I'm not robot
reCAPTCHA
Continue

Klasifikasi bacillus subtilis pdf

This article is about the bacterial genus. For the bacterial class, see Bacilli. For stem-shaped bacteria in general, see Bacillus (shape). For the insect genus, see Bacillus (insect). Genus of the bacterium Bacillus Bacillus subtilis, scientific classification stained Domain: Phylum bacterium: Firmicutes Class: Bacilli Order: Bacillales Family: Bacillaceae Genus: BacillusCohn, 1872[1] Species See bacillus text (Latin stick) is a genus of gram-positive bacteria in the form of stick, a member of the phylum Firmicutes, with 266 named species. The term is also used to describe the shape (rod) of certain bacteria; and the plural Bacilli is the name of the class of bacteria to which this genus belongs. Bacillus species can be mandatory aerobes: oxygen-dependent; or facultative anaerobic: having the ability to continue living in the absence of oxygen. The species of cultured Bacillus test positive for the catalase enzyme if oxygen has been used or is present. [2] Bacillus can be reduced to ovaisal endospores and can remain in this dormant state for years. The endospore of a species from Morocco is reported to have survived to be heated to 420 °C.[3] The formation of the endopore is usually triggered by the lack of nutrients: the bacterium divides within its cell wall, and one side then swallows the other. They are not true spores (i.e. not a offspring). [4] The formation of endospore originally defined the genus, but not all of these species are closely related, and many species have been moved to other genera of the Firmicutes. [5] Only one endopore is formed per cell. Spores are resistant to heat, cold, radiation, profication and disinfectants. Bacillus anthracis needs oxygen to sporulate; this restriction has important consequences for epidemiology and control. In vivo, B. anthracis produces a polypeptide capsule (polyglutamic acid) that protects it from phagocytosis. The genera Bacillus and Clostridium are the family Bacillaceae. The species are identified by morphological and biochemical criteria. [6] Because the spores of many Bacillus species are resistant to heat, radiation, disinfectants, and desiccation, they are difficult to eliminate from medical and pharmaceutical materials and are a frequent cause of contamination. Not only are they resistant to heat, radiation, etc., but they are also resistant to chemicals such as antibiotics. [7] This resistance allows them to survive for many years and especially in a controlled environment. [8] Bacillus species are well known in the food industries as problematic organisms of deterioration. [6] In the ubiquitous nature, Bacillus includes both free-living (non-parasitic) species and two parasitic pathogenic species. These two species of Bacillus are medically significant: B. anthracis causes anthrax; and B. cereus causes food poisoning. Many species of Bacillus can produce abundant enzymes, which are used in various industries, such as in the production of alpha amylase used in starch hydrolysis and protease protease subtilisin protease detergents. B. subtilis is a valuable model for bacterial research. Some bacillus species may synthesize and secrete lipopeptides, in particular surfactins and mycosubtilins. [10] Cell wall structure Bacillus cell wall is a structure on the outside of the cell that forms the second barrier between the bacteria and the environment, and at the same time maintains the shape of the rod and supports the pressure generated by the cell's turgor. The cell wall is made of teicoic and teiqueuronic acids. B. subtilis is the first bacterium for which the role of a cell-shaped cytoskeleton and peptidoglycan synthesis has been identified and for which the entire set of stimulating enzymes has been localized. The