

LIST OF BRANCHES OF BIOLOGY pdf

1: Branches of Biology - Biology

- One can get confused when it comes to knowing about Biology and its branches. Biology is the study of life and living organisms. Biology is the study of life and living organisms. It is a broad field including many branches and sub disciplines.

Dysteleology – It is the study of appearance of vestigial organs due to evolution. Dendrology – It is the study of shrubs and trees. Developmental biology – It deals with the study of processes by which organisms undergo progressive and orderly changes in structure as well as physiology during their entire life cycle. Dermatology – Study of skin. Developmental morphology – It deals with the developmental aspects of plants. Desmology – Study of structures and anatomy of ligaments. Evolution – It is the branch of biology which deals with the study of descent of present day complex living organisms plants and animals from the living forms of the past. Embryology – It deals with the study of the stages of an organism that occur immediately after fertilization. Ecology – It is the study of inter-relationship between living organisms and their environment. Ethology – Study of animal behaviour and conditions of animals. Eugenics – It is the science dealing with the improvement of human race through application of the laws of heredity. Entomology – Study of insects. Exobiology – The study of kind of life that may exist in outer space is called exobiology. Etiology – It is the study of causes of diseases. Ecobiology – Study of adaptations in relation to habitat. Ecophysiology – Physiological adaptations in response to environment. Epigenetics – It is the study of mechanisms by which genes and their products bring about phenotypic expression. Ethnobotany – It is the relationship between primitive humans and plants. Ethnology – It is science dealing with different races of man kind. Economic botany – It deals with the study of various uses of plants and their products. Environmental management – It is the assessment of environment, finding out the ways and means for remedy of environmental problems and for conservation of biodiversity so as to maintain the balance in nature. Forensic science – Application of science for identification of various facts about blood groups, hair, poisons, narcotics, finger prints, DNA finger printing for solving civilian and criminal cases. Food technology – Study of processing and preservation of food is called food technology. Forestry or silviculture – It deals with the development of forests and the utilization of their products. Gynaecology – Study of female reproductive organs. Gerontology – It is a branch of developmental biology which deals with the study of ageing. Genecology – Study of genetical make up of species or population in relation to habitat. Genetic engineering – The methods of artificial synthesis of DNA. Horticulture – It deals with the study of plants cultivated in gardens and orchards. Hypnology – Science dealing with sleep including the one from hypnosis. Helminthology – Study of parasitic worms. Herpetology – Study of reptiles. Hepatology – Study of liver. Haematology – Study of blood. Histology – The study of the structure and chemical composition of animal and plant tissue as related to the function. Ichthyology – Study of fishes or study of fishes and amphibians. Ichnology – It is a branch of paleontology which deals with fossil foot prints. Kalology – Study of human beauty. Lepidopteriology – Study of butterflies and moths. Limnology – Study of fresh water ecology. Leprology – It is the study of leprosy its cause and cure. Limnobiology – It is the study of fresh water. Lichenology – It is the study of lichens. Molecular biology – Study of living organisms at the molecular level. Morphology – It deals with the study of form and structure of animals. Mammology – Study of mammals. Microbiology – Study of microscopic organisms. Malariology – Study of malaria. Myremecology – Study of ants is termed myremecology. Malacology – Study of molluscs. Myology. Sarcology – Study of muscles. Mastology – Study of breast including teats is called mastology. Mycology – It is the study of fungi. Neoinatology – Study of nematodes round worms. Nephrology – Study of kidney. Neonatology – It is science of study of new borns up to twenty eight days in humans. Neurology – Study of nervous system. Nidology - Study of nests of birds. Ornithology – Study of birds.

2: List of different branches of Biology and their Fathers

Medical related branches of biology study all fields that are related to illnesses, alterations and functions of the human body. Physiology. Physiology is the study of the functions of living beings.

