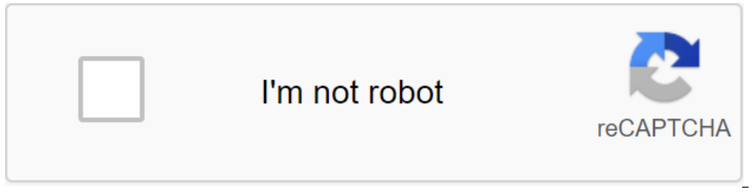

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Obligate intracellular parasites consisting of a protein only

Viruses are usually described as mandatory intracellular parasites, acellular infectious agents that require the presence of host cells in order to multiply. Viruses that have been found to infect all types of cells - humans, animals, plants, bacteria, yeast, archaea, protozoa ... some scientists even claim that they have found a virus that infects other viruses! But it won't happen without any cellular help. Virus Characteristics Viruses can be extremely simple in design, consisting of nucleic acid surrounded by a protein coat known as capsid. Capsid consists of small protein components called capsomers. The capsid genome combination is called nucleocapcide. Viruses can also have additional components, with the most common being an additional membranous layer that surrounds the nucleocapside, called an envelope. The envelope is actually purchased from the nuclear or plasma membrane of an infected host cell and then modified using viral proteins called peplomers. Some viruses contain viral enzymes that are necessary to infect host cells and are encoded in the viral genome. A complete virus, with all the components needed for host cell infection, is called virion. Viral Characteristics, An Image Created by Ben Taylor, Public Domain, Via Wikipedia's Common Viral Genome While cells contain double DNA for their genome, viruses are not limited to this form. Although there are dsDNA viruses, there are also viruses with single strands of DNA (ssDNA), two-jet RNA (dsRNA), and single-jet RNA (ssRNA). In this latter category, ssRNA can either make positive sense (SsRNA, meaning it can trancribe a message like mRNA) or it can be a negative meaning (-ssRNA, indicating that it complements mRNA). Some viruses even start with one form of nucleic acid in nucleocapside, and then convert it into another form during replication. Viral structure Viral nucleocapsides come in two main forms, although the overall appearance of the virus can be altered by the presence of an envelope, if any. Spiral viruses have an elongated tubular structure, with capsomers positioned helically around the spiral gene. Icoahedral viruses have a spherical shape, with an icosahedar symmetry consisting of 20 triangular faces. Some viruses do not fit into any of the two previous categories because they are so unusual in design or components, so there is a third category known as complex viruses. Examples include a dexvirus with a brick exterior shape and a complex internal structure, as well as a bacteriophage with tail fibers attached to Head. Virus replication cycle While the virus replication cycle can vary from virus to virus, there is a general picture, picture, be described, consisting of five steps: Appendix - virion is attached to the correct host cell. Infiltration or viral infiltration - Virus or viral nucleic acid gets entry into the cell. Synthesis - viral proteins and copies of nucleic acid are produced by the mechanism of cells. Build - Viruses are made from viral components. Release - newly formed vignons are released from the cell. Attachment outside the host cell, viruses are inert or metabolically inactive. Thus, the collision of virion with the corresponding host cell is a random event. The attachment itself is very specific, between the molecules on the outside of the virus and the receptors on the surface of the host cell. This explains the specifics of viruses only for infecting certain cell types or specific hosts. Infiltration or viral entry Many non-developing (or naked) viruses inject their nucleic acid into the host cell, leaving an empty capsule outside. This process is called penetration and is common with bacteriophage, viruses that infect bacteria. With eukaryotic viruses, it is more likely for the entire capsid to gain entry to the cell, with capsid removed in the cytoplasm. The unvaccinated eukaryotic virus often enters through endocytosis, where the host cell is forced to absorb the capsid as a result of endocytic vesicula. The shrouded eukaryotic virus gets an entrance for its nucleocappside when the viral envelope merges with the host cell membrane, pushing nucleocapside past the cell membrane. If the whole nucleocapside is brought into the cell, then there is a process of uncoating to deprive the capsid and release the viral genome. The synthesis of the Synthesis Stage is largely dictated by the type of viral genome, as genomes that differ from the dsDNA cell genome can include complex viral strategies for genome replication and protein synthesis. Viral specific enzymes, such as RNA-dependent RNA polymerases, may be required to continue the replication process. Protein production is tightly controlled to ensure that the components are made at the right time in viral development. The build complexity of the viral build depends on the virus being done. The simplest virus has a capsid consisting of 3 different types of proteins, which are self-assembled with little difficulty. The most complex virus consists of more than 60 different proteins that must come together in a certain order. These viruses often use multiple assembly