

Chapter 1 Cell Structure And Function

Answer Key

Protocell Although a functional protocell has not yet been achieved in a laboratory setting, the goal to understand the process appears well within reach. biological evolution). e. A central question in evolution is how simple protocells first arose and how their progeny could diversify, thus enabling the accumulation of novel biological emergences over time (i. In the aqueous environment in which all known cells function, a A protocell (or protobiont) is a self-organized, endogenously ordered, spherical collection of lipids proposed as a rudimentary precursor to cells during the origin of life. the cell membrane which is the only cellular structure found in all organisms on Earth 33b60412b7

Anaphase-promoting complex The APC/C is a large complex of 11–13 subunit proteins,

including a cullin (Apc2) and RING (Apc11) subunit much like SCF. APC/C have unknown functions but are highly conserved. It was the discovery of the APC/C (and SCF) and their key role in eukaryotic cell-cycle regulation Anaphase-promoting complex (also called the cyclosome or APC/C) is an E3 ubiquitin ligase that marks target cell cycle proteins for degradation by the 26S proteasome. Other parts of the APC/C have unknown functions but are highly conserved 33b60412b7

Oocyte An oocyte is a form of genetic material that can be collected for cryopreservation. During oogenesis, the oogonia become primary oocytes. The oocytes produce a primordial germ cell (PGC), which then undergoes mitosis, forming oogonia. the mRNAs and the loaded proteins have multiple functions; from regulation of cellular "house-keeping" such as cell cycle progression and cellular metabolism An oocyte (, oöcyte, or ovocyte) is a female germ cell involved in sexual reproduction. An oocyte is an immature ovum, an immature egg cell produced in a female fetus in the ovary during gametogenesis 33b60412b7

Reversible cellular automaton That is, it is a regular grid of cells, each containing a state drawn from a finite set of states, with a rule for updating all cells simultaneously

based on the states of their neighbors, such that the previous state of any cell before an update can be determined uniquely from the updated states of all the cells. The time-reversed dynamics of a reversible cellular automaton can always be described by another cellular automaton rule, possibly on a much larger neighborhood. which each update partitions the cells into blocks and applies an invertible function separately to each block, and the second-order cellular automaton A reversible cellular automaton is a cellular automaton in which every configuration has a unique predecessor 33b60412b7

Executive functions gradually develop and change across the lifespan of an individual... 33b60412b7

Glycomics physiologic, pathologic, and other aspects. Glycomics "is the systematic study of all glycan structures of a given cell type or organism" and is a subset of glycobiology Glycomics is the comprehensive study of glycomes (the entire complement of sugars, whether free or present in more complex molecules of an organism), including genetic, physiologic, pathologic, and other aspects. The term glycomics is derived from the chemical prefix for sweetness or a sugar, "glyco-", and

was formed to follow the omics naming convention established by genomics (which deals with genes) and proteomics (which deals with proteins). Glycomics "is the systematic study of all glycan structures of a given cell type or organism" and is a subset of glycobiology 33b60412b7

A protocell is a pre-cell in abiogenesis, and was a contained system consisting of simple biologically relevant molecules like ribozymes, and encapsulated in a simple membrane structure – isolating the entity from the environment and other individuals – thought to consist... 33b60412b7 It was the discovery of the APC/C (and SCF) and their key role in eukaryotic cell-cycle regulation that established the importance of ubiquitin-mediated proteolysis in cell biology. Once perceived as a system exclusively involved in removing damaged protein from the cell, ubiquitination and subsequent protein degradation by the proteasome is now perceived as a universal regulatory mechanism for signal transduction whose importance approaches... 33b60412b7 Several methods are known for defining cellular automata rules that are reversible; these include the block cellular automaton method, in which each update partitions the cells into blocks and applies an invertible... 33b60412b7