Soil science dealing especially with production of the crop Science of soil management and production of the crop NS Branches of Definition Biolo Study of the relationship of body size to shape, anatomy, physiology and finally behaviour Allometry Aphidology Study of Aphids Plant Lice the branch of science concerned with the bodily structure of humans, animals, and other living organisms, especially as revealed by dissection and the separation of parts. Anatomy NS Branches of Definition Biolo Arthrology is the science concerned with Arthrology the study of anatomy, function, dysfunction and treatment of joints and articulations. Application of Cybernetics to Biological Aerobiology b small insects, pollen grains and viruses, which Biocybernetics Sciences. Bacteriology the study of bacteria. NS Branches of Definition Biolo the science of the application of the laws of physics to biological phenomena the branch of science concerned with the chemical and Biophysics Biochemistry physico-chemical processes and substances which occur within living organisms. Biotechnology NS Branches of Definition Biolo the branch of biology that deals with the geographical distribution of plants and animals. Chronobiology Craniology NS Branches of Definition Biolo the branch of biology which deals with the properties of organisms and tissues at low temperatures. Cardiology Branches of Definition Biolo the branch of physiology and medicine concerned with endocrine glands and hormones. Ethology the science of animal behaviour. Eugenics controlled breeding to increase the occurrence NS Branches of Definition Biolo the study of the improvement of human Euthenics functioning and well-being by improvement of living conditions. Forensic Forensic biology is the application of biology to Biology law enforcement. Forestry NS Branches of Definition Biolo the scientific study of old age, the process of ageing and the particular problems of old people. Hepatology is the branch of medicine that incorporates as well as management of their disorders. Hepatology the study of liver, gallbladder, biliary tree, and pancreas NS Branches of Definition Biology Karyology Kinesiology Study of the nucleus the study of the mechanics of body movements. NS Branches of Definition Biolo the scientific study of lipids. Study of form and structure the study of the strucearngement. NS Branches of Definitiorrn Biology Neonatology pediatrics that consists of the medical care of newborn infants, especially the ill or premature newborn. It is a hospital-based specialty, and is usually practiced in neonatal intensive care units NICUs Nephrology the branch of medicine that deals with the physiology and diseases of the kidneys the branch of medicine or biology that deals with the anatomy, functions, and organic disorders of nerves nd the nervous system. Neurology NS 0 Branches of Definition Biolo Nosology Osteology Odontology the scientific study of the structure and diseases of the branch of medical science dealing with the classification of diseases. NS 0 Branches of Definition Biolo Obstetrics the branch of medicine and surgery concerned with childbirth and midwifery Ornithology the scientific study of birds. Ophthalmology the branch of medicine concerned with the study and treatment of disorders and diseases of the eye. Paleontology the branch of science concemed with fossil animals Parasitology he branch of biology or medicine concerned with the and plants. Proto zoology that branch of zoology dealing with the study of the protozoans. Physiotherapy the treatment of disease, injury, or deformity by physical methods such as massage, heat treatment, and exercise rather than by drugs or surgery NS 0 Branches of Biology Definition the study and treatment of mental illness, emotional disturbance, and abnormal behaviour Psychiatry Phenomics an area of biology concerned with the measurement of phenomes a phenome is the set of physical and biochemical traits belonging to a given organism the study of soils in their natural environment. It is one of two main branches of soil science Pedology NS Branches of Definitiorrn Biolo Pharmacology the branch of medicine concerned with the uses, Photobiology the study of the effects of light on living organisms. Protistology the study of protists, a highly diverse group of effects, and modes of action of drugs. Psychology Paleobotany the study of fossil plants the science dealing with X-rays and other high-energy radiation, especially the use of such radiation for the diagnosis and treatment of disease. Traumatology Termitology Study of termites. Tricology the branch of medical and cosmetic study and

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practice concerned with the hair and scalp. NS Branches of Definitiorn Biolo Toxicology the branch of science concerned with the nature, Taxonomy Teratology effects, and detection of poisons. You can find me at <https://>

3: Main Branches of Biology

Branches of Biology Biology, the scientific study of life, includes several relevant www.enganchecubano.com is a list of major branches of biology with a brief description for each.

Note, however, that there are so many subbranches within the general field of biology that they cannot be fully listed here. There are many named branches of the discipline that can be found in dictionaries, but that are little known and have few practitioners. The following list, then, attempts to name and define only the major fields:

Fields dealing with animals:

- Comparative anatomy** pronunciation â€” The scientific study of similarities and differences in the bodily structures of distinct types of animals.
- Entomology** pronunciation â€” The scientific study of insects.
- Ethology** pronunciation â€” The scientific study of animal behavior.
- Herpetology** pronunciation â€” The scientific study of reptiles and amphibians.
- Ichthyology** pronunciation â€” The scientific study of fish.
- Mammalogy** pronunciation â€” The scientific study of mammals.
- Nothology** pronunciation â€” The study of hybrids.
- Ornithology** pronunciation â€” The scientific study of birds.
- Primatology** pronunciation â€” The scientific study of primates.
- Veterinary science** pronunciation â€” Animal medicine.
- Zoology** pronunciation â€” The study of animals.

