on to graduate study and earn a master’s degree. Nutritional science jobs focus on how nutrition functions at a molecular or cellular level. This area of study dovetails with careers in nutrition and health that studies how to prevent disease and stress while optimizing one’s health. bachelor’s in nutrition jobs would include the following scenarios: Academia Consulting Food processing Governmental agencies Pharmaceutical industry Private health-related communities Research and development Finally, it is noted that many students who graduate with a bachelor’s in nutrition further their studies in the fields of dentistry, medicine, optometry, and osteopathy, among other medically-related fields. How much does a nutritionist make? A nutritionist salary varies depending on one’s level of education and chosen specialty. One can expect a dietitian salary to fall in line with the federal government’s Bureau of Labor Statistics (BLS). According to the BLS, a nutritionist or dietitian salary for 2017 hovered near the $60,000 mark. A clinical dietetics salary per hour for 2017 was $28.56. Additionally, one can expect for the most part similar compensation for a nutrition science salary (a career that overlaps frequently with clinical dietetics) and other levels of nutrition science degree salary expectations. The projected growth for the nutrition industry is anticipated to exceed the average growth of all occupations for the time period of 2016 — 2026. As a result, a bachelor’s in nutrition salary should rise strictly based on a growing demand. This should also happen for a dietetics degree salary, a clinical dietetics salary, a nutrition science salary, or a nutritionist salary. Many nutritional program graduates are self-employed. The BLS notes that about eleven percent of nutritional degree graduates operate as self-employed consultants with yearly compensation that matches a clinical dietetics salary, a nutrition careers salary, or a nutrition science degree salary. So how much does a nutritionist make? It varies depending on one’s education and specialization. Working for the government of a nonprofit may have its limits, but independent consulting, personal clients, and other more entrepreneurial efforts may mean paydays much higher than the average nutritionist salary or dietitian salary. So go ahead — head to Hollywood, hang out at Whole Foods, and find a star who needs nutritional advice. The nutrition industry is regulated by several accredited agencies that provide licensing criteria and oversight, and continuing education courses to maintain one’s Registered Dietitian license. For students who are new to the following organizations, it is noted that membership in one of these professional nutrition organizations is a great technique for understanding the current job market an effective way to network with colleagues from across the country. These professional organizations include: The Academy of Nutrition and Dietetics The American Journal of Clinical Nutrition The American Society for Nutrition The American College of Nutrition The Center for Nutrition Policy and Promotion The Society for Nutrition Education and Behavior The Academy of Nutrition and Dietetics is considered the largest food and nutritional organization in the world. It was established in 1917 by a dedicated group of women during World War One. Today the Academy of Nutrition and Dietetics membership exceeds 100,000. The American Journal of Clinical Nutrition (AJCN) is the most highly regarded peer-reviewed publication. The American Society for Nutrition focuses on nutritional research and offers professional archived research studies to enhance the industry. The American College of Nutrition encourages the advancement of nutritional science. The Society for Nutrition Education and Behavior(SNEB) is an organization dedicated to nutritional educators across the globe. The Center for Nutrition Policy and Promotion (CNPP)is an agency within the U.S. Department of Agriculture. Its mission is to set forth healthy guidelines to help the population maintain a healthy lifestyle. Provision to cells and organisms to support life For other uses, see Nutrition (disambiguation). A purple leaf blue butterfly (Amblypodia anita) gathering nutrients from guano Nutrition is the biochemical and physiological process by which an organism uses food and water to support its life. The intake of these substances provides organisms with nutrients (divided into macro- and micro-) which can be metabolized to create energy and chemical structures; too much or too little of an essential nutrient can cause malnutrition. Nutritional science, the study of nutrition as a hard science, typically emphasizes human nutrition. The type of organism determines what nutrients it needs and how it obtains them. Organisms obtain nutrients by consuming organic matter, consuming inorganic matter, absorbing light, or some combination of these. Some can produce nutrients internally by consuming basic elements, while some