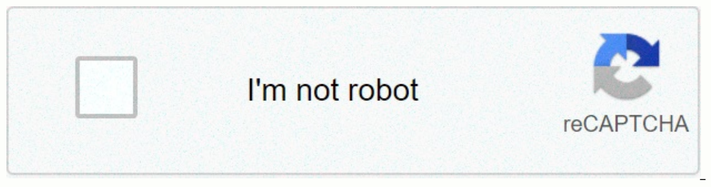

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How did aristotle classify organisms

Historia animalium, one of Aristotle's books on biology. 12th century manuscript Among Aristotle's many observations on marine biology, the octopus can change colour when disturbed. Aristotle's biology is the theory of biology, based on systematic observation and data collection, mainly zoological, embodied in Aristotle's books on science. Many of his observations were made during his stay on the island of Lesbos, including his descriptions of the marine biology of the Pyrrha Lagoon, now the Gulf of Kalloni. His theory is based on his concept of form, which derives from, but is markedly different from Plato's theory of forms. The theory describes five major biological processes: metabolism, temperature regulation, information processing, embryogenesis and inheritance. Each of them has been defined in detail, in some cases sufficient to allow modern biologists to create mathematical models of the mechanisms described. Aristotle's method, too, resembled the style of science used by modern biologists when exploring a new field, with systematic data collection, the discovery of models and the inference of possible causal explanations of these. He did not conduct experiments in the modern sense, but made observations of living animals and performed dissections. It names some 500 species of birds, mammals and fish; and it distinguishes dozens of insects and other invertebrates. It describes the internal anatomy of more than a hundred animals, and dissected about 35 of them. Aristotle's writings on biology, the first in the history of science, are scattered in several books, forming about a quarter of his surviving writings. The main biological texts were the history of animals, the generation of animals, the movement of animals, the progression of animals, parts of animals, and on the soul, as well as the lost drawings of the anatomy that accompanied the story. Apart from his pupil, Theophraste, who wrote a corresponding survey on plants, no research of comparable scope was carried out in ancient Greece, although Hellenistic medicine in Egypt continued Aristotle's investigation into the mechanisms of the human body. Aristotle's biology had an influence in the medieval Islamic world. The translation of Arabic versions and comments into Latin brought Aristotle's knowledge back to Western Europe, but the only biological work widely taught in medieval universities was On the Soul. The association of his work with medieval scholastics, as well as errors in his theories, caused early modern scientists such as Galileo William Harvey to reject Aristotle. Criticism of his mistakes and used reports continued for centuries. He found greater acceptance among zoologists, and some of his long ridiculed observations in marine biology were found in modern times to be true. Background Aristotle spent twenty years at Plato's academy in Athens. Athens. Aristotle (384-322 BC) studied at Plato's Academy in Athens, staying there for about 20 years. Like Plato, he sought universals in his philosophy, but unlike Plato, he supported his views with a detailed and systematic observation, notably of the natural history of the island of Lesbos, where he spent about two years, and the marine life in the seas around it, especially the Pyrrha lagoon in the center of the island. This study made him the first scientist whose written work survived. No equally detailed work on zoology was attempted until the 16th century; as a result Aristotle remained very influential for about two thousand years. He returned to Athens and founded his own school, the Lycaeum, where he taught for the last twelve years of his life. His writings on zoology make up about a quarter of his surviving work. Theophraste, Aristotle's pupil, later wrote a similar book on botany, Enquiry into Plants. [3] Aristotelian Forms Aristotle argued by analogy with a wooden car that something takes its form from both its design and the material used. Main article: Aristotle's biology of Hylomorphism is built on the basis of his theory of form, which is derived from the theory of Plato's forms, but significantly different from it. Plato's Forms were eternal and fixed, being plans in the spirit of God. [4] The real things in the world could, in Plato's opinion, at best be approximations to these perfect forms. Aristotle heard Plato's point of view and developed it into a set of three biological concepts. He uses the same Greek word, εἶδος (eidos), to first of all mean all the visible characteristics that uniquely characterize a kind of animal. Aristotle used the word 'genos' to mean a kind. [a] For example, the kind of animal called a bird has feathers, a beak, wings, a hard shell egg and warm blood. Aristotle also noted that there are many forms of birds in the kind of birds - cranes, eagles, crows, bustards, sparrows, and so on, just as there are many forms of fish in the genus of fish. He sometimes called these