Macromolecules Study Guide Answers

Glymphatic system According to this model, cerebrospinal fluid (CSF), an ultrafiltrated plasma fluid secreted by choroid plexuses in the cerebral ventricles, flows into the paravascular space around cerebral arteries, contacts and mixes with interstitial fluid (ISF) and solutes within the brain parenchyma, and exits via the cerebral venous paravascular spaces back into the subarachnoid space. [citation needed] In 1971, Helen The glymphatic system, glymphatic clearance pathway or paravascular system is an organ system for metabolic waste removal in the central nervous system (CNS) of vertebrates. The pathway consists of a para-arterial influx mechanism for CSF driven primarily by arterial pulsation, which "massages" the low-pressure CSF into the denser brain parenchyma, and the CSF flow is regulated during sleep by changes in parenchyma resistance. subarachnoid space are too great for the efficient removal of interstitial macromolecules and wastes by simple diffusion alone 6cfe505fa0

Tannin The term tannin is widely applied to any large polyphenolic compound containing sufficient hydroxyls and other suitable groups (such as carboxyls) to form strong complexes with various macromolecules. suitable groups (such as carboxyls) to form strong complexes with various macromolecules. The term tannin (from scientific French tannin, from French tan "crushed Tannins (or tannoids) are a class of astringent, polyphenolic biomolecules that bind to and precipitate proteins and various other organic compounds including amino acids and alkaloids 6cfe505fa0

Cancer biomarker Studies have found that these macromolecules and others can be found in circulation during cancer A cancer biomarker refers to a substance or process that is indicative of the presence of cancer in the body. A biomarker may be a molecule secreted by a tumor or a specific response of the body to the presence of cancer. Genetic, epigenetic, proteomic, glycomic, and imaging biomarkers can be used for cancer diagnosis, prognosis, and epidemiology. Ideally, such biomarkers can be assayed in non-invasively collected biofluids like blood or serum. nucleosomes, cleaved cytokeratin-18, and E-cadherin 6cfe505fa0

Francis Crick functional macromolecules, some of which carry out enzymatic reactions of cells. He, James Watson, Rosalind Franklin, and Maurice Wilkins played crucial roles in deciphering the helical structure of the DNA molecule. In the 1940s, some evidence had been found pointing to another macromolecule, DNA Francis Harry Compton Crick (8 June 1916 – 28 July 2004) was an English molecular biologist, biophysicist, and neuroscientist 6cfe505fa0

Matthew Meselson The method, equilibrium density Matthew Stanley Meselson (born May 24, 1930) is an American geneticist and molecular biologist currently at Harvard University, known for his demonstration, with Franklin Stahl, of semi-conservative DNA replication. After completing his Ph. Stahl, together with Jerome Vinograd, invented a method that separates macromolecules according to their buoyant density. D. under Linus Pauling at the California Institute of Technology, Meselson became a Professor at Harvard University in 1960, where he has remained today as Professor of the Natural Sciences 6cfe505fa0

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... 6cfe505fa0 The tannin compounds are widely distributed in many species of plants, where they play a role in protection from predation... 6cfe505fa0 The term tannin (from scientific French tannin, from French tan "crushed oak bark", tanner "to tan", cognate with English tanning, Medieval Latin tannare, from Proto-Celtic *tannos "oak") refers to the abundance of these compounds in oak bark, which was used in tanning animal hides into leather. 6cfe505fa0 Crick and Watson's paper in Nature in 1953 laid the groundwork for understanding DNA structure and functions. Together with Maurice Wilkins, they were jointly awarded the 1962 Nobel Prize in Physiology or Medicine "for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material". 6cfe505fa0

Protocell called coacervates. e. These droplets are driven by the accumulation of macromolecules, producing a distinct dense phase liquid droplet within a more dilute 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. Although a functional protocell has not yet been achieved in a laboratory setting, the goal to understand the process appears well within reach. 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. biological evolution) 6cfe505fa0