Branches of biology relevant to the study of evolution:

- Biogeography** pronunciation â€” The study of the geographic distributions of living organisms.
- Developmental biology** â€” The study of the processes by which an organism changes from a single cell into a mature, multicellular individual.
- Epigenetics** pronunciation â€” The study of heritable changes in phenotype caused by mechanisms other than the alteration of nucleotide sequences.
- Evolutionary biology** â€” The branch of biology concerned with the modes of origin of new forms of life.
- Ichnology** pronunciation â€” The study of the fossilized traces of past animal activity, such as footprints, burrows, trails, and borings.
- Morphology** pronunciation â€” The branch of biology concerned with the form and structure of living organisms.
- Paleontology** pronunciation â€” The study of prehistoric life by means of fossils.

Fields relating to the environment:

- Aerobiology** pronunciation â€” The study of airborne organic particles.
- Astrobiology** pronunciation â€” The branch of biology concerned with the effects of outer space on living organisms and with the search for extraterrestrial life.
- Bioclimatology** pronunciation â€” The study of the influence of climate on living organisms.
- Building biology** The study of the indoor living environment
- Chronobiology** pronunciation â€” The study of time-dependent phenomena in living organisms.
- Conservation biology** â€” The branches of biology concerned with habitat preservation, the prevention of extinction, and conservation of biodiversity.
- Cryobiology** pronunciation â€” The study of the effects of low temperatures on living organisms.
- Ecology** pronunciation â€” The study of the interaction of organisms with each other and with their environment.
- Geobiology** pronunciation â€” A science that combines geology and biology to study the interactions of organisms with their environment.
- Limnology** pronunciation â€” The study of the physical and biological conditions of freshwater, particularly of lakes and ponds.
- Biochemistry** pronunciation â€” The study of life at the chemical level, in particular the chemistry of proteins, carbohydrates, and nucleic acids.

Chemistry-based branches of biology:

- Bioengineering** pronunciation â€” A hybrid field of scientific research that uses the principles of biology and the techniques of engineering to produce useful products.
- Molecular biology** â€” The branch of biology that studies the formation, structure, and function of macromolecules found in living organisms, particularly nucleic acids and proteins.

4: Biology - Wikipedia

Structural biology is a branch of molecular biology, biochemistry, and biophysics dealing with the molecular structure of biological macro-molecules. Theoretical Biology Theoretical biology (aka Mathematical biology) is an interdisciplinary scientific research field with a range of applications in biology, biotechnology, and medicine.

Environmental biology Cellular biology Cellular biology or cytology is the branch of biology which studies the structure and function of cells. This discipline is responsible for understanding among other matters the properties, structures and functions of these as well as their interaction with the environment. Undoubtedly, it is a fairly wide field which started being studied following the invention of the optical microscope. Within this branch we find the following fields: Cytology This is the branch of cellular biology that specifically studies living cells including their specific properties, their physical structure, chemistry and division in order to understand how they interact with nature. Histology This field solely focuses on the cellular tissue which is studied from a microscopic point of view. Microbiology Microbiology, a science or branch of biology that focuses on the study of microorganisms, which are the smallest living things. These organisms are completely invisible to the human eyes, they are only visible through the use of a microscope. It focuses on how microorganisms affect others. Palynology This is the specific study of particles found in the air water or other deposits such as grain, spores and pollen; focusing on how they interact with nature. Protistology This is the specific branch that studies Protists, which are eukariotic organisms that cannot be specifically classified as either animal, plant or fungi but are more similar in characteristics to algae. Molecular biology Also, molecular biology is the discipline which studies the biological processes on a molecular level. The truth is that this branch shares elements of biology with chemistry, particularly genetics and biochemistry. It focuses mainly on studying the interactions of different cell systems. Bio-engineering is a hybrid that is also related to chemical biology, which aims to research engineering techniques related to biology when using this knowledge on products. Evolutionary biology This branch of biology solely focuses on biology from an evolutionary point of view in order to predict how biology will evolve by studying how it has done so in the past thanks to these fields: Biogeography This particular branch of biology studies the way in which all living creatures and organisms distribute and have done during history in a geographical point of view. Developmental biology Developmental biology is the branch of biology that studies the development of living organisms from birth until death. A less superficial description would state that this discipline studies the processes by which organisms grow. So it focuses on the genetic control of cell growth and cell differentiation and morphogenesis. Ichnology This is the study that focuses only on the traces left by living creatures in the past in order to study its activity such as old footprints, trails, burrows Morphology Morphology is closely related to developmental biology, as it studies and classifies the structure and the form of all living organisms. Paleontology Paleontology is the branch that studies basically fossils left basically by prehistoric means of life in order to understand past times. For more information, take a look at the practical uses of paleontology. Evolutionary biology This branch of biology focuses on how different forms of life are currently changing and studies how they are creating brand new forms of life. Marine biology Marine biology is the branch of biology that is responsible for studying all the creatures that live within the marine environment. This discipline engulfs a series of specialisations that are centred in more specific areas. And so, amongst these, we can highlight ichthyology, which directly studies fish; malacology, which studies molluscs; phycology, which centres around the study of seaweed; cetology, which studies marine mammals. Learn what you can do with a marine biology degree here! Medical biology Medical related branches of biology study all fields that are related to illnesses, alterations and functions of the human body. Physiology Physiology is the study of the functions of living beings. A branch that deals with studying the respiratory, reproductive, nervous system etc. Also, within physiology, and depending on the type of living organism, we can distinguish between three groups of plant physiology, animal physiology and lastly human physiology. Genetics Genetics is an exciting branch of biology that attempts to study biological heritage which is transmitted from generation to generation. Anatomy This field of biology is in charge of studying the structure of any multi-cellular organism

