

ORIGIN OF LIFE

HISTORY OF LIFE

- Earth is 4.5 billion years old
- Oldest rock is 3.8 billion years old o Contains isotopes of carbon o Indicates metabolic activity
- Oldest fossils
 - 3.5 billion years old
 - Stromatolites
 - Banded domes of sedimentary rock
 - Resemble layered mats of cyanobacteria today
- Probably photosynthetic o Probably not first life forms
- First life forms were NOT photosynthetic

ONE HYPOTHESIS

CONDITIONS ON EARTH	SCENARIO
<ul style="list-style-type: none"> • Atmosphere had little O₂ • Intense o Lightning • Volcanic activity • Meteorite bombardment • UV radiation 	<ol style="list-style-type: none"> 1. Abiotic synthesis of organic monomers 2. Abiotic synthesis of polymers 3. Formation of protobionts 4. Origin of hereditary material

ABIOTIC SYNTHESIS OF ORGANIC MONOMERS

OPARIN & HALDANE 1920S	MILLER & UREY 1953
<ul style="list-style-type: none"> • Worked independently • Postulated • Conditions on primitive Earth favored abiotic synthesis of organic material <ul style="list-style-type: none"> o Atmosphere <ul style="list-style-type: none"> ▪ Contained less O₂ ▪ Less oxidizing than today's ▪ More reducing than today's 	<ul style="list-style-type: none"> • Tested Oparin & Haldane hypothesis • Created conditions on early Earth in lab • Atmosphere - H₂O, H₂, CH₄, NH₃ • Added spark • Created organic material • Other labs have created <ul style="list-style-type: none"> o All 20 AA o Some sugars & lipids o Purine & pyrimidine bases o ATP

Origin Of Life Ap Biology Lab Answers

M Mosston



Origin Of Life Ap Biology Lab Answers:

Invitation to Biology Helena Curtis, N. Sue Barnes, 1994-02-15 This clearly written accurate and well illustrated introduction to biology seamlessly integrates the theme of evolution while offering expanded up to date coverage of genetic engineering the immune response embryological development and ecological concerns Report of the President of the Johns Hopkins University, Baltimore, Maryland Johns Hopkins University, 1877 *Life Atomic* Angela N. H. Creager, 2024-05-31 After World War II the US Atomic Energy Commission AEC began mass producing radioisotopes sending out nearly 64 000 shipments of radioactive materials to scientists and physicians by 1955 Even as the atomic bomb became the focus of Cold War anxiety radioisotopes represented the government's efforts to harness the power of the atom for peace advancing medicine domestic energy and foreign relations In *Life Atomic* Angela N H Creager tells the story of how these radioisotopes which were simultaneously scientific tools and political icons transformed biomedicine and ecology Government produced radioisotopes provided physicians with new tools for diagnosis and therapy specifically cancer therapy and enabled biologists to trace molecular transformations Yet the government's attempt to present radioisotopes as marvelous dividends of the atomic age was undercut in the 1950s by the fallout debates as scientists and citizens recognized the hazards of low level radiation Creager reveals that growing consciousness of the danger of radioactivity did not reduce the demand for radioisotopes at hospitals and laboratories but it did change their popular representation from a therapeutic agent to an environmental poison She then demonstrates how by the late twentieth century public fear of radioactivity overshadowed any appreciation of the positive consequences of the AEC's provision of radioisotopes for research and medicine **Annual Report of the President of the Johns Hopkins University, Baltimore, Maryland** Johns Hopkins University, 1874 The Biology of the Laboratory Rabbit Steven H. Weisbroth, Ronald E. Flatt, Alan L. Kraus, 2013-10-02 The *Biology of the Laboratory Rabbit* is a compendium of papers that discusses the use of the rabbit as an experimental substrate in the scientific process The collection describes normative biology research utilization and rabbit disease These papers emphasize naturally occurring diseases which affect the value of the rabbit as a research tool Some papers describe these effects and their impact for investigators engaged in laboratory experimental work on animal medicine Other papers tackle the value of certain rabbit diseases as models of considerable interest in comparative medicine Several papers discuss bacterial diseases viral diseases protozoal diseases arthropod parasites helminth parasites neoplastic diseases inherited diseases nutritional diseases metabolic traumatic mycotic and miscellaneous diseases of the rabbit One paper describes a number of diseases that man can acquire from domestic and laboratory rabbits These include tularemia which is endemic in wild rabbits and hares plague transmitted by fleas listeriosis rare in laboratory rabbit colonies salmonellosis from rabbit feces and *Pasteurella multocida* common in laboratory and domestic rabbits The paper notes that laboratory and domestic rabbits are not a major health hazard The compendium can benefit veterinarians the medically oriented investigator the

