

Problem Based Microbiology 1e

Clostridium botulinum

in the United States". *Aquaculture*. 27 (1): 1-11. Bibcode:1982Aquac..27....1E. doi:10.1016/0044-8486(82)90104-1. Eklund MW, Poysky FT, Peterson ME, Peck

Clostridium botulinum is a gram-positive, rod-shaped, anaerobic, spore-forming, motile bacterium with the ability to produce botulinum toxin, which is a neurotoxin.

C. botulinum is a diverse group of aerobic bacteria. Initially, they were grouped together by their ability to produce botulinum toxin and are now known as four distinct groups, C. botulinum groups I-IV. Along with some strains of Clostridium butyricum and Clostridium baratii, these bacteria all produce the toxin.

Botulinum toxin can cause botulism, a severe flaccid paralytic disease in humans and other animals, and is the most potent toxin known in scientific literature, natural or synthetic, with a lethal dose of 1.3-2.1 ng/kg in humans.

C. botulinum is commonly associated with bulging canned food; bulging, misshapen cans can...

Archimedean spiral

orbit". *Nature Astronomy*. 1 (3): 0060. arXiv:1704.00449. Bibcode:2017NatAs...1E..60K. doi:10.1038/s41550-017-0060. S2CID 119433782. Wikimedia Commons has

The Archimedean spiral (also known as Archimedes' spiral, the arithmetic spiral) is a spiral named after the 3rd-century BC Greek mathematician Archimedes. The term Archimedean spiral is sometimes used to refer to the more general class of spirals of this type (see below), in contrast to Archimedes' spiral (the specific arithmetic spiral of Archimedes). It is the locus corresponding to the locations over time of a point moving away from a fixed point with a constant speed along a line that rotates with constant angular velocity. Equivalently, in polar coordinates (r, θ) it can be described by the equation

r

=

b

·

θ

$\displaystyle r=b\cdot \theta \}$

with real number b. Changing the parameter b controls the distance between...

Orders of magnitude (numbers)

"Microbial Ecology of the Gastrointestinal Tract". *Annual Review of Microbiology*. 31: 107-33. doi:10.1146/annurev.mi.31.100177.000543. PMID 334036. Berg

This list contains selected positive numbers in increasing order, including counts of things, dimensionless quantities and probabilities. Each number is given a name in the short scale, which is used in English-speaking countries, as well as a name in the long scale, which is used in some of the countries that do not have English as their national language.

TRAPPIST-1

states. Based on observations of its Lyman-alpha radiation emissions, TRAPPIST-1e may be losing hydrogen at a rate of 0.6×10^7 g/s. TRAPPIST-1e is in a

TRAPPIST-1 is an ultra-cool red dwarf star with seven known planets. It lies in the constellation Aquarius approximately 40.66 light-years away from Earth, and it has a surface temperature of about 2,566 K (2,290 °C; 4,160 °F). Its radius is slightly larger than Jupiter's and it has a mass of about 9% of the Sun. It is estimated to be 7.6 billion years old, making it older than the Solar System. The discovery of the star was first published in 2000.

Observations in 2016 from TRAPPIST-South (Transiting Planets and Planetesimals Small Telescope project) at La Silla Observatory in Chile and other telescopes led to the discovery of two terrestrial planets in orbit around TRAPPIST-1. In 2017, further analysis of the original observations identified five more terrestrial planets. The seven planets...

Essential gene

Streptococcus sanguinis Scientific Reports. 1 (1): 125. Bibcode:2011NatSR...1E.125X. doi:10.1038/srep00125. ISSN 2045-2322. PMC 3216606. PMID 22355642. Zhang

Essential genes are indispensable genes for organisms to grow and reproduce offspring under certain environment. However, being essential is highly dependent on the circumstances in which an organism lives. For instance, a gene required to digest starch is only essential if starch is the only source of energy. Recently, systematic attempts have been made to identify those genes that are absolutely required to maintain life, provided that all nutrients are available. Such experiments have led to the conclusion that the absolutely required number of genes for bacteria is on the order of about 250–300. Essential genes of single-celled organisms encode proteins for three basic functions including genetic information processing, cell envelopes and energy production. Those gene functions are used...