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at a naked eye, i. In turn, it can be divided into three areas of study: Embryology As you may have already guessed by now, embryology is the study of all embryos. Endocrinology This branch studies the endocrine glands in order to understand the function of hormones and how they act in a human body. Epidemiology This field studies how diseases or epidemics affect living population and well as researching its successful control and eradication. Immunology Last but not least, immunology focuses on the study of how the immune system works in the body and also experiments on how it can be built. There are also other important branches in the field of medical biology, which are the following:

5: Branches of Biology List |authorSTREAM

Branches of Definition Biolo the branch of biology that deals with the geographical distribution of plants and animals. the branch of biology concerned with cyclical physiological phenomena. the scientific study of the shape and size of the skulls of different human races.

Biology is a natural science in which we study about the life of living organisms consisting of various functions, structure, evolution, taxonomy etc. The branch of Biology under which the internal structure of the body of an organism is studied. The branch of science under which human development, their culture and customary activities, history and the traditional societies are studied. The scientific study of insects. The branch of the medical science under which the epidemics and its remedial measures are studied. It is that branch of science under which the possibilities of lives are studied on the various planets and satellites other than earth. The branch of science under which the development and the cultivating techniques of temperate, sub-tropical and tropical fruits, vegetables, ornamental and medicinal plants, species and plantation crops etc are studied. The branch of medical science under which the treatment of the disease is done by water. The branch of medical science under which through a comprehensive diagnostic mechanism the breast cancer of the women are detected. The branch of medical science under which the study of nerves and the diseases related to the nerves are diognised and its curable modes are studied. The scientific study of the teeth in the medical science. The branch of biology under which birds related activities are studied. The branch of zoology under which the bones and the skeleton systems of the body of the animals are studied. Is the scientific study of the fruits. Is the scientific study of the grasses. Is the scientific study of the mollusc shells. Is the scientific study of the human species. The scientific study of the nature, character and behaviour of the living beings. The scientific study of the diversities of the species of the organism and thus the study of population genetics to the environment. The branch of the medical science under which the direct impact of the mutual interaction of the climate and surrounding on the health of the human beings is studied. The diagnostic treatment process through the sunlight. The scientific study of the agriculture in which water processing mechanism is developed. The scientific study of the algae. The branch of the agriculture science under which the culturing of the silk worms and the production of the silk are studied. Is the scientific study of the poison.

6: Complete List of All Branches of Biology for SSC & Banking Exams- GK Notes in PDF! - Testbook Blog

The following is a list of the branches of biology, with definitions, pronunciations, and links to related topics. Note, however, that there are so many subbranches within the general field of biology that they cannot be fully listed here.