biologist the medical and chemical researcher and others whose work involve laboratory animal care **Readers' Guide to Periodical Literature** ,1963 **Scientific and Technical Aerospace Reports** ,1987 Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database **Global Perspectives on the Biology and Life History of the White Shark** Michael L. Domeier,2012-02-03 Inspired by the International White Shark Symposium in 2010 Global Perspectives on the Biology and Life History of the White Shark incorporates the most important contemporary research findings into a single peer reviewed book This beautifully illustrated reference represents a historic change in the context of White Shark *Carcharodon carcharias* *Foundations of Space Biology and Medicine* ,1975 *Foundations of Space Biology and Medicine: Space as a habitat* ,1975 **Resources in Education** ,1996 *Foundations of Space Biology and Medicine: Space medicine and biotechnology* ,1975 *Viral Tumorigenesis Report* , **Annual Report of the President** Johns Hopkins University,1876 **Report summaries** United States. Environmental Protection Agency,1983 **NOAA Technical Report NMFS.** ,1984 **Selected Water Resources Abstracts** ,1977 **Guide for the Care and Use of Laboratory Animals** Institute for Laboratory Animal Research,Commission on Life Sciences,Division on Earth and Life Studies,National Research Council,1996-08-06 A respected resource for decades the Guide for the Care and Use of Laboratory Animals has been revised by a committee of experts based on input from scientists and the public The Guide incorporates recent research on commonly used species including farm animals and includes extensive references It is organized around major components of animal use Institutional policies and responsibilities The committee discusses areas that require policy attention the role and function of the Institutional Animal Care and Use Committee protocols for animal care and use occupational health and safety personnel qualifications and other areas Animal environment husbandry and management The committee offers guidelines on how to design and run a management program addressing environment nutrition sanitation behavioral and social issues genetics nomenclature and more Veterinary care The committee discusses animal procurement and transportation disease and preventive medicine and surgery The Guide addresses pain recognition and relief and issues surrounding euthanasia Physical plant The committee identifies design and construction issues providing guidelines for animal room doors drainage noise control surgery and other areas The Guide for the Care and Use of Laboratory Animals provides a framework for the judgments required in the management of animal facilities a resource of proven value now updated and expanded This revision will be important to researchers animal care technicians facilities managers administrators at research institutions policymakers involved in research issues and animal welfare advocates

System of Fellowships ,1880 *The Subject Index to Periodicals* ,1946

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outcomes. Bringing up boys : Dobson, James C., 1936 Aug 25, 2020 — x, 269 pages ; 24 cm. One of the country's most respected parenting experts & bestselling author of Dare to Discipline, offers advice ... Raising Boys: Routine Panic - Part 1 (Transcript) James Dobson, interacting with the studio audience during his Bringing Up Boys ... Or call us toll free, (877) 732-6825. I pray that God will bless you in 2020 ... Bringing up boys : Dobson, James C., 1936 May 11, 2022 — Publication date: 2001 ; Topics: Parenting -- Religious aspects -- Christianity, Boys -- Religious life ; Publisher: Wheaton, Ill. : Tyndale House ... Bringing Up Boys: Dobson, James C. In the runaway bestseller Bringing Up Boys, Dr. Dobson draws from his experience as a child psychologist and family counselor, as well as extensive research, to ... Bringing up Boys - James Dobson.pdf Mar 17, 2022 — Online file sharing and storage - 10 GB free web space. Easy registration. Share your files easily with friends, family, and the world on ... Bringing Up Boys by James Dobson on Free Audio Book ... "Bringing Up Boys"-a must-read book for parents, teachers, social workers, youth leaders, counselors--anyone involved in the challenge of turning boys into ... Raising Boys - Part 1 with Dr. James Dobson's Family Talk Bringing Up Boys Sep 1, 2014 — Sensible advice and caring encouragement on raising boys from the nation's most trusted parenting authority, Dr. James Dobson. Bringing Up Boys Listen Free to Bringing Up Boys audiobook by James C. Dobson with a 30 Day Free Trial!Stream and download audiobooks to your computer, tablet and iOS and ... Bringing Up Boys by Dr. James Dobson Book In Bringing Up Boys, Dr. Dobson tackles questions and offers advice and encouragement based on a firm foundation of biblical principles. Wordsworth's Poetry and Prose This Norton Critical Edition presents a generous selection of William Wordsworth's poetry (including the thirteen-book Prelude of 1805) and prose works along ... Milton's Selected Poetry and Prose This Norton Critical Edition of Milton's Selected Poetry and Prose includes "Lycidas"—widely considered the greatest short poem in English—the great tragedy ... John Donne's Poetry: A Norton Critical Edition ... This Norton Edition is the definitive collection of Donne's poetry, and at a decent price. Not only have the poems been based on the best manuscripts but there ... Keats's Poetry and Prose: A Norton Critical Edition ... This edition offers extensive apparatus to help readers fully appreciate Keats's poetry and legacy, including an introduction, headnotes, explanatory ... The Norton Critical Edition of Wordsworth's Poetry and Prose This Norton Critical Edition presents a generous selection of William Wordsworth's poetry (including the thirteen-book Prelude of 1805) and prose works along ... Shelley's Poetry and Prose (Norton Critical Edition) This Second Edition is based on the authoritative texts established by Reiman and Fraistat for their scholarly edition, The Complete Poetry of Percy Bysshe ... WORDSWORTH'S POETRY AND PROSE (FIRST ... WORDSWORTH'S POETRY AND PROSE (FIRST EDITION) (NORTON CRITICAL EDITIONS) [REDSHELF](LIFETIME). Home » E-books & Codes · WORDSWORTH'S POETRY AND PROSE (FIRST ... Wordsworth's Poetry and Prose: A Norton Critical Edition ... This Norton Critical Edition presents a generous selection of William Wordsworth's poetry (including the thirteen-book Prelude of 1805) and prose works along ... Edmund Spenser's Poetry (Norton Critical Editions ... Edmund Spenser (c. 1552 - 1599) was an important English poet and

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