

Günther Witzany *Editor*

Viruses: Essential Agents of Life

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Mark Burgin, Gordana Dodig-crnkovic



Viruses Essential Agents Of Life:

Viruses: Essential Agents of Life Günther Witzany, 2012-11-13 A renaissance of virus research is taking centre stage in biology Empirical data from the last decade indicate the important roles of viruses both in the evolution of all life and as symbionts of host organisms There is increasing evidence that all cellular life is colonized by exogenous and or endogenous viruses in a non lytic but persistent lifestyle Viruses and viral parts form the most numerous genetic matter on this planet

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Biocommunication of Archaea Guenther Witzany, 2017-09-27 Archaea represent a third domain of life with unique properties not found in the other domains Archaea actively compete for environmental resources They perceive themselves and can distinguish between self and non self They process and evaluate available information and then modify their behaviour accordingly They assess their surroundings estimate how much energy they need for particular goals and then realize the optimum variant These highly diverse competences show us that this is possible owing to sign aling mediated communication processes within archaeal cells intra organismic between the same related and different archaeal species interorganismic and between archaea and nonarchaeal organisms transorganismic This is crucial in coordinating growth and development shape and dynamics Such communication must function both on the local level and between widely separated colony parts This allows archaea to coordinate appropriate response behaviors in a differentiated manner to their current developmental status and physiological influences This book will orientate further investigations on how archaeal ecosphere inhabitants communicate with each other to coordinate their behavioral patterns and whats the role of viruses in this highly dynamic interactional networks

Theoretical Information Studies: Information In The World Mark Burgin, Gordana Dodig-crnkovic, 2020-03-24 This is the first attempt to delineate the synthetic field of the theoretical study of information treating information as the basic phenomenon on the fundamental level of the world encompassing nature technology individuals and society The exploration of information is done within Info computational approaches to natural and social phenomena such as Bioinformatics Information Physics Informational Chemistry Computational Physics Cognitive and Social sciences with special emphasis on interdisciplinary crossdisciplinary and transdisciplinary knowledge The book presents results of collaboration across research fields within info computational and info structural frameworks in attempt to better theoretically and conceptually capture the phenomenon of information and its dynamics such as computation and communication as they appear on different levels of organization on different scales and in different contexts

The Oxford Handbook of Human Symbolic Evolution Nathalie Gontier, Andy Lock, Chris Sinha, 2024 The Oxford Handbook of Human

Symbolic Evolution explores the origins of our characteristically human abilities our ability to speak create images play music and read and write The book investigates how symbolization evolved in human evolution and how symbolism is expressed across the various areas of human life

Handbook of Astrobiology Vera M. Kolb,2018-12-07 Choice Recommended Title August 2019 Read an exclusive interview with Professor Vera Kolb here Astrobiology is the study of the origin evolution distribution and future of life on Earth This exciting and significant field of research also investigates the potential existence and search for extra terrestrial life in the Solar System and beyond This is the first handbook in this burgeoning and interdisciplinary field Edited by Vera Kolb a highly respected astrobiologist this comprehensive resource captures the history and current state of the field Rich in information and easy to use it assumes basic knowledge and provides answers to questions from practitioners and specialists in the field as well as providing key references for further study Features Fills an important gap in the market providing a comprehensive overview of the field Edited by an authority in the subject with chapters written by experts in the many diverse areas that comprise astrobiology Contains in depth and broad coverage of an exciting field that will only grow in importance in the decades ahead

Biocommunication: Sign-mediated Interactions Between Cells And Organisms Richard Gordon,Joseph Seckbach,2016-11-01 All coordination between cells organs and organisms depends on successful biocommunicative processes There are abundant cases of communication in the biological world both within intraspecific and between interspecific single cell and multicellular microorganisms and higher animal forms Split into two parts this book first looks at the history development and progress within the field of biocommunication The second part presents real life case studies and investigation into examples of biocommunication in the biological world Among the organisms covered are bacteria fungi plants terrestrial and marine animals including bonobos chimpanzees and dolphins as well as a new theory of communication between parts in developing embryos cybernetic embryos Contributions from international experts in the field provide up to date research and results while in depth analysis expands on these findings to pave the way for future discoveries As the first comprehensive review of its kind it is perfect for undergraduates graduates professionals and researchers in the field of life sciences

