DAFTAR PUSTAKA

Aachmann, F. L., Sørlie, M., Skjåk-Bræk, G., Eijsink, V. G. H., & Vaaje-Kolstad, G. (2012). NMR structure of a lytic polysaccharide monooxygenase provides insight into copper binding, protein dynamics, and substrate interactions. *Proceedings of the National Academy of Sciences of the United States of America*, *109*(46), 18779–18784. https://doi.org/10.1073/pnas.1208822109

Abril, J. F., & Castellano, S. (2018). Genome annotation. *Encyclopedia of Bioinformatics and Computational Biology: ABC of Bioinformatics*, *1–3*, 195–209. https://doi.org/10.1016/B978-0-12-809633-8.20226-4

Ahmed, I., Yokota, A., Yamazoe, A., & Fujiwara, T. (2007). Proposal of Lysinibacillus boronitolerans gen. nov. sp. nov., and transfer of Bacillus fusiformis to Lysinibacillus fusiformis comb. nov. and Bacillus sphaericus to Lysinibacillus sphaericus comb. nov. *International Journal of Systematic and Evolutionary Microbiology*, *57*(5), 1117–1125. https://doi.org/10.1099/ijs.0.63867-0

Allievi, Claudia, M., Florencia, S., Mariano, P. A., Mercedes, P. M., Ruzal, S. M., & Carmen, S. R. (2011). Metal biosorption by surface-layer proteins from Bacillus species. *Journal of Microbiology and Biotechnology*, *21*(2), 147–153. https://doi.org/10.4014/jmb.1009.09046

Allievi, M. C., Palomino, M. M., Acosta, M. P., Lanati, L., Ruzal, S. M., & Sánchez-Rivas, C. (2014). Contribution of S-layer proteins to the mosquitocidal activity of Lysinibacillus sphaericus. *PLoS ONE*, *9*(10). https://doi.org/10.1371/journal.pone.0111114

Aly, C., Mulla, M. S., & Federici, B. A. (1989). Ingestion, dissolution, and proteolysis of the Bacillus sphaericus toxin by mosquito larvae. *Journal of Invertebrate Pathology*, *53*(1), 12–20. https://doi.org/10.1016/0022-2011(89)90068-2

Andreeva, Z. I., Nesterenko, V. F., Fomkina, M. G., Ternovsky, V. I., Suzina, N. E., Bakulina, A. Y., Solonin, A. S., & Sineva, E. V. (2007). The properties of Bacillus cereus hemolysin II pores depend on environmental conditions. *Biochimica et Biophysica Acta - Biomembranes*, *1768*(2), 253–263. https://doi.org/10.1016/j.bbamem.2006.11.004

Aprilyanto, V., & Sembiring, L. (2016). *Filogenetika Molekuler, Teori dan Aplikasi*. Innosain.

Arkin, A. P., Cottingham, R. W., Henry, C. S., Harris, N. L., Stevens, R. L., Maslov, S., Dehal, P., Ware, D., Perez, F., Canon, S., Sneddon, M. W., Henderson, M. L., Riehl, W. J., Murphy-Olson, D., Chan, S. Y., Kamimura, R. T., Kumari, S., Drake, M. M., Brettin, T. S., … Yu, D. (2018). KBase: The United States department of energy systems biology knowledgebase. *Nature Biotechnology*, *36*(7), 566–569. https://doi.org/10.1038/nbt.4163

Baida, G. E., & Kuzmin, N. P. (1996). Mechanism of action of hemolysin III from Bacillus cereus. *Biochimica et Biophysica Acta - Biomembranes*, *1284*(2), 122–124. https://doi.org/10.1016/S0005-2736(96)00168-X

Bankevich, A., Nurk, S., Antipov, D., Gurevich, A. A., Dvorkin, M., Kulikov, A. S., Lesin, V. M., Nikolenko, S. I., Pham, S., Prjibelski, A. D., Pyshkin, A. V., Sirotkin, A. V., Vyahhi, N., Tesler, G., Alekseyev, M. A., & Pevzner, P. A. (2012). SPAdes: A new genome assembly algorithm and its applications to single-cell sequencing. *Journal of Computational Biology*, *19*(5), 455–477. https://doi.org/10.1089/cmb.2012.0021

Becker, N., Petric, D., Zgomba, M., Boase, C., Dahl, C., Madon, M., & Kaiser, A. (2010). Mosquitoes and Their Control. In *Springer-Verlag* (2nd editio). Springer.