must consume other organisms to obtain pre-existing nutrients. All forms of life require carbon, energy, and water as well as various other molecules. Animals require complex nutrients such as carbohydrates, lipids, and proteins, obtaining them by consuming other organisms. Humans have developed agriculture and cooking to replace foraging and advance human nutrition. Plants acquire nutrients through the soil and the atmosphere. Fungi absorb nutrients around them by breaking them down and absorbing them through the mycelium. Main article: Nutritional science Scientific analysis of food and nutrients began during the chemical revolution in the late 18th century. Chemists in the 18th and 19th centuries experimented with different elements and food sources to develop theories of nutrition.[1] Modern nutrition science began in the 1910s as individual micronutrients began to be identified. The first vitamin to be chemically identified was thiamine in 1926, and vitamin C was identified as a protection against scurvy in 1932.[2] The role of vitamins in nutrition was studied in the following decades. The first recommended dietary allowances for humans were developed to address fears of disease caused by food deficiencies during the Great Depression and the Second World War.[3] Due to its importance in human health, the study of nutrition has heavily emphasized human nutrition and agriculture, while ecology is a secondary concern.[4] Main article: Nutrient Composting within agricultural systems capitalizes upon the natural services of nutrient recycling in ecosystems. Bacteria, fungi, insects, earthworms, bugs, and other creatures dig and digest the compost into fertile soil. The minerals and nutrients in the soil is recycled back into the production of crops. Nutrients are substances that provide energy and physical components to the organism, allowing it to survive, grow, and reproduce. Nutrients can be basic elements or complex macromolecules. Approximately 30 elements are found in organic matter, with nitrogen, carbon, and phosphorus being the most important.[5] Macronutrients are the primary substances required by an organism, and micronutrients are substances required by an organism in trace amounts. Organic micronutrients are classified as vitamins, and inorganic micronutrients are classified as minerals. Nutrients can also be classified as essential or nonessential, with essential meaning the body cannot synthesize the nutrient on its own.[6] Nutrients are absorbed by the cells and used in metabolic biochemical reactions. These include fueling reactions that create precursor metabolites and energy, biosynthetic reactions that convert precursor metabolites into building block molecules, polymerizations that combine these molecules into macromolecule polymers, and assembly reactions that use these polymers to construct cellular structures.[5] Main article: Primary nutritional groups Organisms can be classified by how they obtain carbon and energy. Heterotrophs are organisms that obtain nutrients by consuming the carbon of other organisms, while autotrophs are organisms that produce their own nutrients from the carbon of inorganic substances like carbon dioxide. Mixotrophs are organisms that can be heterotrophs and autotrophs, including some plankton and carnivorous plants. Phototrophs obtain energy from light, while chemotrophs obtain energy by consuming chemical energy from matter. Organotrophs consume other organisms to obtain electrons, while lithotrophs obtain electrons from inorganic substances, such as water, hydrogen sulfide, dihydrogen, iron(II), sulfur, or ammonium.[7] Prototrophs can create essential nutrients from other compounds, while auxotrophs must consume preexisting nutrients.[8] Main article: Diet (nutrition)In nutrition, the diet of an organism is the sum of the foods it eats.[9] A healthy diet improves the physical and mental health of an organism. This requires ingestion and absorption of vitamins, minerals, essential amino acids from protein and essential fatty acids from fat-containing food. Carbohydrates, protein and fat play major roles in ensuring the quality of life, health and longevity of the organism.[10] Some cultures and religions have restrictions on what is acceptable for their diet.[11] Main article: Nutrient cycleA nutrient cycle is a biogeochemical cycle involving the movement of inorganic matter through a combination of soil, organisms, air or water, where they are exchanged in organic matter.[12] Energy flow is a unidirectional and noncyclic pathway, whereas the movement of mineral nutrients is cyclic. Mineral cycles include the carbon cycle, sulfur cycle, nitrogen cycle, water cycle, phosphorus cycle, and oxygen cycle, among others that continually recycle along with other mineral nutrients into productive ecological nutrition.[12] Biogeochemical cycles that are performed by living organisms and natural processes are water, carbon, nitrogen, phosphorus, and sulfur cycles.