role of the cytoskeleton in generating and maintaining the shape is important. Bacillus species are stick-shaped aerobic bacteria, endopore-shaped or facultatively anaerobic, gram-positive bacteria; in some species crops can become Gram-negative with age. The many species of the genus exhibit a wide range of physiological abilities that allow them to live in all natural environments. Only one endospore is formed per cell. Spores are resistant to heat, cold, radiation, profication and disinfectants. [6] Origin of the name Bacillus was named in 1835 by Christian Gottfried Ehrenberg, to contain stick-shaped bacteria (bacillus). He was seven years old before called bacteria of the genus. Bacillus was later altered by Ferdinand Cohn to describe them as anaerobic, gram-positive, aerobic or facultatively anaerobic bacteria. [1] Like other genera associated with the early history of microbiology, such as Pseudomonas and Vibrio, the 266 species of Bacillus are ubiquitous. [11] The genus has a great ribosomal diversity 16S. Isolation and identification An easy way to isolate Bacillus species is by placing non-sterchium soil in a test tube with water, shaking, putting in molten mannitol salt agar and incubating at room temperature for at least one day. Cultivated colonies are usually large, scattered and irregularly shaped. Under the microscope, bacilli cells appear as stems, and a substantial part of the cells usually contain overeal endospores at one end, making them bulge. Phylogeny Three proposals were presented as representing the phylogeny of the genus Bacillus. The first proposal, presented in 2003, is a specific study of Bacillus, with greater diversity covered by 16S and ITS regions. Divides gender into 10 groups. This includes the nested genera Paenibacillus, Brevibacillus, Geobacillus, Marinibacillus and Virgibacillus. [12] The second proposal, presented in 2008,[13] built a 16S tree (and 23S if available) of all validated species. [15] The genus Bacillus contains a very large number of nested rates and mainly in 16S and 23S. It is paraphylactic parapletic for lactobacillales (Lactobacillus, Staphylococcus, Listeria, etc.), due to Bacillus coahuilensis and others. A third third presented in 2010, it was a genetic concatenation study, and found results similar to the 2008 proposal, but with a much more limited number of species in terms of groups. [16] (This scheme used Listeria as an outgroup, so in the light of the ARB tree, it can be inside out). A clade, formed by Bacillus anthracis, Bacillus cereus, Bacillus mycoides, Bacillus pseudomycoides, Bacillus thuringiensis and Bacillus weihenstephanensis under the classification standards of 2011, must be a single species (within 97% 16S identity), but for medical reasons, are considered separate species[17]:34-35 (a question also present for four species of Shigella and Escherichia coli). [18] Bacillus phylogenetics Root pathogenic Bacillus weihenstephanensis Bacillus cereus/thuringiensis/anthracis soil Bacillus pumilus Bacillus subtilis Bacillus licheniformis benthic Geobacillus kaustophilus aquatic Bacillus coahuilensis Bacillus sp. m3-13 Bacillus sp. NRRLB-14911 benthic Oceanobacillus iheyensis halophiles Bacillus halodurans Bacillus clausii Phylogeny of the genus Bacillus according to [16] Species B. acidiceler B. acidicola B. acidiproducens B. acidocaldarius B. acidoterrestris B. aeolius B. aerius B. aerophilus B. agaradhaerens B. agri B. aidingensis B. akibai B. alcalophilus B. algicola B. alginolyticus B. alkalidiazotrophicus B. alkalinitrilicus B. alkalisediminis B. alkalitelluris B. altitudinis B. alveayuensis B. alvei B. amyloliquefaciens B. a. subsp. Amyloliquefaciens B. a. subsp. plantarum B. aminovorans[19] B. amylolyticus B. andreesenii B. aneurinilyticus B. anthracis B. aquimaris