

Explain A Lysogenic Viral Infection

Endogenization integrase recombinases and follow a lysogenic life cycle within brown algae. Epigenetic silencing of endogenized viral DNA can reduce fitness cost to the

== Discovery and impact ==

Phycodnaviridae Phycodnaviridae play important ecological roles by regulating the growth and productivity of their algal hosts. Phycodnaviridae cause death and lysis of freshwater and marine algal. Heterosigma akashiwo virus (HaV) has been suggested for use as a microbial agent to prevent the recurrence of toxic red tides produced by this algal species. pentamer may be responsible for digesting the host cell wall during viral infection. The species Phaeocystis puchetii virus from the genus Prymnesiovirus Phycodnaviridae is a family of large (100–560 kb) double-stranded DNA viruses that infect marine or freshwater eukaryotic algae. Algal species such Heterosigma akashiwo and the genus Chrysochromulina can form dense blooms which can be damaging to fisheries, resulting in losses in the aquaculture industry. Evidence was published in 2014 suggesting that specific strains of Phycodnaviridae might infect humans rather than just algal species, as was previously believed. Most genera under this family enter the host cell by cell receptor endocytosis and replicate in the nucleus. As of 2014, there were 33 species in this family, divided among 6 genera. This family belongs to a super-group of large viruses known as nucleocytoplasmic large DNA viruses. Viruses within this family have a similar morphology, with an icosahedral capsid (polyhedron with 20 faces)

== A == Virus latency is not to be confused with clinical latency during the incubation period when a virus is not dormant. == Mechanisms == When infected, a host cell is often forced to rapidly produce thousands of copies of the original virus. When not inside an infected cell or in the process of infecting a cell, viruses exist in the form of independent viral particles, or virions, consisting of (i) genetic material, i.e., long molecules of DNA or RNA that encode the structure of the proteins by which the virus acts; (ii) a protein coat, the capsid, which surrounds and protects the genetic material; and in some cases (iii) an outside envelope of lipids. The shapes of these virus particles range from simple helical and icosahedral forms to more complex structures. Most virus species... Caudoviruses are one of the most abundant group of viruses on Earth and are ubiquitous worldwide. They infect prokaryotes and are a major cause of death in them, which contributes to the recycling of organic material in a process called viral shunt. Caudoviruses have been used as model organisms to study biological processes and as a form of therapy to treat bacterial infections. Herpesviruses infect animals and are commonly associated with diseases such as herpes and chickenpox. Mirusviruses infect microscopic eukaryotes and...

Viral shunt The DOM recycled by the viral shunt pathway is comparable to the amount generated by the other main sources of marine DOM. The viral shunt is a mechanism that prevents marine microbial particulate organic matter (POM) from migrating up trophic levels by recycling them into The viral shunt is a mechanism that

prevents marine microbial particulate organic matter (POM) from migrating up trophic levels by recycling them into dissolved organic matter (DOM), which can be readily taken up by microorganisms 4b29cc42b7

Viruses can easily infect microorganisms in the microbial loop due to their relative abundance compared to microbes. Prokaryotic and eukaryotic mortality contribute to carbon nutrient recycling through cell lysis. There is evidence as well of nitrogen (specifically ammonium) regeneration. This nutrient recycling helps stimulate microbial growth. As much as 25% of the primary production from phytoplankton in the global oceans may be recycled within the microbial loop through the viral shunt.

4b29cc42b7 The first described cyanophage LPP-1, was reported by Safferman...

Bacteriophage Maintaining an appropriate balance in the amounts of each of these proteins produced during viral infection appears A bacteriophage (), also known informally as a phage (), is a virus that infects and replicates within bacteria. Their genomes may encode as few as four genes (e. The term is derived from Ancient Greek φαγεῖν (phagein) 'to devour' and bacteria. Phages replicate within the bacterium following the injection of their genome into its cytoplasm. Bacteriophages are composed of proteins that encapsulate a DNA or RNA genome, and may have structures that are either simple or elaborate. other in a characteristic sequence. g. MS2) and as many as hundreds of genes 4b29cc42b7

Bacteriophages are among the most common and diverse entities in the biosphere. Bacteriophages are ubiquitous viruses, found wherever bacteria exist. It is estimated there are more than 10³¹ bacteriophages on the planet, more than every living organism on Earth, including bacteria, combined. Viruses are the most abundant biological entity in the water column of the world's oceans, and the second largest component of biomass after prokaryotes, where up to 9×10⁸ virions per millilitre have been found in microbial mats at the surface, and up to 70% of marine bacteria may be infected by bacteriophages. 4b29cc42b7