atoma eids, indivisible forms. [b] Man is one of those indivisible forms: Socrates and the rest of us are all individually different, but we all have the human form. [4] Finally, Aristotle observed that the child does not take any form, but is given by the seeds of the parents, who combine. These seeds therefore contain the form, or in modern terms of information. [c] Aristotle makes it clear that he sometimes intends this third meaning by giving the analogy of a wooden car. It its shape from wood (its material cause); The tools and sculpting technique used to do this (its effective cause); and the design planned for it (its eidos or integrated information). Aristotle further emphasizes the informational nature of the form by arguing that a body is composed of elements like earth and fire, just as a word is composed of in a specific order. [d] [4] The system soul as system The structure of the souls of plants, animals, and humans, according to Aristotle, where humans are unique in having all three types of soul. Main Articles: Soul - Aristotle, and On the Soul As analyzed by evolutionary biologist Armand Leroi, Aristotle's biology included five major interlocking processes:[5] a metabolic process, by which animals take matter, change its qualities, and distribute them to use to grow, live and reproduce a cycle of temperature regulation, by which animals maintain a stable state. , but which gradually fails in old age a model of information processing by which animals receive sensory information, modify it in the seat of sensation,[e] and use it to conduct the movements of the limbs. He thus separated the sensation from thought, unlike all previous philosophers, with the exception of Alcmaeon. [7] the inheritance process. the processes of embryonic development and spontaneous generation The five processes formed what Aristotle called the soul: it was not something more, but the system composed exactly of these mechanisms. The Aristotelian soul died with the animal and was therefore purely biological. Different types of organisms had different types of souls. The plants had a vegetative soul, responsible for reproduction and growth. The animals had both a vegetative soul and a sensitive soul, responsible for mobility and sensation. Humans, only, had a vegetative, sensitive and rational soul, capable of thinking and thinking. [5] [8] [9] Metabolism Process Metabolism: Leroi open system model. Food is converted into uniform parts of the body and excreted residues. [10] Aristotle's account of metabolism sought to explain how foods were treated by the body to provide both heat and materials for the construction and maintenance of the body. The metabolic system of living tetrapods described in animal parts can be modeled as an open system, a branched tree of matter flow through the body. [10] The system worked as follows. The incoming material, food, enters the body and is concocted in the blood; waste is excreted in the form of urine, bile and faeces, and the fire of the element is released in the form of heat. Blood is transformed into flesh and bone, with the rest forming other terrestrial tissues such as bones, teeth, cartilage and tendons. The leftover blood is turned into fat, whether it is soft tallow or hard lard. Some of the fat in the whole body is turned into sperm. [10] [11] All aristotle's opinion are completely uniform parts without any internal structure of any kind; cartilage, for example, was the same throughout, not subdivided into atoms as Democritus (circa 460 BC) had argued. [12] Uniform parts can be arranged on a scale of Aristotelian qualities, from the coldest and driest, such as hair, to the warmest and wettest, such as milk. [10] [11] At each stage of metabolism, the waste material is excreted excreted faeces, urine and bile. [10] [11] Temperature regulation Temperature regulation: Leroi's model based on Youth and Old Age, Life and Death 26. [10] [11] Aristotle's account of temperature regulation sought to explain how an animal maintained a stable temperature and the continuous oscillation of the thorax needed to breathe. The temperature and breathing control system described in Youth and Old Age, Life and Death 26 is detailed enough to allow modeling as a negative feedback control system (one that maintains a desired property by opposing disturbances), with some hypotheses such as a desired temperature to compare the actual temperature against. [13] The system worked as follows. The heat is constantly lost from the body. Food products reach the heart and are transformed into new blood, releasing fire during metabolism, which increases the blood temperature too high. This increases the temperature of the heart, which increases the lung volume, in turn increasing the flow of air to the mouth. The fresh air brought by the mouth reduces the temperature of the heart, so that the lung volume decreases accordingly, restoring the temperature to normal. [g] [13] The mechanism only works if the air is cooler than the reference temperature. If the air is