Proteins and nucleic acids are the workhorses of biology, providing the necessary chemical reactions, structural organization, growth... 6cfe505fa0

Chemical formula Chemical formulae can fully specify the structure of only the simplest of molecules and chemical substances, and are generally more limited in power than chemical names and structural. formulae are the standard for ionic compounds, such as $CaCl_2$, and for macromolecules, such as SiO_2. A chemical formula is not a chemical name since it does not contain any words. Although a chemical formula may imply certain simple chemical structures, it is not the same as a full chemical structural formula. An empirical formula makes no reference to isomerism A chemical formula is a way of presenting information about the chemical proportions of atoms that constitute a particular chemical compound or molecule, using chemical element symbols, numbers, and sometimes also other symbols, such as parentheses, dashes, brackets, commas and plus (+) and minus (−) signs. These are limited to a single typographic line of symbols, which may include subscripts and superscripts 6cfe505fa0

Biological data visualization The visualization of macromolecules is critical for an intricate understanding of the multifaceted structures Biological data visualization is a branch of bioinformatics concerned with the application of computer graphics, scientific visualization, and information visualization to different areas of the life sciences. Software tools used for visualizing biological data range from simple, standalone programs to complex, integrated systems. This includes visualization of sequences, genomes, alignments, phylogenies, macromolecular structures, systems biology, microscopy, and magnetic resonance imaging data. motif, and exploring protein-protein interactions 6cfe505fa0

An emerging trend is the blurring of boundaries between the visualization of 3D structures at atomic resolution, the visualization of larger complexes by cryo-electron microscopy, and the visualization of the location of proteins and complexes within whole cells and tissues. There has also been an... 6cfe505fa0

Sense Stimuli are of three general types. changes. Sensation and perception are fundamental to nearly every aspect of an organism's cognition, behavior and thought. During sensation, sense organs collect various stimuli (such as a sound or smell) for transduction, meaning transformation into a form that can be understood by the brain. Senses used by non-human organisms are even greater in variety and number. Although, in some cultures, five human senses were traditionally identified as such (namely sight, smell, touch, taste, and hearing), many more are now recognized. Some stimuli are ions and macromolecules that affect transmembrane receptor proteins when these chemicals diffuse A sense is a biological system used by an organism for sensation, the process of gathering information about the surroundings through the detection of stimuli 6cfe505fa0

Structure validation referees, experimentalists studying the macromolecules by other techniques, and theoreticians and bioinformaticians studying more general properties of Macromolecular structure validation is the process of evaluating reliability for 3-dimensional atomic models of large biological molecules such as proteins and nucleic acids. The validation has three aspects: 1) checking on the validity of the thousands to millions of measurements in the experiment; 2) checking how consistent the atomic model is with those experimental data; and 3) checking consistency of the model with known physical and chemical properties. These models, which provide 3D coordinates for each atom in the molecule (see example in the image), come from structural biology experiments such as x-ray crystallography or nuclear magnetic resonance (NMR) 6cfe505fa0

In organisms, a sensory organ consists of a group of interrelated sensory cells that respond to a specific type of... 6cfe505fa0 While numerous challenges exist in translating biomarker research into the clinical space; a number of gene and protein based biomarkers have already been used at some point in patient care; including, AFP (liver cancer), BCR-ABL (chronic myeloid leukemia), BRCA1 / BRCA2 (breast/ovarian cancer), BRAF V600E (melanoma/colorectal cancer), CA-125 (ovarian... 6cfe505fa0 In the famous Meselson–Stahl experiment of 1958 he and Frank Stahl demonstrated through nitrogen isotope labeling that DNA is replicated semi-conservatively. In addition, Meselson, François Jacob, and Sydney Brenner

discovered the existence of messenger RNA in 1961. Meselson has investigated DNA repair in cells and how cells recognize and destroy foreign DNA, and, with... 6cfe505fa0 Crick was an important theoretical molecular biologist and played a crucial role in research related to revealing the helical structure of DNA. He is widely known for the use of the... 6cfe505fa0