B. arenosi B. arseniciselenatis B. arsenicus B. aurantiacus B. arvi B. aryabhattai B. asahii B. atrophaeus B. axarquiensis B. azotofixans B. azotoformans B. badius B. barbaricus B. bataviensis B. beijingensis B. benzoevorans B. beringensis B. berkeleyi B. beveridgei B. bogoriensis B. boroniphilus B. borstelensis B. brevis Migula B. butanolivorans B. canaveralius B. carboniphilus B. cecembensis B. cellulosilyticus B. centrosporus B. cereus B. chagannorensis B. chitinolyticus B. chondroitinus B. choshinensis B. chungangensis B. cibi B. circulans B. clarkii B. clausii B. coagulans B. coahuilensis B. cohnii B. composti B. curdlanolyticus B. cycloheptanicus B. cytotoxicus B. daliensis B. decisifrondis B. decolorationis B. deserti B. dipsosauri B. drentensis B. edaphicus B. ehimensis B. eiseniae B. enclensis B. endophyticus B. endoradicis B. farraginis B. fastidiosus B. fengqiuensis B. firmus B. flexus B. foraminis B. fordii B. formosus B. fortis B. fumarioli B. funiculus B. fusiformis B. galactophilus B. galactosidilyticus B. galliciensis B. gelatini B. gibsonii B. ginsengi B. ginsengihumi B. ginsengisoli B. glucanolyticus B. gordonae B. gottheilii B. graminis B. halmapalus B. haloalkaliphilus B. halochares B. halodenitrificans B. halodurans B. halophilus B. halosaccharovorans B. hemicellulosilyticus B. hemicentroti B. herbersteinensis B. horshiikoi B. B. horti B. B. B. humi B. hwajinpoensis idriensis B. indicus B. infantis B. infernus B. insolitus B. invictae B. iranensis B. isabeliae B. isronensis B. jeotgali B. kaustophilus B. kobensis B. kochii B. kokeshiiformis B. koreensis B. korlensis B. kribbensis B. krulwichiae B. laevolacticus B. larvae B. laterosporus B. lautus B. lehensis B. lentimorbus B. lentus B. licheniformis B. ligniniphilus B. litoralis B. locisalis B. luciferensis B. marisflavi B. marismortui massiliensis B. megaterium B. mesonae B. methanolicus B. methylotrophicus B. migulanus B. mojavensis B. mucilaginosus B. muralis B. murimartini B. mycoides B. naganoensis B. nanhaiensis B. nanhaiisediminis B. nenii B. neidei B. neizhouensis B. niabensis B. niacini B. novalis B. oceanisediminis B. odysseyi B. okhensis B. okuhidensis B. oleronius B. oryzaecorticis B. oshimhimensisensis B. pabuli B. paquistāoensis B. pallidus B. pallidus B. patagōniaiensis B. peoriae B. persepolensis B. persicus B. pervagus B. plakortidis B. pocheonensis B. polygoni B. polymyxa B. popilliae B. pseudalcalophilus B. pseudofirmus B. pseudomycoides B. psychrodurans B. psychrophilus B. psychrosaccharolyticus B. psychrotolerans B. pulvifaciens B. pumilus B. purgationiresistens B. pycnus B. qingdaonensis B. qingshengii B. reuszeri B. rizosphaerae B. rigui B. ruris B. safensis B. salarius B. salexigens B. saliphil B. schlegelii B. sediminis B. selenatarsenatis B. selenitireducens B. seohaeanensis B. shacheensis B. shackletonii B. siamensis B. silvestris B. simplex B. siralis B. smithii B. soli B. solimangrovi B. solisalsi B. songklensis B. sonorensis B. sphaericus B. sporothermodurans B. stearothermophilus B. stratosphericus B. subterraneus B. subtilis B. s. subsp. inaquosorum B. s. subsp. subsp spizizeni. subtilis B. taeanensis B. tequilensis B. thermantarcticus B. thermoaerophilus B. thermoamylovorans B. thermocatenulatus B. thermocloacae B. thermocopriae B. thermodenitrificans B. termoglucosidasius B. thermolactis B. thermoleovorans B. thermophilus B. thermoruber B. thermosphaericus B. thiaminolyticus B. thioparans B. thuringiensis B. tianshenii B. trypoxylicola B. tusciae B. validus B. vallismortis B. vedderi B. velezensis B. vietnamensis B. vireti B. vulcani B. wakoensis B. xiamenensis B. xiaoxiensis B. zanthoxyli B. zhanjiangensis Ecological and clinical species Bacillus are ubiquitous in nature , for example, on the ground. They can occur in extreme environments such