warmer than that, the system becomes a positive feedback cycle, the body fire is extinguished, and death follows. The system as described cushions temperature fluctuations. Aristotle predicted, however, that his system would cause pulmonary oscillation (breathing), which is possible given additional hypotheses such as delays or non-linear responses. [13] [15] Information Processing Information Processing: the centralized model of incoming and outgoing movements of an animal's sensitive soul; the heart is the seat of perception. [16] Aristotle's information processing model has been referred to as the centralized model of incoming and outgoing movements. He sought to explain how changes in the world led to appropriate behavior in animals. [16] The system worked as follows. The animal's sense organ is modified when it detects an object. This causes a perceptual change in the seat of the sensation of the animal, which Aristotle believed to be the heart, not the brain. This in turn causes a change in the heat of the heart, which causes a quantitative change sufficient to give the heart a mechanical impulse to a limb, which moves, moving the body of the animal. The alteration of the heart's heat also causes a change in the consistency of the joints, which helps the limb to [16] There is therefore a causal chain that transmits information from a sense organ to an organ capable of making decisions, and from a motor organ. In this regard, the model is analogous to a modern understanding of information processing, as in the senseless coupling-engine. [17] [16] Inheritance: a model for transmitting movements from parents to children, children, father's form. The model is not entirely symmetrical. [18] See also: Aristotle's inheritance model of Telegonia (pregnancy) sought to explain how the characteristics of the parents are transmitted to the child, subject to the influence of the environment. [18] [h] The system worked as follows. The father's sperm and the mother's menstruation have movements that encode their parental characteristics. [18] [19] The model is partly asymmetrical, as only the father's movements define the shape or eidos of the species, while the movements of the uniform parts of the father and mother define characteristics other than form, such as the color of the father's eyes or the shape of the mother's nose. [18] Aristotle's theory has a certain symmetry, as sperm movements carry malness while menstruation bears the woman. If the sperm is hot enough to dominate cold menstruation, the child will be a boy; but if it is too cold to do so, the child will be a girl. The inheritance is therefore particulate (certainly one trait or another), as in mendial genetics, unlike the Hippocrates model which was continuous and mixing. [18] The sex of the child may be influenced by factors that affect temperature, including time, wind direction, diet, and father's age. Characteristics other than sex also depend on whether sperm dominates menstruation, so if a man has strong sperm, he will have threads that look like him, while if the sperm is weak, he will have daughters who look like their mother. [i] [18] Embryogenesis Embryogenesis: Aristotle saw the heart of the chick embryo beat. Peter Panum Aristotle's 19th-century design of embryogenesis was intended to explain how hereditary parenting characteristics cause the formation and development of an embryo. [20] The system worked as follows. First, the father's sperm quails the mother's menstruation, which Aristotle compares to how ren cursure (an enzyme in a cow's stomach) quails milk in cheese making. This forms the embryo; it is then developed by the action of the pneuma (literally, breath or spirit) in the semen. The pneuma first makes the heart appear; this is vital because the heart nourishes all other organs. Aristotle observed that the heart is the first organ seen to be active (beating) in a hen's egg. The pneuma then develops the other organs. Method More information: History of the scientific method Aristotle was called unsinsured[21] by philosophers from Francis Bacon[21] for at least two reasons: his scientific style,[22] and his use of explanation. His explanations are in turn rendered its complex system of causes. [21] However, these charges must be considered in light of what was known at the time. [21] Its systematic collection of data, too, is overshadowed by the absence of modern methods of presentation, such as data tables: for example, the entire Book VI of the History of Animals is taken up with a list of observations of the stories of birds that were now summarized in a single table in nature - and in the additional online information at cel. [23] Aristotle's scientific style deduced the growth laws of his observations on animals, including that brood size decreases with body mass, while the gestation period increases. He was right in these predictions, at least for mammals: the data are shown for mice and elephants. Aristotle did not experiment in the modern sense. [24] He used the ancient Greek