[13] Nutrient cycles allow these essential elements to return to the environment after being absorbed or consumed.[14] Without proper nutrient cycling, there would be risk of change in oxygen levels, climate, and ecosystem function.[citation needed] Main article: Foraging A bonobo fishing for termites with a prepared stick Foraging is the process of seeking out nutrients in the environment. It may also be defined to include the subsequent use of the resources. Some organisms, such as animals and bacteria, can navigate to find nutrients, while others, such as plants and fungi, extend outward to find nutrients. Foraging may be random, in which the organism seeks nutrients without method, or it may be systematic, in which the organism can go directly to a food source.[15] Organisms are able to detect nutrients through taste or other forms of nutrient sensing, allowing them to regulate nutrient intake.[16] Optimal foraging theory is a model that explains foraging behavior as a cost–benefit analysis in which an animal must maximize the gain of nutrients while minimizing the amount of time and energy spent foraging. It was created to analyze the foraging habits of animals, but it can also be extended to other organisms.[17] Some organisms are specialists that are adapted to forage for a single food source, while others are generalists that can consume a variety of food sources.[18] See also: Malnutrition Nutrient deficiencies, known as malnutrition, occur when an organism does not have the nutrients that it needs. This may be caused by suddenly losing nutrients or the inability to absorb proper nutrients. Not only is malnutrition the result of a lack of necessary nutrients,[19] but it can also be a result of other illnesses and health conditions. When this occurs, an organism will adapt by reducing energy consumption and expenditure to prolong the use of stored nutrients. It will use stored energy reserves until they are depleted, and it will then break down its own body mass for additional energy.[20] A balanced diet includes appropriate amounts of all essential and non-essential nutrients. These can vary by age, weight, sex, physical activity levels, and more. A lack of just one essential nutrient can cause bodily harm, just as an overabundance can cause toxicity. The Daily Reference Values keep the majority of people from nutrient deficiencies.[21] DRVs are not recommendations but a combination of nutrient references to educate professionals and policymakers on what the maximum and minimum nutrient intakes are for the average person.[22] Food labels also use DRVs as a reference to create safe nutritional guidelines for the average healthy person.[23] Main article: Animal nutrition A kingfisher eating a tadpole near the Ariège river, France Animals are heterotrophs that consume other organisms to obtain nutrients. Herbivores are animals that eat plants, carnivores are animals that eat other animals, and omnivores are animals that eat both plants and other animals.[24] Many herbivores rely on bacterial fermentation to create digestible nutrients from indigestible plant cellulose, while obligate carnivores must eat animal meats to obtain certain vitamins or nutrients their bodies cannot otherwise synthesize. Animals generally have a higher requirement of energy in comparison to plants.[25] The macronutrients essential to animal life are carbohydrates, amino acids, and fatty acids.[6][26] All macronutrients except water are required by the body for energy, however, this is not their sole physiological function. The energy provided by macronutrients in food is measured in kilocalories, usually called Calories, where 1 Calorie is the amount of energy required to raise 1 kilogram of water by 1 degree Celsius.[27] Carbohydrates are molecules that store significant amounts of energy. Animals digest and metabolize carbohydrates to obtain this energy. Carbohydrates are typically synthesized by plants during metabolism, and animals have to obtain most carbohydrates from nature, as they have only a limited ability to generate them. They include sugars, oligosaccharides, and polysaccharides. Glucose is the simplest form of carbohydrate.[28] Carbohydrates are broken down to produce glucose and short-chain fatty acids, and they are the most abundant nutrients for herbivorous land animals.[29] Carbohydrates contain 4 calories per gram. Lipids provide animals with fats and oils. They are not soluble in water, and they can store energy for an extended period of time. They can be obtained from many different plant and animal sources. Most dietary lipids are triglycerides, composed of glycerol and fatty acids. Phospholipids and sterols are found in smaller amounts.[30] An animal's body will reduce the amount of fatty acids it produces as dietary fat intake increases, while it increases the amount of fatty acids it produces as carbohydrate intake increases.