Executive functions g. Executive functions include basic cognitive processes such as attentional control, cognitive inhibition, inhibitory control, working memory, and cognitive flexibility. , reasoning and problem-solving). Higher-order executive functions require the simultaneous use of multiple basic executive functions and include planning and fluid intelligence (e. In cognitive science and neuropsychology, executive functions (collectively referred to as executive function and cognitive control) are a set of cognitive In cognitive science and neuropsychology, executive functions (collectively referred to as executive function and cognitive control) are a set of cognitive processes that support goal-directed behavior, by regulating thoughts and actions through cognitive control, selecting and successfully monitoring actions that facilitate the attainment of chosen objectives 33b60412b7

Lisp (programming language) data structures, automatic storage management, dynamic typing, conditionals, higher-order functions, recursion, the self-hosting compiler, and the read-eval-print Lisp (historically LISP, an abbreviation of "list processing") is a family of programming languages with a long history and a distinctive, fully parenthesized prefix notation 33b60412b7

Neural Darwinism Edelman's 1987 book Neural Darwinism introduced the public to the theory of neuronal group selection (TNGS), a theory that attempts to explain global brain function. Organization and the Group-selective Theory of Higher Brain Function, which describes the columnar structure of the cortical groups within the neocortex, and argues Neural Darwinism is a biological, and more specifically Darwinian and selectionist, approach to understanding global brain function, originally proposed by American biologist, researcher and Nobel-Prize recipient Gerald Maurice Edelman (July 1, 1929 – May 17, 2014) 33b60412b7

History of biology During the European Renaissance and early modern period, biological thought was revolutionized in Europe by a renewed interest in empiricism and the discovery of many novel organisms. Prominent in this movement were Vesalius and Harvey, who used experimentation and careful observation in physiology. Although the concept of biology as a single coherent field arose in the 19th century, the biological sciences emerged from traditions of medicine and natural history reaching back to Ayurveda, ancient Egyptian medicine and the works of Aristotle, Theophrastus and Galen in the ancient Greco-Roman world. This ancient work was further developed in the Middle Ages by Muslim physicians and scholars

such as Avicenna. and by the end of the 19th century cytologists identified many of the key cell components: chromosomes, centrosomes mitochondria, chloroplasts, and other The history of biology traces the study of the living world from ancient to modern times 33b60412b7

Although humans have always been interested in the natural history of the animals they saw around them, and used this knowledge to domesticate certain species, the formal study of zoology can be said to have originated with Aristotle. He viewed animals as living organisms, studied their structure and development, and considered their adaptations to their surroundings and the function of their parts... 33b60412b7 Originally specified in the late 1950s, it is the second-oldest high-level programming language still in common use, after Fortran. Lisp has changed since its early days, and many dialects have existed over its history. Today, the best-known general-purpose Lisp dialects are Common Lisp, Scheme, Racket, and Clojure. 33b60412b7

Zoology Zoology is one of the primary branches of biology. The term is derived from Ancient Greek ζῷον, zōion ('animal'), and λόγος, logos ('knowledge', 'study'). Its studies include the structure, embryology, classification, habits, and distribution of all

animals, both living and extinct, and how they interact with their ecosystems. Understanding the structure and function of cells is fundamental to all of the biological sciences. The similarities and differences between cell types are particularly Zoology (zoh-OL-ə-jee, UK also zoo-) is the scientific study of animals 33b60412b7

TNGS (also referred to as the theory of neural Darwinism) has roots going back to Edelman and Mountcastle's 1978 book, The Mindful Brain - Cortical Organization and the Group-selective Theory of Higher Brain Function, which describes the columnar structure of the cortical groups within the neocortex, and argues for selective processes operating among degenerate primary... 33b60412b7 Lisp was originally created as a practical mathematical notation for computer programs, influenced by (though not originally derived from) the notation of Alonzo Church's lambda calculus. It quickly became a favored programming language for artificial intelligence (AI) research. As one of the earliest programming... 33b60412b7

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