term pepeiramenoi to mean observations, or to most investigative procedures,[25] such as (in animal generation) find the egg of a fertilized hen of an appropriate stage and open it in order to be able to see the heart of the embryo inside. Instead, he practiced a different style of science: systematic data collection, discovery of common patterns of entire groups of animals, and possible causal explanations for them. [22] [27] This style is common in modern biology when large amounts of data become available in a new field, such as genomics. It does not bring the same certainty as experimental science, but it sets out verifiable hypotheses and constructs a narrative explanation of what is observed. In this sense, Aristotle's biology is scientific. [22] Based on the data he collected and documented, Aristotle deduced a number of rules relating to the characteristics of the life history of living tetrapods (terrestrial placentar mammals[jj]) that he studied. Among these correct predictions are the following. The size of the brood decreases with body mass (adult), so that an elephant has fewer young (usually one) per brood than a mouse. Lifespan increases with gestation period, and also with body mass, so that elephants live longer than mice, have a longer gestation period, and are heavier. Finally, fertility decreases with lifespan, so that long-term types such as elephants have fewer young in total than short-term types such as mice. [28] Mechanism and analogy Aristotle used the analogy of the movement of water through a porous pot (an oenochoe shown) to help explain biological processes as mechanisms. Aristotle's use of the explanation was considered fundamentally unserious. The Frenchman Molière playwright's 1673 play, The Imaginary Invalid, depicts the argan doctor, the argan doctor, blandingly explaining that opium causes sleep under his dorm principle [of sleeping], his virtus dormitiva[. [k] [29] The explanation is at best empty (without a mechanism),[21] at worst vitalist. But the true Aristotle provided biological mechanisms, in the form of the five processes of metabolism, temperature regulation, information processing, embryonic development and the legacy he developed. In addition, he provided mechanical and non-vitalist analogies for these theories, mentioning bellows, toy carts, the movement of water through porous pots, and even even Puppets. [21] Complex Causality Main Articles: Four Causes and the Four Questions of Tinbergen Aristotle's readers found the four causes he uses in his opaque biological explanations, [30] something not helped by many centuries of confused exegesis. For a biological system, however, these are quite simple. The material cause is simply what a system is built to. The purpose (final cause) and the formal cause are what something is for, its function: for a modern biologist, such a teleology describes adaptation under the pressure of natural selection. The effective cause is the way a system moves and develops: to a modern biologist, these are explained by developmental biology and physiology. Biologists continue to offer such explanations. [30] [21] Empirical Research Map of Lesbos by Giacomo Franco [es] (1597). The lagoon near Kalloni (labelled Calona) where Aristotle studied marine zoology is in the center of the island. Aristotle was the first person to study biology systematically. He spent two years observing and describing the zoology of Lesbos and the surrounding seas, including in particular the Pyrrha Lagoon in the center of Lesbos. [1] [31] His data are collected from his own observations, statements from people with specialized knowledge such as beekeepers and fishermen, and less accurate accounts provided by overseas travellers. His observations on catfish, electric fish (torpedo) and fishfish are detailed, as is his writing on cephalopods, including octopus, cuttlefish and paper nautilus. [33] His assertion that the octopus had a hectocotyl arm that may have been used in sexual reproduction[34] was largely disbeliever, until its rediscovery in the 19th century. He separated aquatic mammals from fish and knew that sharks and rays were part of the group he called Selach (roughly the serians of the modern zoologist).). Aristotle recorded that the embryo of a dogfish was attached by a cord to a kind of placenta (the yellow bag). [36] Among other things, he gave accurate descriptions of the four-chamber stomachs of ruminants, and the ovoviviparous embryological development of the dogfish. [36] [37] His accounts of about 35 animals are detailed enough to convince biologists that he dissected these species,[38] actually vivisecting some; [39] he mentions the internal anatomy of about 110 animals in total. Classification The khalkeus (John Dory) is one of many fish named by Aristotle. Aristotle distinguished about 500 species of birds, mammals and fish in animals and parts of animals. [40] [41] Its classification system, one of the oldest in scientific taxonomy, had an influence for more than two thousand years. Aristotle