Duplodnaviria There are three groups of viruses in the realm: caudoviruses, herpesviruses, and the putative group mirusviruses. whereby infection leads directly to virion formation and exit from the host cell, and the lysogenic cycle, whereby a latent infection retains the viral DNA Duplodnaviria is a realm of viruses that includes all double-stranded DNA viruses that encode the HK97 fold major capsid protein. The HK97 fold major capsid protein (HK97 MCP) is the primary component of the viral capsid, which stores the viral deoxyribonucleic acid (DNA). Viruses in the realm also share a number of other characteristics, such as an icosahedral capsid, an opening in the capsid called a portal, a protease enzyme that empties the inside of the capsid prior to DNA packaging, and a terminase enzyme that packages viral DNA into the capsid 4b29cc42b7

== Ecological paradox == 4b29cc42b7 Bacteriophages were used from the 1920s as an alternative to antibiotics...

Paradox of the plankton When a phytoplankton species enters a bloom period, cell In aquatic biology, the paradox of the plankton describes the situation in which a limited range of resources supports an unexpectedly wide range of plankton species, apparently flouting the competitive exclusion principle, which holds that when two species compete for the same resource, one will be driven to extinction. Viruses can also enter a lysogenic cycle, in which the virus writes its DNA into the host genome 4b29cc42b7

Virus latency (or viral latency) is the ability of a pathogenic virus to lie dormant (latent) within a cell, denoted as the lysogenic part of the viral life cycle. However, the viral genome is not eradicated. The virus can reactivate and begin producing large amounts of viral progeny (the lytic part of the viral life cycle) without the host becoming reinfected by new outside virus, and stays within the host indefinitely. Latency is the phase in certain viruses' life cycles in which, after initial infection, proliferation of virus particles ceases. A latent viral infection is a type of persistent viral infection which is distinguished from a chronic viral infection.

Virus The study of viruses is known as virology, a subspeciality of microbiology. Since the first discovery of a virus, the tobacco mosaic virus, in the 1890s, more than 16,000 of the millions of virus species have been described in detail. Viruses infect all life forms, from animals and plants to microorganisms, including bacteria and archaea. undergo a lysogenic cycle where the viral genome is incorporated by genetic recombination into a specific place in the host's chromosome. Viruses are found in almost every ecosystem on Earth and are the most numerous type of biological entity. The viral genome A virus is a submicroscopic infectious agent that replicates only inside the living cells of an organism.

Cyanophage Viral nucleic-acid replication and immediate synthesis of virus-encoded Cyanophages are viruses that infect cyanobacteria, also known as Cyanophyta or blue-green algae. Cyanophages infect a wide range of cyanobacteria and are key regulators of the cyanobacterial populations in aquatic environments, and may aid in the prevention of cyanobacterial blooms in freshwater and marine ecosystems. Infection by these viruses is highly prevalent in cells belonging to *Synechococcus* spp. Cyanophages can be found in both freshwater and marine environments. Although cyanobacteria metabolize photoautotrophically like eukaryotic plants, they have prokaryotic cell structure. In marine environments, where up to 12% of cells belonging to marine cyanobacterial cells have been reported to contain mature phage particles. Marine and freshwater cyanophages have icosahedral heads, which contain double-stranded DNA, attached to a tail by connector proteins. These blooms can pose a danger to humans and other animals, particularly in eutrophic freshwater lakes. Cyanobacteria are a phylum of bacteria that obtain their energy through the process of photosynthesis. Cyanophage replication has two dominant cycles: the lytic cycle and the lysogenic cycle. The size of the head and tail vary among species of cyanophages.

The paradox of the plankton results from the clash between the observed diversity of plankton and the competitive exclusion principle, also known as Gause's law, which states that, when two species compete for the same resource, ultimately only one will persist and the other will be driven to extinction. Coexistence between two such species is impossible because the dominant one will inevitably deplete the shared resources, thus decimating the inferior population. Phytoplankton life is diverse at all phylogenetic levels despite the limited range of resources (e.g. light, nitrate, phosphate, silicic acid, iron) for which they compete amongst themselves. The paradox of the plankton was originally described in 1961 by G. Evelyn Hutchinson, who proposed that the paradox could be resolved by factors such as vertical gradients of light or turbulence...

Glossary of virology viral matrix viral particle See virion. viral infection. viral plaque viral protein viral shedding viral transformation viral vector viremia virion A This glossary of virology is a list of definitions of terms and concepts used in virology, the study of viruses, particularly in the description of viruses and their actions. Related fields include microbiology, molecular biology, and genetics.

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