To understand the diversity of life, scientists classify organisms based on shared traits and ancestry. An introduction to biology includes understanding classification. Classification makes it easier to compare observations of living things, from the simplest single-celled organisms to complex systems containing trillions of cells. Methods of classification have evolved over time as scientists continue to collect information and use advances in technology to learn more about life on the cellular level. As a result of these discoveries, scientists now categorize living things into three large divisions: Eukarya, Bacteria and Archaea. The Father of Biology Renowned philosopher and scientist, Aristotle was regarded as the father of biology for centuries. These groups roughly aligned with vertebrates and invertebrates, and were subdivided into smaller groups similar to the classes and orders used today: Main Branches of Biology Until the s, there were only two large divisions of life, and all living things were classified as either plants or animals. In , the two-kingdom system was updated to include additional types of biology and separated into five kingdoms. In addition to plants and animals, kingdoms were created for bacteria Monera , fungi and protists, thanks to advances in microbiology. Kingdom Monera contained prokaryotes while the other four kingdoms contained eukaryotes. The main difference between eukaryotic cells and prokaryotic cells is the presence of a nucleus and organelles in eukaryotes, which prokaryotes lack. The five-kingdom system held until , when a University of Illinois professor named Carl Woese proposed a major change to the classification system. These organisms, termed archaeobacteria, are prokaryotic cells that are sufficiently different from bacteria to warrant their own classification. The discovery of archaeobacteria resulted in the creation of a level of classification higher than kingdom: Bacteria belong to their own, self-named domain. Archaeobacteria share some characteristics with both eukaryotes and bacteria. They also have some unique traits all their own, which puts them in their own domain: This domain encompasses single-celled organisms such as algae and protozoan; fungi such as molds, yeast and mushrooms; and more complex, multicellular organisms such as plants and animals. The cells of these organisms have a nucleus and distinct organelle structures encased in membranes. Friends and Foes This domain includes single-celled prokaryotic organisms that are distinct from Eukarya and Archaea. The cell walls of bacteria contain peptidoglycan, which is absent from the cell walls of archaeobacteria and eukaryotes. Some bacteria can be helpful to humans and other types are harmful. Common bacteria include cyanobacteria, lactobacilli “beneficial gut bacteria” and pathogenic species that cause illness, such as streptococcus. Living in Extremes Some species of archaeobacteria live in soil, water or other common locations. Other types of archaeobacteria can live in the most inhospitable places on Earth. Organisms from this domain have been found living in high concentrations of salt, methane and other chemicals. Some organisms can survive extremely high temperatures. A feature unique to Archaea is the composition of their cell membranes, which allows them to withstand conditions too harsh for bacteria or eukaryotes.

7: Branches of Biology - Online Biology Dictionary

Download as PDF Branches of Biology - Introduction. Biology comes from the Greek word "bios" meaning life and "logos" meaning study. Biology is the science that studies about various living organisms.

Are you sure you want to delete this answer? Yes Sorry, something has gone wrong.

AnatomyThe science of understanding the structure and make-up of the body.

Biochemistry"The chemistry of life" Study of the structure and properties of molecules in living organisms and how those molecules are made, changed, and broken down.

Biophysics Cell biologyThe study of cellular form and function on a microscopic and molecular level.

Developmental biologyThe process whereby a single cell becomes a differentiated organism. The process of orderly change that an individual goes through in the formation of structure.

EcologyThe study of the interactions of organisms with their environment and with each other.

Evolutionary biologyIn Darwinian terms a gradual change in phenotypic frequencies in a population that results in individuals with improved reproductive success.

Genetics 1 The study of genes through their variation.

ImmunologyThe study of immunity – the security or protection against a foreign organism or poison introduced into an individual.

Molecular biologyThe study of the structure, function, and makeup of biologically important molecules.

Biology - Branches of Biology While botany encompasses the study of plants, zoology is the branch of science that is concerned about the study of animals and anthropology is the branch of biology to study human beings. However, at the molecular scale, life is studied in the disciplines of molecular biology, biochemistry, and molecular genetics. At the next level of the cell, it is studied in cell biology, and at multicellular scales, it is examined in physiology, anatomy, and histology. Moving up the scale towards more than one organism, genetics considers how heredity works between parent and offspring. Ethology considers group behavior of more than one individual. Population genetics looks at the level of an entire population, and systematics considers the multi-species scale of lineages. Interdependent populations and their habitats are examined in ecology and evolutionary biology. A speculative new field is astrobiology or xenobiology , which examines the possibility of life beyond the Earth.

8: Category:Branches of biology - Wikipedia

Biology is the natural science that studies life and living organisms, including their physical structure, chemical processes, molecular interactions, physiological mechanisms, development and evolution.