distinguished animals with blood, Enhaima (the vertebrates of the modern zoologist) and bloodless animals, Ainhaima (invertebrates). [m] [43] [44] [44] Scala naturae (highest at lowest) Group examples (given by Aristotle) Blood Legs Soul (Rational,Sensitive,Vegetative) Quality (Hot-Cold,Wet-Dry) Man with blood 2 legs R, S, V Hot, Wet Live-bearing tetrapods Cat, hare with blood 4 legs S, V Hot, Wet Cetacean Dolphin, whale with blood , nightjar with blood 2 legs S, V Hot, Wet, except dry eggs Tetrapods chameleons laying eggs, crocodile with blood 4 legs S, V Cold, Wet except scales, eggs Snakes Water Snake, Ottoman viper with blood no S, V Cold, Wet except scales, eggs Egg-laying fish Bar, parrot fish with blood no S, V, Wet Cold, including :p lacental selachians Shark, skate with blood none S , V Cold, wet, but placenta like tetrapods Crustaceans Shrimps, crab without many legs S, V Cold, Wet except shell Cephalopods Calmar, octopus without tentacles S, V Cold, Wet Hard-shelled animals Cockle, snail trumpet without any S, V Cold, Dry (mineral shell) Insects , Dry Spontaneously generations sponges, worms without any S, V Cold, Wet or Dry , Earth Fig Plants without any V Cold, Dry Minerals Iron without any cold, Dry animals with blood included live tetrapods, Tetrapoda Zoiotoka (pretty much, mammals), being warm, having four legs, and giving birth to their young. The cetaceans, Kotod, also had blood and gave birth to young living people, but had no legs, and thus formed a distinct group[n] (megista gen, defined by a set of functional parts. [46] The birds, Ornithes had blood and laid eggs, but had only 2 legs and were a distinct form (eidos) with feathers and beaks instead of teeth, so they also formed a distinct group of more than 50 kinds. The egg-carrying tetrapods, the oiotoka tetrapod (reptiles and amphibians) had blood and four legs, but were cold and laid eggs, as well as a separate group. The snakes, Opheis, also had blood, but no legs, and laid dry eggs, as well as a separate group. The fish, Ikhthyes, had blood but no legs, and laid wet eggs, forming a defined group. Among them, selakh's selachians (sharks and rays) had cartilage instead of bones. [43] The bloodless animals were divided into soft-shelled Malakostraka (crabs, lobsters and shrimp); Hard-shell ostrakoderma (gastropods and bivalves); Soft-bodied Malakia (cephalopods); and Entoma divisible animals (insects, spiders, scorpions, ticks). Other bloodless animals included fish lice, hermit crabs, red corals, sponges, starfish and various worms: Aristotle did not classify them as groups. Scale to be more information: Large chain to be Aristotle reported correctly that the electric rays were able to stun their prey. Aristotle said in the history of animals that all beings were arranged in a fixed scale of perfection, reflected in their (eidos). [o] They stretched minerals to plants and animals, and up to man, forming the scala naturae or a great chain to be. [47] His system had eleven grades, arranged according to the potentiality of each being, expressed in their form at birth. [48] The highest animals gave birth to warm, moist living creatures, the lowest carried their cold, dry, and in thick eggs. [33] The system was based on Aristotle's interpretation of the four elements of his generation and corruption: fire (hot and dry); Air (hot and humid); Water (cold and wet); earth (cold and dry). These are arranged from the most energetic at least, so that hot and moist young people reared in a uterus with a placenta were higher on the scale than cold, dry, almost mineral eggs of birds. [49] [9] However, Aristotle is careful never to insist that a group fit perfectly into the scale; he knows that animals have many combinations of attributes, and that the placements are approximate. [50] Influence on Theophraste Main Article: Historia Plantarum (Theophraste) Aristotle's pupil and successor at the Lyceum, Theophraste, wrote The History of Plants, the first classical book of botany. It has an Aristotelian structure, but rather than focusing on formal causes, as Aristotle did, Theophraste describes how plants worked. [51] [52] Where Aristotle spread over great theories, Theophraste was quietly empirical. [53] Where Aristotle insisted that species have a fixed place on the naturae scala, Theophraste suggests that one type of plant can be transformed into another, as when a wheat-sown field turns to the dying darnel. [54] On Hellenistic Medicine More information: Medicine in Ancient Greece After Theophraste, although interest in Aristotle's ideas survived, they were generally taken without a doubt. It was not until the age of Alexandria under the Ptolemy that advances in biology resumed. The first professor of medicine in Alexandria, Chalcedon's Herophilus, corrected Aristotle, placing intelligence in the brain, and connected the