Epigenetics in Biological Communication Guenther Witzany,2024-06-19 Every cell tissue organ and organism is competent to use signs to exchange information reaching common coordinations and organisations of both single cell and group behavior These sign mediated interactions we term biological communication The regulatory system that works in development morphology cell fate and identity physiology genetic instructions immunity memory learning physical and mental disease depends on epigenetic marks The communication of cells persistent viruses and their defectives such as mobile genetic elements and RNA networks ensures both the transport of regulatory instructions and the reprogramming of these instructions But how are the different states of the epigenome orchestrated The epigenetic pathways respond to various signaling cues such as DNA methylation histone variants histone modifications chromatin structure nucleosome remodeling and epigenetic interactions Epigenetic signals are

responsible for the establishment maintenance and reversal of transcriptional states that are fundamental for the cell's ability to memorize past events such as changes in the external environment socio sphere or developmental cues External signals trigger changes in the epigenome allowing cells to respond dynamically Internal signals direct activities that are necessary for body maintenance and repairing damaged tissues and organs With the emergence of epigenetic memory organisms can fix historical and context dependent impressive experiences Evolution from now on learnt to learn Learning means organisms can avoid reproduction of always the same This is key to adaptation However inheritance of acquired characteristics is only one of the many examples of the explanatory power of epigenetics Behavioral epigenetics demonstrates the way in which environmental and social experiences produce individual differences in behaviour cognition personality and mental health This book assembles experts to outline the various motifs of all kinds of epigenetic regulation of cells throughout their lives

COVID-19 Pandemic - Philosophical Approaches Nicolae Sfetcu, 2020 The paper begins with a retrospective of the debates on the origin of life the virus or the cell The virus needs a cell for replication instead the cell is a more evolved form on the evolutionary scale of life In addition the study of viruses raises pressing conceptual and philosophical questions about their nature their classification and their place in the biological world The subject of pandemics is approached starting from the existentialism of Albert Camus and Sartre the replacement of the exclusion ritual with the disciplinary mechanism of Michel Foucault and about the Gaia hypothesis developed by James Lovelock and supported in the current pandemic by Bruno Latour The social dimensions of pandemics their connection to global warming which has led to an increase in infectious diseases and the deforestation of large areas which have caused viruses to migrate from their native area their reservoir are highlighted below The ethics of pandemics is approached from several philosophical points of view of which the most important in a crisis of such global dimensions is utilitarianism which involves maximizing benefits for society in direct conflict with the usual Kantian view of respect for people as individuals After a retrospective of the COVID 19 virus that caused the current pandemic its life cycle and its history with an emphasis on the philosophy of death the concept of biopower initially developed by Foucault is discussed with reference to the practice of modern states of control of the populations and the debate generated by Giorgio Agamben who states that what is manifested in this pandemic is the growing tendency to use the state of emergency as a normal paradigm of government An interesting and much debated approach is the one generated by the works of Slavoj Žižek who states that the current pandemic has led to the bankruptcy of the current barbaric capitalism wondering if the path that humanity will take is a neo communism Another important negative effect is desocialization with the conclusion of some philosophers that we cannot exist independently of our relationships with others that a person's humanity depends on the humanity of those around him The last section is dedicated to forecasting what the world will look like after the pandemic and there are already signs of a paradigm shift including the sudden disappearance of the wall ideology a cough was enough to make it suddenly impossible

to avoid the responsibility that every individual has it towards all living beings for the simple fact that he is part of this world and of the desire to be part of it The whole is always involved in part because everything is in a sense in everything and in nature there are no autonomous regions that are an exception The COVID 19 pandemic seems to restore the supremacy that once belonged to politics One of the virtues of the virus is its ability to generate a more sober idea of freedom to be free means to do what needs to be done in a specific situation

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Pepper Virome Akhtar Ali,R.K. Gaur,2024-04-25 Pepper Virome Molecular Biology Diagnostics and Management presents detailed information about the plant viruses that infect pepper worldwide providing crucial insights for both the scientific community and producers Understanding the nature of the viruses their transmission methods and possible sources of resistance in order to minimize the yield losses as well as to reduce the spread of these viruses to new locations or countries is of global importance Pepper is an important commodity worldwide It is cultivated for both fresh produce and for processing industry as a spice However various diseases affect pepper production and cause significant yield losses in pepper yield The increasing outbreaks of virus species infecting Capsicum spp have become a major problem for growers A combination of factors including expansion and intensification of pepper cultivation availability of volunteer hosts abundance of insect vectors and climate change have all contributed to the issue Pepper Virome provides in depth information on both the viruses infecting peppers and eco friendly management measures to decrease the rate of spread of viruses Addressing the need for increased international collaboration and exchange of pepper germplasm these insights will also facilitate the selection and breeding for improved Capsicum spp adapted to local conditions and uses Focuses on symptomatology transmission and epidemiology of pepper viruses Reveals the impact on host yield and virus vector interactions Evaluates management strategies against viruses and how they have evolved

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