It was used again in a work entitled *Philosophiae naturalis sive physicae*: The term came into its modern usage with the six-volume treatise *Biologie, oder Philosophie der lebenden Natur* 1792 by Gottfried Reinhold Treviranus , who announced: The science that concerns itself with these objects we will indicate by the name biology [Biologie] or the doctrine of life [Lebenslehre]. Although modern biology is a relatively recent development, sciences related to and included within it have been studied since ancient times. Natural philosophy was studied as early as the ancient civilizations of Mesopotamia , Egypt , the Indian subcontinent , and China. However, the origins of modern biology and its approach to the study of nature are most often traced back to ancient Greece. Especially important are his *History of Animals* and other works where he showed naturalist leanings, and later more empirical works that focused on biological causation and the diversity of life. Medicine was especially well studied by Islamic scholars working in Greek philosopher traditions, while natural history drew heavily on Aristotelian thought, especially in upholding a fixed hierarchy of life. It was then that scholars discovered spermatozoa , bacteria , infusoria and the diversity of microscopic life. Investigations by Jan Swammerdam led to new interest in entomology and helped to develop the basic techniques of microscopic dissection and staining. In the early 19th century, a number of biologists pointed to the central importance of the cell. Then, in 1838, Schleiden and Schwann began promoting the now universal ideas that 1 the basic unit of organisms is the cell and 2 that individual cells have all the characteristics of life , although they opposed the idea that 3 all cells come from the division of other cells. Thanks to the work of Robert Remak and Rudolf Virchow , however, by the 1850s most biologists accepted all three tenets of what came to be known as cell theory. Carl Linnaeus published a basic taxonomy for the natural world in variations of which have been in use ever since , and in the 1750s introduced scientific names for all his species. Although he was opposed to evolution, Buffon is a key figure in the history of evolutionary thought ; his work influenced the evolutionary theories of both Lamarck and Darwin. The discovery of the physical representation of heredity came along with evolutionary principles and population genetics. In the 1940s and early 1950s, experiments pointed to DNA as the component of chromosomes that held the trait-carrying units that had become known as genes. A focus on new kinds of model organisms such as viruses and bacteria , along with the discovery of the double helical structure of DNA in 1953, marked the transition to the era of molecular genetics. From the 1960s to present times, biology has been vastly extended in the molecular domain. Finally, the Human Genome Project was launched in 1990 with the goal of mapping the general human genome. This project was essentially completed in 2003, [23] with further analysis still being published. The Human Genome Project was the first step in a globalized effort to incorporate accumulated knowledge of biology into a functional, molecular definition of the human body and the bodies of other organisms. Foundations of modern biology Cell theory Human cancer cells with nuclei specifically the DNA stained blue. The central and rightmost cell are in interphase , so the entire nuclei are labeled. The cell on the left is going through mitosis and its DNA has condensed. Cell theory Cell theory states that the cell is the fundamental unit of life , that all living things are composed of one or more cells, and that all cells arise from pre-existing cells through cell division. The cell is also considered to be the basic unit in many pathological processes. Finally, cells contain hereditary information DNA , which is passed from cell to cell during cell division. Research into the origin of life, abiogenesis , amounts to an attempt to discover the origin of the first cells. Evolution A central organizing concept in biology is that life changes and develops through evolution, and that all life-forms known have a common origin. The theory of evolution postulates that all organisms on the Earth , both living and extinct, have descended from a common ancestor or an ancestral gene pool. This universal common ancestor of all organisms is believed to have appeared about 3.8 billion years ago. Darwin theorized that species flourish or die when subjected to the processes of natural selection or selective breeding. Widely varied approaches to biology generate information about phylogeny. These include the comparisons of DNA sequences , a product of molecular biology more particularly

genomics , and comparisons of fossils or other records of ancient organisms, a product of paleontology. For a summary of major events in the evolution of life as currently understood by biologists, see evolutionary timeline. Evolution is relevant to the understanding of the natural history of life forms and to the understanding of the organization of current life forms. But, those organizations can only be understood in the light of how they came to be by way of the process of evolution. Consequently, evolution is central to all fields of biology.