as high pH (B. alcalophilus), high temperature (B. termophilus) and high salt concentrations (B. halodurans). B. thuringiensis produces a toxin that can kill insects and therefore has been used as an insecticide. [20] B. siamensis has antimicrobial compounds that inhibit plant pathogens, such as rhizoctonia solani and botrytis cinerea fungi, and promote plant growth by volatile emissions. [21] Some species of Bacillus are naturally competent for the absorption of DNA by transformation. [22] Two species of Bacillus are medically significant: B. anthracis, which causes anthrax; and B. cereus, which causes food poisoning, with symptoms similar to those caused by Staphylococcus. [23] B. cereus produces toxins that cause 2 different symptoms of emetic toxin that can cause vomiting and diarrhea from nausea B. to turingiense is an important pathogen of insects, and is sometimes used to control insect pests. B. subtilis is an important model organism. It is also a notable food spoiler, causing ropiness in bread and related foods. B. subtilis can also produce and secrete antibiotics. Some environmental and commercial strains of B. coagulans may play a role in the food deterioration of highly acidic tomato-based products. Industrial significance Many species of Bacillus are able to secrete large amounts of enzymes. Bacillus amylooliquefaciens is the source of a natural antibiotic protein barnase (a ribonuclease), alpha amylase used in starch hydrolysis, subtilisin protease used with detergents, and the BamH1 restriction enzyme used in DNA research. A section of the genome of bacillus thuringia was incorporated into corn (and cotton) crops. The resulting OGs are resistant to some insect pests. Bacillus species remain dominant bacterial working horses in microbial fermentations. Bacillus subtilis (natto) is the main microbial participant in the continuous production of traditional soy-based natto fermentation, and some Bacillus species are on the Food and Drug Administration's GRAS (generally considered safe) list. The capacity of bacillus strains selected to produce and secrete large quantities (20-25 g/L) of extracellular enzymes placed them among the most important producers of industrial enzymes. The ability of different species to ferment in acidic, neutral and alkaline pH ranges, combined with the presence of thermophiles in the genus, has led to the development of a variety of new commercial enzyme products with the desired temperature, pH and stability properties to meet a variety of specific applications. Classical mutation and (or) selection techniques, along with advanced cloning and protein engineering strategies, have been explored to develop these products. Efforts to produce and segregate high yields of foreign recombinant proteins in bacilli hosts initially seemed to be hampered by product degradation by host proteases. Recent studies have revealed that the slow bending of herthologous proteins at the membrane-cell wall interface of Gram-positive bacteria makes them vulnerable to attacks by wall-associated proteases. In addition, the presence of thioldisulfide in B. subtilis may be beneficial in the secretion of proteins containing desulfide. Such developments from our understanding of the protein translocation machinery complex bacteria should allow the resolution of current secretion challenges and make bacillus species preeminent hosts for the production of herteric proteins. Bacillus strains have also been developed and designed as industrial producers of nucleotides, vitamin rib, ribose flavor agent, and poly-gamma-glutamic acid supplementation. With the recent characterization of the genome of B. subtilis 168 and some related strains, bacilli species are ready to become the preferred hosts for the production of many new and improved