[31] Fats contain 9 calories per gram. Protein consumed by animals is broken down to amino acids, which would be later used to synthesize new proteins. Protein is used to form cellular structures, fluids,[32] and enzymes (biological catalysts). Enzymes are essential to most metabolic processes, as well as DNA replication, repair, and transcription.[33] Protein contains 4 calories per gram. Much of animal behavior is governed by nutrition. Migration patterns and seasonal breeding take place in conjunction with food availability, and courtship displays are used to display an animal's health.[34] Animals develop positive and negative associations with foods that affect their health, and they can instinctively avoid foods that have caused toxic injury or nutritional imbalances through a conditioned food aversion. Some animals, such as rats, do not seek out new types of foods unless they have a nutrient deficiency.[35] Main articles: Human nutrition and Cooking Early human nutrition consisted of foraging for nutrients, like other animals, but it diverged at the beginning of the Holocene with the Neolithic Revolution, in which humans developed agriculture to produce food. The Chemical Revolution in the 18th century allowed humans to study the nutrients in foods and develop more advanced methods of food preparation. Major advances in economics and technology during the 20th century allowed mass production and food fortification to better meet the nutritional needs of humans.[36] Human behavior is closely related to human nutrition, making it a subject of social science in addition to biology. Nutrition in humans is balanced with eating for pleasure, and optimal diet may vary depending on the demographics and health concerns of each person.[37] Humans are omnivores that eat a variety of foods. Cultivation of cereals and production of bread has made up a key component of human nutrition since the beginning of agriculture. Early humans hunted animals for meat, and modern humans domesticate animals to consume their meat and eggs. The development of animal husbandry has also allowed humans in some cultures to consume the milk of other animals and process it into foods such as cheese. Other foods eaten by humans include nuts, seeds, fruits, and vegetables. Access to domesticated animals as well as vegetable oils has caused a significant increase in human intake of fats and oils. Humans have developed advanced methods of food processing that prevent contamination of pathogenic microorganisms and simplify the production of food. These include drying, freezing, heating, milling, pressing, packaging, refrigeration, and irradiation. Most cultures add herbs and spices to foods before eating to add flavor, though most do not significantly affect nutrition. Other additives are also used to improve the safety, quality, flavor, and nutritional content of food.[38] Humans obtain most carbohydrates as starch from cereals, though sugar has grown in importance.[28] Lipids can be found in animal fat, butterfat, vegetable oil, and leaf vegetables, and they are also used to increase flavor in foods.[30] Protein can be found in virtually all foods, as it makes up cellular material, though certain methods of food processing may reduce the amount of protein in a food.[39] Humans can also obtain energy from ethanol, which is both a food and a drug, but it provides relatively few essential nutrients and is associated with nutritional deficiencies and other health risks.[40] In humans, poor nutrition can cause deficiency-related diseases, such as blindness, anemia, scurvy, preterm birth, stillbirth and cretinism,[41] or nutrient-excess conditions, such as obesity[42] and metabolic syndrome.[43] Other conditions possibly affected by nutrition disorders include cardiovascular diseases,[44] diabetes,[45][46] and osteoporosis.[47] Undernutrition can lead to wasting in acute cases, and stunting of marasmus in chronic cases of malnutrition.[41] In domesticated animals, such as pets, livestock, and working animals, as well as other animals in captivity, nutrition is managed by humans through animal feed. Fodder and forage are provided to livestock. Specialized pet food has been manufactured since 1860, and subsequent research and development have addressed the nutritional needs of pets. Dog food and cat food in particular are heavily studied and typically include all essential nutrients for these animals. Cats are sensitive to some common nutrients, such as taurine, and require additional nutrients derived from meat. Large-breed puppies are susceptible to overnutrition, as small-breed dog food is more energy dense than they can absorb.[48] Main article: Plant nutrition Schematic of photosynthesis in plants. The carbohydrates produced are stored in or used by the plant. Most plants obtain nutrients through inorganic substances absorbed from the soil or the atmosphere. Carbon, hydrogen, oxygen, nitrogen, and sulfur are essential nutrients that make up organic material in a plant and allow enzymic processes. These are absorbed ions in the soil, such as bicarbonate, nitrate, ammonium, and sulfate, or they are absorbed as gases, such as carbon dioxide, water, oxygen gas, and sulfur dioxide. Phosphorus, boron, and silicon are used for esterification. They are obtained through the soil as phosphates, boric acid, and silicic acid, respectively. Other nutrients used by plants are potassium, sodium, calcium, magnesium, manganese, chlorine, iron, copper, zinc, and molybdenum.