lines to create different viral structures and then use scaffolding proteins to put all the viral components together in an organized manner. Release most viruses to lick their host cells at the end of the replication, allowing all newly formed virions to be released into the environment. Another possibility common to shrouded viruses is a budding virus where one virus from the cell at a time. The cell membrane changes by inserting viral proteins, with nucleocapsydy pushing out through this modified part of the membrane, allowing it to purchase an envelope. John Kellogg's active viral life cycle Is Via OER at Oregon State University Bacteriophage Viruses that infect bacteria known as bacteriophage or phage. Virulent phage is the one that always licks the host cell at the end of the replication, following the five steps described above. This is called the lytic replication cycle. There are also moderate phage viruses that have two options in regards to their replication. Option 1 is to mimic the virulent phage by following five steps of replication and licking the host cell at the end, called the lithium cycle. But the moderate phage differs from the virulent phages in that they have another choice: option 2, where they stay in the host cage without destroying it. This process is known as lysogenesis or lysogenic replication cycle. The phage, which uses lysogenia, still goes through the first two stages of a typical cycle of replication, attachment and penetration. Once the viral DNA has been inserted into the cell, it integrates with the host's DNA, forming a profag. The infected bacterium is called lysogenic or lysogenic bacterium. In this state, the virus has a stable relationship with its host, where it does not interfere with the metabolism of host cells or reproduction. The host cell is immune from re-infection with the same virus. Exposure to stressful conditions (i.e. UV radiation) causes induction, in which viral DNA excises from the DNA of the host cell. This event triggers the remaining steps of the lytic cycle, synthesis, maturation and release, leading to the lysion of the host cell and the release of newly formed virions. The lithiuc cycle versus the lysogenic replication cycle. OpenStax, Viral Infections and Hosts. OpenStax CNX. April 11, 2013 3. So, what dictates the type of replication that will be used by a moderate phage? If there are many host cells around, it is likely that a moderate phage will participate in a lytic replication cycle, leading to a significant increase in viral production. If the host cells are scarce, moderate phage is more likely to enter the lysogenia, allowing the virus to survive until the number of host cells increases. The same is true if the number of phages in the environment far exceeds the host cells, since foxogenicity will allow the numbers of host cells to rebound, providing long-term viral survival. Lysogenes may benefit from lysogenia as well, as this can lead to lysiogenic transformation, a situation where the development of promag leads to a change in the host's phenotype. One of the best examples of this for the bacterium Corynebacterium diphtheria, the causal agent Diphtheria. The toxin of diphtheria that causes the disease is encoded in the phage genome, so that only C. diphtheria lyagens cause diphtheria. Eukaryotic viruses of eukaryotic viruses can cause one of four different results for their host cells. The most common result is the lyses of host cells, resulting in a dangerous infection (essentially a lithiuc replication cycle seen in phage). Some viruses can cause a hidden infection by peacefully presenting host cells for years (just like a moderate phage during lysogenesis). Some shrouded eukaryotic viruses can also be released one at a time from the infected host cell, in a type of beginner process, causing a permanent infection. Finally, some eukaryotic viruses can cause the host cell to turn into a malignant or cancerous cell, a mechanism known as transformation. Viruses and cancer there are many different causes of cancer, or unregulated cell growth and reproduction. Some known causes include exposure to certain chemicals or UV radiation. There are also certain viruses that are known to be associated with the development of cancer. These viruses are called oncoviruses. Oncoviruses can cause cancer by producing proteins that bind to host proteins known as tumor suppressor proteins that function to regulate cell growth and trigger programmed cell death if necessary. If tumor suppressor proteins are inactivated by viral proteins, the cells get out of control, leading to the development of tumors and metastases, where cells spread throughout the body. virus, obligatory intracellular parasite, capsid, bacteriophage, capsomer, nucleocapside, envelope, ashlomer, virion, dsDNA, ssDNA, dsRNA, SsRNA, -ssRNA, helicular viruses, icosahedral viruses, complex viruses, attachment, penetration, viral input, synthesis, assembly, release, naked virus, endocytosis, budding, bacteriophage, phage, virulent phage, lyth cycle, moderate phage, lysogenium, lysogen cycle, profage, lysogen, lysogenic bacterium, induction, lysogen conversion, virulent infection, Proteins.

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