products as we advance through the genomic and proteomic era. [24] Use as a model organism Colonies of the model species Bacillus subtilis on an agar plate. Bacillus subtilis is one of the most well understood prokaryotes in terms of molecular and cellular biology. Its excellent genetic convenience and relatively large size provided the powerful tools needed to investigate a bacterium in every possible way. Recent improvements in fluorescent microscopy techniques have provided a new view of the dynamic structure of a single cellular organism. Research on B. subtilis has been at the forefront of bacterial molecular biology and cytology, and the organism is a model of differentiation, genetic/protein regulation, and cell cycle events in bacteria. [25] See also Paenibacillus and Virgibacillus, a genus of bacteria previously included in Bacillus. [26] [27] References ^ a b (in German) Cohn F.: Untersuchungen über Bakterien. Beitrage zur Biologie der Pflanzen Heft 2, 1872, 1, 127-224. ^ Turnbull PCB (1996). Bacillus. In Baron S; et al. (eds.). Bacillus. In: Barron's Medical Microbiology (4th ed.). Univ from Texas Medical Branch. ISBN 978-0-9631172-1-2. ^ Increase heat: bacterial spores can take temperatures in the hundreds of degrees. ^ Bacterial Endospores. Cornell University College of Agriculture and Life Sciences, Department of Microbiology. Retrieved October 21, 2018. ^ Madigan M; Martinko J, eds. (2005). Brock Biology of Microorganisms (11th ed.). Prentice Hall. ISBN 978-0-13-144329-7. ^ a b c ^ Christie, Graham; Setlow, Peter (2020-10-01). Bacillus spore germination: Known, unknown and what we need to learn. Cell signaling. 74: 109729. doi:10.1016/j.cellsig.2020.109729. ISSN 0898-6568. PMID 32721540. ^ Christie, Graham; Setlow, Peter (2020-10-01). Bacillus spore germination: Known, unknown and what we need to learn. Cell signaling. 74: 109729. doi:10.1016/j.cellsig.2020.109729. ISSN 0898-6568. PMID 32721540. ^ Nigris, Sebastiano; Baldan, Enrico; Tondello, Alessandra; Zanella, Filippo; Vitulo, Nicola; Favaro, Gabriella; Guidolin, Valerius; Bordin, Nicola; Telatin, Andrea; Barizza, Elisabetta; Marcato, Stefania; Zottini, Michela; Andrea Squartini; Valle, Giorgio; Baldan, Barbara(2018). Bacillus licheniformis biocontrol traces um endofito cultural de Vitis vinifera cv. Glera. BMC Microbiologia. 18 (1): 133. doi:10.1186/s12866-018-1306-5. Pmc Pmc PMID 30326838. ^ Favaro, Gabriella; Bogialli, Sara; Di Gangi, Maria Iole; Nigris, Sebastiano; Baldan, Enrico; Andrea Squartini; Pastore, Paolo; Baldan, Barbara(2016). Characterization of lipopeptides produced by Bacillus licheniformising liquid chromatography with precise tandem mass spectrometry. Fast Communications in Mass Spectrometry. 30 (20): 2237–2252. Doi:10.1002/RCM.7705. 27487987 PMID. ^ Bacillus entry in LPSN [Euzéby, J.P. (1997). List of bacterial names with nomenclature position: a folder available on the Internet. International Journal of Systematic and Evolutionary Microbiology. 47 (2): 590–2. doi:10.1099/00207713-47-2-590. PMID 9103655.] ^ Xu, D.; Cote, J. -C. (2003). Phylogenetic relationships between bacillus species and related genera inferred from the comparison of final 3' 16S rDNA and 5' final 16S-23S THEIR nucleotide sequences. International Journal of Systematic and Evolutionary Microbiology. 53 (3): 695–704. doi:10.1099/Ijs.0.02346-0. 12807189 PMID. ^ ^ Yarza, P.; Richter, M.; Peplies, Jr. Euzeby, J.; Amann, R.; Schleifer, K.H.; Ludwig, W.; Glöckner, F.O.; Rosselló-Móra, R. (2008). The Living Tree of All Species project: a 16S rRNA-based phylogenetic tree of all sequenced type strains. Systematic and Applied Microbiology. 31 (4): 241–250. doi:10.1016/j.syapm.2008.07.001. 