Citizen science

Australia Conservation Science and Practice. 1 (10). Bibcode:2019ConSP...1E.100S. doi:10.1111/csp2.100. ISSN 2578-4854. S2CID 202327827. Doyle, Cathal;

The term citizen science (synonymous to terms like community science, crowd science, crowd-sourced science, civic science, participatory monitoring, or volunteer monitoring) is research conducted with participation from the general public, or amateur/nonprofessional researchers or participants of science, social science and many other disciplines. There are variations in the exact definition of citizen science, with different individuals and organizations having their own specific interpretations of what citizen science encompasses. Citizen science is used in a wide range of areas of study including ecology, biology and conservation, health and medical research, astronomy, media and communications and information science.

There are different applications and functions of "citizen science" in...

Antarctica

Island, Antarctica Cretaceous Research. 101: 1–16. Bibcode:2019CrRes.101....1E. doi:10.1016/j.cretres.2019.04.003. S2CID 146325060. Leslie, Mitch (December

Antarctica () is Earth's southernmost and least-populated continent. Situated almost entirely south of the Antarctic Circle and surrounded by the Southern Ocean (also known as the Antarctic Ocean), it contains the geographic South Pole. Antarctica is the fifth-largest continent, being about 40% larger than Europe, and has an area of 14,200,000 km² (5,500,000 sq mi). Most of Antarctica is covered by the Antarctic ice sheet, with an average thickness of 1.9 km (1.2 mi).

Antarctica is, on average, the coldest, driest, and windiest of the continents, and it has the highest average elevation. It is mainly a polar desert, with annual precipitation of over 200 mm (8 in) along the coast and far less inland. About 70% of the world's freshwater reserves are frozen in Antarctica, which, if melted, would...

CCR5

(December 2004). "HIV and the CCR5-Delta32 resistance allele". FEMS Microbiology Letters. 241 (1): 1–12. doi:10.1016/j.femsle.2004.09.040. PMID 15556703

C-C chemokine receptor type 5, also known as CCR5 or CD195, is a protein on the surface of white blood cells that is involved in the immune system as it acts as a receptor for chemokines.

In humans, the CCR5 gene that encodes the CCR5 protein is located on the short (p) arm at position 21 on chromosome 3. Certain populations have inherited the Delta 32 mutation,

resulting in the genetic deletion of a portion of the CCR5 gene. Homozygous carriers of this mutation are resistant to infection by macrophage-tropic (M-tropic) strains of HIV-1.

Major prion protein

Weissmann C (November 2004). *"The state of the prion"*. *Nature Reviews. Microbiology*. 2 (11): 861–871. doi:10.1038/nrmicro1025. PMID 15494743. S2CID 20992257

The major prion protein (PrP) is encoded in the human body by the PRNP gene also known as CD230 (cluster of differentiation 230). Expression of the protein is most prominent in the nervous system but occurs in many other tissues throughout the body.

The protein can exist in multiple isoforms: the normal PrP^C form, and the protease-resistant form designated PrP^{Res} such as the disease-causing PrP^{Sc} (scrapie) and an isoform located in mitochondria. The misfolded version PrP^{Sc} is associated with a variety of uniformly fatal neurodegenerative diseases in humans and nonhuman species. In nonhuman species these include ovine scrapie, bovine spongiform encephalopathy (BSE, mad cow disease), feline spongiform encephalopathy, transmissible mink encephalopathy (TME), exotic ungulate encephalopathy, chronic...

Toll-like receptor 4

modifications in commensals and pathogens". *International Journal of Medical Microbiology*. 306 (5): 290–301. doi:10.1016/j.ijmm.2016.03.001. PMID 27009633. Kelley

Toll-like receptor 4 (TLR4), also designated as CD284 (cluster of differentiation 284), is a key activator of the innate immune response and plays a central role in the fight against bacterial infections. TLR4 is a transmembrane protein of approximately 95 kDa that is encoded by the TLR4 gene.

TLR4 belongs to the toll-like receptor family which is representative of the pattern recognition receptors (PRR), so named for their ability to recognize evolutionarily conserved components of microorganisms (bacteria, viruses, fungi and parasites) called pathogen-associated molecular patterns (PAMPs). The recognition of a PAMP by a PRR triggers rapid activation of the innate immunity essential to fight infectious diseases.

TLR4 is expressed in immune cells mainly of myeloid origin, including monocytes...

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https://uk.fulldoc.me/pub/gi162609/7312833G6I225204/the_chicken_from_minsk_and_99_other-infuriatingly_challenging-brain-teasers_from-the-great-russian_tradition_of-math_and-science.pdf

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