[49] Plants uptake essential elements from the soil through their roots and from the air (consisting of mainly nitrogen and oxygen) through their leaves. Nutrient uptake in the soil is achieved by cation exchange, wherein root hairs pump hydrogen ions (H+) into the soil through proton pumps. These hydrogen ions displace cations attached to negatively charged soil particles so that the cations are available for uptake by the root. In the leaves, stomata open to take in carbon dioxide and expel oxygen.[50] Although nitrogen is plentiful in the Earth's atmosphere, very few plants can use this directly. Most plants, therefore, require nitrogen compounds to be present in the soil in which they grow. This is made possible by the fact that largely inert atmospheric nitrogen is changed in a nitrogen fixation process to biologically usable forms in the soil by bacteria.[51] As these nutrients do not provide the plant with energy, they must obtain energy by other means. Green plants absorb energy from sunlight with chloroplasts and convert it to usable energy through photosynthesis.[52] See also: Fungiculture Fungi are chemoheterotrophs that consume external matter for energy. Most fungi absorb matter through the root-like mycelium, which grows through the organism's source of nutrients and can extend indefinitely. The fungus excretes extracellular enzymes to break down surrounding matter and then absorbs the nutrients through the cell wall. Fungi can be parasitic, saprophytic, or symbiotic. Parasitic fungi attach and feed on living hosts, such as animals, plants, or other fungi. Saprophytic fungi feed on dead and decomposing organisms. Symbiotic fungi grow around other organisms and exchange nutrients with them.[53] Protists include all eukaryotes that are not animals, plants, or fungi, resulting in great diversity between them. Algae are photosynthetic protists that can produce energy from light. Several types of protists use mycelium similar to those of fungi. Protozoa are heterotrophic protists, and different protozoa seek nutrients in different ways. Flagellate protozoa use a flagellum to assist in hunting for food, and some protozoa travel via infectious spores to act as parasites.[54] Many protists are mixotrophic, having both phototrophic and heterotrophic characteristics. Mixotrophic protists will typically depend on one source of nutrients while using the other as a supplemental source or a temporary alternative when its primary source is unavailable.[55] Further information: Microbial metabolism Simplified view of cellular metabolism Prokaryotes, including bacteria and archaea, vary greatly in how they obtain nutrients across nutritional groups. Prokaryotes can only transport soluble compounds across their cell envelopes, but they can break down chemical components around them. Some lithotrophic prokaryotes are extremophiles that can survive in nutrient-deprived environments by breaking down inorganic matter.[56] Phototrophic prokaryotes, such as cyanobacteria and Chloroflexia, can engage in photosynthesis to obtain energy from sunlight. This is common among bacteria that form in mats atop geothermal springs. Phototrophic prokaryotes typically obtain carbon from assimilating carbon dioxide through the Calvin cycle.[57] Some prokaryotes, such as Bdellovibrio and Ensifer, are predatory and feed on other single-celled organisms. Predatory prokaryotes seek out other organisms through chemotaxis or random collision, merge with the organism, degrade it, and absorb the released nutrients. Predatory strategies of prokaryotes include attaching to the outer surface of the organism and degrading it externally, entering the cytoplasm of the organism, or by entering the periplasmic space of the organism. Groups of predatory prokaryotes may forgo attachment by collectively producing hydrolytic enzymes.[58] Liebig's law of the minimum – Growth is limited by the scarcest resource Nutrient density – the proportion of any array of a single nutrient or nutritional factor, or of numerous nutrients in foods, often ordered by different scalar indicesPages displaying wikidata descriptions as a fallback Nutrition analysis Resource (biology) – Anything required by an organism to survive, grow, and reproduce Substrate (biology) – Surface on which a plant or animal lives Milan Charter 2015 Charter on Nutrition

^ Carpenter, Kenneth J. (1 March 2003). "A Short History of Nutritional Science: Part 1 (1785–1885)". The Journal of Nutrition. 133 (3): 638–645. doi:10.1093/jn/133.3.638. PMID 12612130. ^ Stafford, Ned (December 2010). "History: The changing notion of food". Nature. 468 (7327): S16 – S17. Bibcode:2010Natur.468S..16S. doi:10.1038/468S16