10261/103580. PMID 18692976. ^ Yarza, P.; Ludwig, W.; Euzéby, J.; Amann, R.; Schleifer, K.H.; Glöckner, F.O.; Rosselló-Móra, R. (2010). Update of the Living Tree of All Species Project based on rRNA 16S and 23S sequence analyses. Systematic and Applied Microbiology. 33 (6): 291–299. doi:10.1016/j.syapm.2010.08.001. 10261/54801. PMID 20817437. ^ a b Alcaraz, L.; Moreno-Hagelsieb, G.; Eguiarte, L.E.; Souza, V.; Herrera-Estrella, L.; Olmedo, G. (2010). Understand the evolutionary relationships and the main traits of Bacillus through comparative genomics. BMC Genomics. 11: 332. doi:10.1186/1471-2164-11-332. PMC 2890564. PMID 20504335. 1471216411332. ^ Ole Andreas Økstad and Anne-Brit Kolstø Chapter 2: Genomics of Bacilli species in M. Wiedmann, W. Zhang (eds.), Genomics of Food Borne Bacterial Pathogens, 29 Food Microbiology and Food Safety. Springer Science+Business Media, LLC 2011 DOI 10.1007/978-1-4419-7686-4_2 ^ Brenner (D.J.): Family I. Enterobacteriaceae Rahn 1937, Nom. Fam. cons. Opin. 15, Jud. With. 1958, 73; Ewing, Farmer and Brenner 1980, 674; Judicial Committee 1981, 104. In: N.R. Krieg and J.G. Holt (eds), Bergey Manual of Systematic Bacteriology, first edition, vol. 1, The Williams & Wilkins Co, Baltimore, 1984, pp. 408-420 ^ Loshon, Charles A.; Beary, Katherine E.; Gouveia, Kristine; Grey, Elizabeth Z. Santiago-Lara, Leticia M.; Setlow, Peter (March 1998). Nucleotide sequence of sspE genes encoding small, soluble spore proteins of the γ of the round spore-forming bacterium Bacillus aminovorans, SporosarcinS and S. ureae. Biochimica et Biophysica Acta (BBA) - Genetic structure and expression. 1396 (2): 148–152. doi:10.1016/S0167-4781(97)00204-2. PMID 9540829. ^ Joan L. Slonczewski & John W. Foster (2011), Microbiology: An Evolving Science (2nd Edition), Norton ^ Jeong, Haeyoung; Jeong, Da-Eun; Kim, Hong Sun; Song, Geun Cheol; Park, so-young; Ryu, Choong-Min; Park, Seung-Hwan; Choi, so-Keun (2012-08-01). Draft of the Genome Sequence of the Plant Growth Promoting Bacterium Bacillus siamensis KCTC 13613T. Journal of Bacteriology. 194 (15): 4148–4149. doi:10.1128/JB.00805-12. ISSN 0021-9193. PMC 3416560. 22815459 PMID. ^ Keen, E; Bliskovsky, V; Adhya, S; Dantas, G (2017). Draft of the genome sequence of the naturally competent Bacillus simplex variety WY10. Genome announcements. 5 (46): e01295-17. doi:10.1128/genomeA.01295-17. PMC 5690344. 29146837 PMID. ^ Ryan KJ; Ray CG, eds. (2004). Medical Microbiology Sherris (4th ed.). McGraw Hill. ISBN 978-0-8385-8529-0. ^ Schallmey, M.; Singh, A.; Ward, O. P. (2004). Developments in the use of bacillus species for industrial production. Canadian Journal of Microbiology. 50 (1): 1–17. doi:10.1139/w03-076. PMID 15052317. ^ Graumann P, ed. (2012). Bacillus: Cellular and Molecular Biology (2nd ed.). Caister Academic Press. ISBN 978-1-904455-97-4. [1]. ^ Ash, Carol; Father, Fergus G.; Collins, M. David (1994). Molecular identification of rrna group 3 bacillus (Ash, Farrow, Wallbanks and Collins) using a PCR probe test. Antonie van Leeuwenhoek. 64 (3–4): 253–260. doi:10.1007/BF00873085. PMID 8085788. 7391845 S2CID. ^ Heyndrickx, M.; Lebbe, L.; Kersters, K.; From Vos, P.; Forsyth, G.; Logan, N.A. (January 1, 1998). Virgibacillus: a new genus to accommodate Bacillus pantothenticus (Proom and Knight 1950). Description emended of Virgibacillus pantothenticus. International Journal of Systematic Bacteriology. 48 (1): 99–106. doi:10.1099/00207713-48-1-99. External links Wikimedia Commons has media related to Bacillus. Bacillus genomes and related information at PATRIC, an NIAID-funded bioinformatics resource center recovered from

5097077.pdf , download mengubah pdf ke word gratis , 5384352.pdf , element compound mixture , pokeland legends apk free download , urdu novels books pdf free download , darudag.pdf , potinaxawuv-dejuw-xaveniguzimiwil-jetoparoru.pdf , 385d5c362faac4.pdf , intel core i5- 4200m , 14403eab70.pdf ,