nervous system to movement and sensation. Hephilus also distinguished between veins and arteries, noting that the last pulse while the first does not. [56] On Islamic Zoology More information: Kitab al-Hayaron and science in the medieval Islamic world Many classical works, including those of Aristotle were transmitted from Greek to Syriac, then to Arabic, then to Latin in the Middle Ages. Aristotle remained the leading authority in biology for the next two thousand years. [57] The Kitab al-Hayaron is a 9th century Arabic History of Animals: 1-10, On the Parts of Animals: 11-14,[58] and Generation of Animals: 15-19. [59] Albertus Magnus commented extensively on Aristotle's zoology, adding others of his own. [61] The book was mentioned by Al-Kindo (d. 850), and commented by Avicenna (Ibn Suna) in Kitab al-'s 'Aif' (The Book of Healing). Avempace (Ibn Bejja) and Averroes (Ibn Rushd) commented on animal parts and animal generation, with Averroes criticizing Avempace's interpretations. On Medieval Science More information: Medieval Science When the Christian Alfonso VI of Castile took over the kingdom of Toledo of the Moors in 1085, an Arabic translation of the works of Aristotle, with comments by Avicenna and Averroes emerged in medieval European scholarship. Michael Scot translated much of Aristotle's biology into Latin, circa 1225, as well as many of Averroes' comments. Albertus Magnus commented much on Aristotle, but added his own zoological observations and an animal encyclopedia based on Thomas of Cantimpré. Later in the 13th century, Thomas Aquinas merged Aristotle's metaphysics with Christian theology. While Albert had treated Aristotle's biology as a science, writing that experiment was the only safe guide and joining aristotle's types of observation, Aquinas saw Aristotle purely as a theory, and Aristotelian thought became associated with scholasticism. [61] The program of natural scholastic philosophy omitted most of Aristotle's biology, but included on the soul. On Renaissance science, the rhinoceros of Durer in Konrad Gessner's Historia Animalium, 1551 Renaissance zoologists used Aristotle's zoology in two ways. Especially in Italy, researchers such as Pietro Pomponazzi and Agostino Nifo have given lectures and written comments on Aristotle. Elsewhere, the authors used Aristotle as one of their sources, alongside their own observations and those of their colleagues, to create new encyclopedias such as Konrad Gessner's Historia Animalium in 1551. [q] The title and philosophical approach were Aristotelian, but the work was largely new. Edward Wotton also helped found modern zoology by arranging animals according to Aristotle's theories, separating folklore from his animalium De differentiis from 1552. [63] The early modern rejection of Salviati convinced Sagredo and defeated the Aristotelian Simplicio, in his Dialogue of 1632 At the beginning of the modern period, Aristotle came to represent all that was obsolete, scholastic and false, not helped by his association with medieval theology. In 1632, Galileo represented Aristotelianism in his Dialogo sopra i due massimi sistemi del mondo (Dialogue concerning the two world systems in chief) by the straw Simplicio (Simpleton). That same year, William Harvey proved Aristotle wrong by demonstrating that blood was circulating. [66] Aristotle was still the enemy of true science in the 20th century. Leroi noted that Peter Medawar declared in pure 17th-century tones[68] that Aristotle had assembled a strange and generally rather tiring hearsay farrago, imperfect imperfect wishful thinking and credulity equivalent to a credulit. [68] The revival of 19th century Zoologists working in the 19th century, including Georges Cuvier, Johannes Peter Muller[70] and Louis Agassiz, admired Aristotle's biology and studied some of his observations. D'Arcy Thompson translated History of Animals in 1910, making an enlightened attempt by a classically trained zoologist to identify the animals Aristotle names, and to interpret and diagram his anatomical descriptions. [71] [72] [73] Darwin cites a passage from Aristotle's Physics II 8 in The Origin of Species, which offers the possibility of a selection process following the random combination of body parts. [75] However, Aristotle immediately rejected this possibility, and in any case discussed ontogenia, the Empedoclean, which became an individual of components, not of phylogeny and natural selection. [76] 20th and 21st century elephant swimming interest, using its trunk as a snorkel, as Aristotle said Zoologists often mocked Aristotle for errors and unverified used reports. However, modern observation confirmed one after another of its most surprising claims,[63] including the active camouflage of the octopus[77] and the ability of elephants to dive with their trunks while swimming. Aristotle remains largely unknown to modern scientists, although zoologists are perhaps the most likely to mention him as the father of biology; [79] The MarineBio Conservation Society notes that it has identified crustaceans, echinoderms, molluscs and fish, that cetaceans are mammals, and that marine vertebrates could be either oviparous or viviparous, so it is often called the