Genetics Genes are the primary units of inheritance in all organisms. A gene is a unit of heredity and corresponds to a region of DNA that influences the form or function of an organism in specific ways. All organisms, from bacteria to animals, share the same basic machinery that copies and translates DNA into proteins. The translation code from RNA codon to amino acid is the same for most organisms. For example, a sequence of DNA that codes for insulin in humans also codes for insulin when inserted into other organisms, such as plants. A chromosome is an organized structure consisting of DNA and histones. In eukaryotes, genomic DNA is localized in the cell nucleus , or with small amounts in mitochondria and chloroplasts. In prokaryotes, the DNA is held within an irregularly shaped body in the cytoplasm called the nucleoid. In turn, ACTH directs the adrenal cortex to secrete glucocorticoids , such as cortisol. The GCs then reduce the rate of secretion by the hypothalamus and the pituitary gland once a sufficient amount of GCs has been released. All living organisms , whether unicellular or multicellular , exhibit homeostasis. After the detection of a perturbation, a biological system normally responds through negative feedback that stabilize conditions by reducing or increasing the activity of an organ or system. One example is the release of glucagon when sugar levels are too low.

Basic overview of energy and human life. Energy The survival of a living organism depends on the continuous input of energy. Chemical reactions that are responsible for its structure and function are tuned to extract energy from substances that act as its food and transform them to help form new cells and sustain them. The organisms responsible for the introduction of energy into an ecosystem are known as producers or autotrophs. Nearly all such organisms originally draw their energy from the sun. The majority of the rest of this biomass and energy are lost as waste molecules and heat. The most important processes for converting the energy trapped in chemical substances into energy useful to sustain life are metabolism [44] and cellular respiration.

Molecular biology , Cell biology , Genetics , and Developmental biology Schematic of typical animal cell depicting the various organelles and structures. Molecular biology is the study of biology at the molecular level. Molecular biology is a study of the interactions of the various systems within a cell, including the interrelationships of DNA, RNA, and protein synthesis and how those interactions are regulated. The next larger scale, cell biology , studies the structural and physiological properties of cells , including their internal behavior , interactions with other cells, and with their environment. This is done on both the microscopic and molecular levels, for unicellular organisms such as bacteria , as well as the specialized cells of multicellular organisms such as humans. Understanding the structure and function of cells is fundamental to all of the biological sciences. The similarities and differences between cell types are particularly relevant to molecular biology. Anatomy is a treatment of the macroscopic forms of such structures organs and organ systems. Genetics provides research tools used in the investigation of the function of a particular gene, or the analysis of genetic interactions. Within organisms, genetic information is physically represented as chromosomes , within which it is represented by a particular sequence of amino acids in particular DNA molecules. Developmental biology studies the process by which organisms grow and develop. Developmental biology, originated from embryology , studies the genetic control of cell growth , cellular differentiation , and "cellular morphogenesis ," which is the process that progressively gives rise to tissues , organs , and anatomy. Model organisms for developmental biology include the round worm *Caenorhabditis elegans* , [50] the fruit fly *Drosophila melanogaster* , [51] the zebrafish *Danio rerio* , [52] the mouse *Mus musculus* , [53] and the weed *Arabidopsis thaliana*.

Physiology Physiology is the study of the mechanical, physical, and biochemical processes of living organisms function as a whole. The theme of "structure to function" is central to biology. Physiological studies have traditionally been divided into plant physiology and animal physiology , but some principles of physiology are universal, no matter what particular organism is being studied. For example, what is learned about the physiology of yeast cells can also apply to human cells. The field of animal physiology extends the tools and methods of human physiology to non-human species.

Plant physiology borrows techniques from both research fields. Physiology is the study the interaction of how, for example, the nervous , immune , endocrine , respiratory , and circulatory systems, function and interact. The study of these systems is shared with such medically oriented disciplines as neurology and immunology. Evolutionary Evolutionary research is concerned with the origin and descent of species , and their change over time. It employs scientists from many taxonomically oriented disciplines, for example, those with special training in particular organisms such as mammalogy , ornithology , botany , or herpetology , but are of use in answering more general questions about evolution. Evolutionary biology is partly based on paleontology , which uses the fossil record to answer questions about the mode and tempo of evolution, [57] and partly on the developments in areas such as population genetics. Systematic A phylogenetic tree of all living things, based on rRNA gene data, showing the separation of the three domains bacteria , archaea , and eukaryotes as described initially by Carl Woese. Trees constructed with other genes are generally similar, although they may place some early-branching groups very differently, presumably owing to rapid rRNA evolution. The exact relationships of the three domains are still being debated. Intermediate minor rankings are not shown. Systematics Multiple speciation events create a tree structured system of relationships between species. The role of systematics is to study these relationships and thus the differences and similarities between species and groups of species. Monera ; Protista ; Fungi ; Plantae ; Animalia. Modern alternative classification systems generally begin with the three-domain system: Archaea originally Archaeobacteria ; Bacteria originally Eubacteria and Eukaryota including protists , fungi , plants , and animals [63] These domains reflect whether the cells have nuclei or not, as well as differences in the chemical composition of key biomolecules such as ribosomes. Outside of these categories, there are obligate intracellular parasites that are "on the edge of life" [64] in terms of metabolic activity, meaning that many scientists do not actually classify such structures as alive, due to their lack of at least one or more of the fundamental functions or characteristics that define life. They are classified as viruses , viroids , prions , or satellites. The scientific name of an organism is generated from its genus and species. For example, humans are listed as *Homo sapiens*. *Homo* is the genus, and *sapiens* the species. When writing the scientific name of an organism, it is proper to capitalize the first letter in the genus and put all of the species in lowercase. It includes ranks and binomial nomenclature.