Berry, C., Hindley, J., Ehrhardt, A. F., Grounds, T., De Souza, I., & Davidson, E. W. (1993). Genetic determinants of host ranges of Bacillus sphaericus mosquito larvicidal toxins. *Journal of Bacteriology*, *175*(2), 510–518. https://doi.org/10.1128/jb.175.2.510-518.1993

Berry, Colin. (2012). The bacterium, Lysinibacillus sphaericus, as an insect pathogen. *Journal of Invertebrate Pathology*, *109*(1), 1–10. https://doi.org/10.1016/j.jip.2011.11.008

Bolger, A. M., Lohse, M., & Usadel, B. (2014). Trimmomatic: A flexible trimmer for Illumina sequence data. *Bioinformatics*, *30*(15), 2114–2120. https://doi.org/10.1093/bioinformatics/btu170

Boonyos, P., Soonsanga, S., Boonserm, P., & Promdonkoy, B. (2010). Role of cysteine at positions 67, 161 and 241 of a Bacillus sphaericus binary toxin BinB. *BMB Reports*, *43*(1), 23–28. https://doi.org/10.5483/BMBRep.2010.43.1.023

Broadwell, A. H., Baumann, L., & Baumann, P. (1990). The 42- and 51-kilodalton mosquitocidal proteins of Bacillus sphaericus 2362: Construction of recombinants with enhanced expression and in vivo studies of processing and toxicity. *Journal of Bacteriology*, *172*(5), 2217–2223. https://doi.org/10.1128/jb.172.5.2217-2223.1990

Burgos, Y., & Beutin, L. (2010). Common origin of plasmid encoded alpha-hemolysin genes in Escherichia coli. *BMC Microbiology*, *10*.

https://doi.org/10.1186/1471-2180-10-193

Chaisson, M. J., & Pevzner, P. A. (2008). Short read fragment assembly of bacterial genomes. *Genome Research*, *18*(2), 324–330. https://doi.org/10.1101/gr.7088808

Charles, J. F., & Nicolas, L. (1986). RECYCLING OF BACILLUS SPHAERICUS 2362 IN MOSQUITO LARVAE : A LABORATORY STUDY. *Recycling Of Bacillus Sphaericus 2362 in Mosquito Larvae : A Laboratory Study*, 101–111.

Charles, J. F., Nielsen-LeRoux, C., & Delécluse, A. (1996). Bacillus sphaericus toxins: Molecular biology and mode of action. *Annual Review of Entomology*, *41*(1), 451–472. https://doi.org/10.1146/annurev.en.41.010196.002315

Chen, Y. C., Liu, T., Yu, C. H., Chiang, T. Y., & Hwang, C. C. (2013). Effects of GC Bias in Next-Generation-Sequencing Data on De Novo Genome Assembly. *PLoS ONE*, *8*(4). https://doi.org/10.1371/journal.pone.0062856

Cholishoh, A. (2019). *Pengendalian Nyamuk Culex quinquefasciatus Say, 1823 (Diptera: Culicidae) dengan Menggunakan Bakteri Entomopatogenik Lysinibacillus sphaericus (ex Meyer and Neide, 1904) Ahmed et al., 2007 dari Berbagai Kotoran Burung*. Universitas Gadjah Mada.

Clark, M. A., & Baumann, P. (1991). Modification of the Bacillus sphaericus 51- and 42-kilodalton mosquitocidal proteins: Effects of internal deletions, duplications, and formation of hybrid proteins. *Applied and Environmental Microbiology*, *57*(1), 267–271. https://doi.org/10.1128/aem.57.1.267-271.1991

Coorevits, A., Dinsdale, A. E., Heyrman, J., Schumann, P., van Landschoot, A., Logan, N. A., & de Vos, P. (2012). Lysinibacillus macroides sp. nov., nom. rev. *International Journal of Systematic and Evolutionary Microbiology*, *62*(5), 1121–1127. https://doi.org/10.1099/ijs.0.027995-0

Darling, A. C. E., Mau, B., Blattner, F. R., & Perna, N. T. (2004). Mauve: Multiple alignment of conserved genomic sequence with rearrangements. *Genome Research*, *14*(7), 1394–1403. https://doi.org/10.1101/gr.2289704

Davidson, E. W., Singer, S., & Briggs, J. D. (1975). Pathogenesis of Bacillus sphaericus strain SSII-1 infections in Culex pipiens quinquefasciatus (= C. pipiens fatigans) larvae. *Journal of Invertebrate Pathology*, *25*(2), 179–184. https://doi.org/10.1016/0022-2011(75)90066-X

De Melo, J. V., Jones, G. W., Berry, C., Vasconcelos, R. H. T., De Oliveira, C. M. F., Furtado, A. F., Peixoto, C. A., & Silva-Filha, M. H. N. L.