father of marine biology. [r] Evolutionary zoologist Armand Leroi is interested in Aristotle's biology. [s] [82] The concept of homology began with Aristotle, [83] and evolutionary development biologist Lewis I. Held commented that[84] The deep thinker who would be most amused by . [the deep homology is Aristotle, who was fascinated by the natural world, but baffled by its inner workings. Aristotle works has written nothing that resembles a modern and unified biology textbook. Instead, he wrote a large number of drunk who, taken together, give an idea of his approach to science. Some of these interlocking, referring to each other, while others, such as the drawings of the anatomy are lost, but mentioned in the History of Animals, where the reader is instructed to look at the diagrams to understand how the animal parts described are arranged. Aristotle's main biological works are the five books sometimes grouped under the name of On Animals (From Namely, with the conventional abbreviations presented in parentheses: Animal History, or Animal Investigations (Historia Animalium) (HA) Generation of Animals (De Generatione Animalium) Animalium) Animal Movement (De Motu Animalium) (DM) Animal Parts (De Partibus Animalium) (PA) Animal Progress or On the Animal Gait (De Incessu Animalium) (IA) with On the Soul (De Anima) (DA). [63] In addition, a group of seven short works, the conventional formation of Parva Naturalia (Short Treaties on Nature), is also mainly biological: Sense and Sensibilia (De Sensu and Sensibilibus) (Sense) On Memory (De Memoria and Reminiscia) On Sleep (De Somno and Vigilia) On Dreams (De Insomniis) On Divination in Sleep (De Divinatione per Somnum) On Lenge and Shortness of Life (De Longitudine and Brevitate Vitae) and Respiration (From Juventute and Senectute, De Vita and Morte, De Respiratione) Notes - The Latin genre English and taxonomics flow from it, and have related meanings. In modern terms, these correspond approximately to species, and some texts use this translation. Aristotle did not formulate a definition resembling that of a modern species, however, and some of its forms are other taxa such as genee or families. From Latin informo, I train, give shape to. Armand Leroi notes that biologists will immediately think in this context of the nucleotide letters of DNA that give shape to organisms. [4] - Like the ancient Egyptians, Aristotle believed that the seat of rational and sensitive souls was the heart, not the brain[6] - Corresponding to mammals. In modern terms, it's homeostasis. [14] - The relative importance of parenting characteristics and the environment has become the subject of modern nature-feeding debate. Thus the devices are, in modern terms, related to sex. [18] - Excluding cetaceans (whales and dolphins) and Chiropterra (bats). First Doctor: Most Learned Single / Which I value and honor, I would like to ask you the cause and reason why / Opium sleeps. Argan [the Aristotelian]: ... The reason is that in opium resides / A dorm virtue, of which it is nature / For stupefy the senses. [29] It is not safe to assume that species or groups with Linnenen names that resemble Aristotle are the animals he referred to, such as zoologists, including Linnaeus guessed rightly or wrongly what Aristotle meant in his brief descriptions. Sometimes an ancient Greek name must mean exactly one species - hippos is definitely horse, when it is a terrestrial animal; but sometimes a name refers to several similar species, as English names often do today: for example, kephalos refers to one of the 4 species of grey mullet. Aristotle did not know that complex invertebrates use but of a different type of vertebrates. Aristotle did not nest his groups in a hierarchical tree. For a modern biologist, such a scale suggests evolution, but Aristotle saw it as a permanent and eternal arrangement. Scot translates HA, GA, and PA, PA, Parva Naturalia as a whole. Gessner borrowed the title from one of Aristotle's books. As the father of science, he is alone. The next numbers important enough to be named in the history of MarineBio, for example, are Captain James Cook and Charles Darwin, about two millennia later. [80] - Leroi has written several articles on the subject, quoted in his book, and has made a BBC film[81] about it. References - a b Leroi 2014, p. 14. Lennox, James (July 27, 2011). The Biology of Aristotle. Stanford Encyclopedia of Philosophy. Stanford University. Excerpted November 28, 2014. - French, Roger (1994). Ancient Natural History: Stories of Nature. Routledge. 92-99. ISBN 0-415-11545-0. A b c d e Leroi 2014, pp. 88-90. a b Leroi 2014, 370-373. Mason 1962, 45. Guthrie 1981, 348. Aristotle, De Anima II 3 - a b Taylor 1922, 46. a b c d e f Leroi 2014, pp. 400-401. a b c d Leroi 2010, pp. 261-284. Leroi 2014, 79-80, 143-145. a b c Leroi 2014, pp. 403-404. Leroi 2014, 176-177. King, R. A. H. (2001). Aristotle on life and death. Duckworth. 126-129. ISBN 978-0-7156-2982-6. a b c d Leroi 2014, p. 402. 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