9: List of All Branches of Biology for SSC & Railway Exams- GK Notes in PDF

Biology is the study of life and living organisms. It is a broad field including many branches and subdisciplines. Biologists study structure, function, growth, evolution, distribution, identification and taxonomy.

Micro- and nano-electronic components and devices have increasingly been combined with biological systems [2] like medical implants , biosensors , lab-on-a-chip devices etc. Biomaterials are any matter, surface, or construct that interacts with biological systems. As a science, biomaterials is about fifty years old. The study of biomaterials is called biomaterials science. It has experienced steady and strong growth over its history, with many companies investing large amounts of money into the development of new products. Biomaterials science encompasses elements of medicine , biology , chemistry , tissue engineering and materials science. Biomedical science is healthcare science, also known as biomedical science, is a set of applied sciences applying portions of natural science or formal science , or both, to develop knowledge, interventions, or technology of use in healthcare or public health. Explaining physiological mechanisms operating in pathological processes , however, pathophysiology can be regarded as basic science. Biomonitoring is measurement of the body burden [4] of toxic chemical compounds , elements , or their metabolites , in biological substances. Since they are polymers , biopolymers contain monomeric units that are covalently bonded to form larger structures. There are three main classes of biopolymers, classified according to the monomeric units used and the structure of the biopolymer formed: Food science is applied science devoted to the study of food. Activities of food scientists include the development of new food products, design of processes to produce and conserve these foods, choice of packaging materials, shelf-life studies, study of the effects of food on the human body, sensory evaluation of products using panels or potential consumers, as well as microbiological, physical texture and rheology and chemical testing. The field also includes studies of intragenomic phenomena such as heterosis , epistasis , pleiotropy and other interactions between loci and alleles within the genome. Kinesiology is Kinesiology, also known as human kinetics, is the scientific study of human movement. Kinesiology addresses physiological, mechanical, and psychological mechanisms. Applications of kinesiology to human health include: Play media Parasagittal MRI of the head, with aliasing artifacts nose and forehead appear at the back of the head Medical imaging is the technique and process used to create images of the human body or parts and function thereof for clinical or physiological research purposes Optogenetics is Optogenetics is a neuromodulation technique employed in neuroscience that uses a combination of techniques from optics and genetics to control and monitor the activities of individual neurons in living tissue even within freely-moving animals and to precisely measure the effects of those manipulations in real-time. Spatially-precise neuronal control is achieved using optogenetic actuators like channelrhodopsin , halorhodopsin , and archaerhodopsin , while temporally-precise recordings can be made with the help of optogenetic sensors like Clomeleon, Mermaid, and SuperClomeleon. More specifically, it is the study of the interactions that occur between a living organism and chemicals that affect normal or abnormal biochemical function. If substances have medicinal properties, they are considered pharmaceuticals. Population dynamics is Population dynamics is the study of short-term and long-term changes in the size and age composition of populations , and the biological and environmental processes influencing those changes. Population dynamics deals with the way populations are affected by birth and death rates , and by immigration and emigration , and studies topics such as ageing populations or population decline. Proteomics is Proteomics is the large-scale study of proteins , particularly their structures and functions. The proteome is the entire set of proteins, [34] produced or modified by an organism or system. This varies with time and distinct requirements, or stresses, that a cell or organism undergoes. University of California Press.

LIST OF BRANCHES OF BIOLOGY pdf

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