(2009). Cytopathological effects of Bacillus sphaericus Cry48Aa/Cry49Aa toxin on binary toxin-susceptible and -resistant Culex quinquefasciatus larvae. *Applied and Environmental Microbiology*, *75*(14), 4782–4789. https://doi.org/10.1128/AEM.00811-09

de Sá, P. H. C. G., Guimarães, L. C., das Graças, D. A., de Oliveira Veras, A. A., Barh, D., Azevedo, V., da Costa da Silva, A. L., & Ramos, R. T. J. (2018). Next-generation sequencing and data analysis: Strategies, tools, pipelines and protocols. *Omics Technologies and Bio-Engineering: Towards Improving Quality of Life*, *1*, 191–207. https://doi.org/10.1016/B978-0-12-804659-3.00011-7

Didelot, X., Bowden, R., Wilson, D. J., Peto, T. E. A., & Crook, D. W. (2012). Transforming clinical microbiology with bacterial genome sequencing. *Nature Reviews Genetics*, *13*(9), 601–612. https://doi.org/10.1038/nrg3226

Dussán, J., Andrade, D., Lozano, L., & Vanegas, S. (2002). Caracterización fisiológica y genética de cepas nativas de Bacillus sphaericus. *Revista Colombiana de Biotecnología*, *4*(1), 89–99. http://www.revistas.unal.edu.co/index.php/biotecnologia/article/view/30097

Eijsink, V. G. H., Petrovic, D., Forsberg, Z., Mekasha, S., Røhr, Å. K., Várnai, A., Bissaro, B., & Vaaje-Kolstad, G. (2019). On the functional characterization of lytic polysaccharide monooxygenases (LPMOs). *Biotechnology for Biofuels*, *12*(1), 1–16. https://doi.org/10.1186/s13068-019-1392-0

Elbers, A. R. W., Koenraad, C. J. M., & Meiswinkel, R. (2015). Mosquitoes and Culicoides biting midges: Vector range and the influence of climate change. *OIE Revue Scientifique et Technique*, *34*(1), 123–137. https://doi.org/10.20506/rst.34.1.2349

Foster, W. A., & Walker, D. E. (2019). Mosquitoes (Culicidae). In L. Durden & G. Mullen (Eds.), *Medical and Veterinary Entomology* (3rd editio, pp. 261–325). Academic Press.

Frederiksen, R. F., Paspaliari, D. K., Larsen, T., Storgaard, B. G., Larsen, M. H., Ingmer, H., Palcic, M. M., & Leisner, J. J. (2013). Bacterial chitinases and chitin-binding proteins as virulence factors. *Microbiology (United Kingdom)*, *159*(PART 5), 833–847. https://doi.org/10.1099/mic.0.051839-0

Guerineau, M., Alexander, B., & Priest, F. G. (1991). Isolation and identification of Bacillus sphaericus strains pathogenic for mosquito larvae. *Journal of Invertebrate Pathology*, *57*(3), 325–333. https://doi.org/10.1016/0022-2011(91)90136-E

Guo, G., Zhang, L., Zhou, Z., Ma, Q., Liu, J., Zhu, C., Zhu, L., Yu, Z., & Sun, M. (2008). A new group of parasporal inclusions encoded by the S-layer gene of Bacillus thuringiensis. *FEMS Microbiology Letters*, *282*(1), 1–7. https://doi.org/10.1111/j.1574-6968.2008.01087.x

Gurevich, A., Saveliev, V., Vyahhi, N., & Tesler, G. (2013). QUAST: Quality assessment tool for genome assemblies. *Bioinformatics*, *29*(8), 1072–1075. https://doi.org/10.1093/bioinformatics/btt086

Hernández-Santana, A., Gómez-Garzón, C., & Dussán, J. (2016). Complete genome sequence of Lysinibacillus sphaericus WHO reference strain 2362. *Genome Announcements*, *4*(3), 9–10. https://doi.org/10.1128/genomeA.00545-16

Hill, S., & Roxanne, C. (2009). *Feature Creature: Southern House Mosquitoe*. University of Florida.

Hire, R. S., Hadapad, A. B., Dongre, T. K., & Kumar, V. (2009). Purification and characterization of mosquitocidal Bacillus sphaericus BinA protein. *Journal of Invertebrate Pathology*, *101*(2), 106–111. https://doi.org/10.1016/j.jip.2009.03.005

Hu, X., Fan, W., Han, B., Liu, H., Zheng, D., Li, Q., Dong, W., Yan, J., Gao, M., Berry, C., & Yuan, Z. (2008). Complete genome sequence of the mosquitocidal bacterium Bacillus sphaericus C3-41 and comparison with those of closely related bacillus species. *Journal of Bacteriology*, *190*(8), 2892–2902. https://doi.org/10.1128/JB.01652-07

Hu, X., Li, J., Hansen, B. M., & Yuan, Z. (2008). Phylogenetic analysis and heterologous expression of surface layer protein SlpC of Bacillus sphaericus C3-41. *Bioscience, Biotechnology and Biochemistry*, *72*(5), 1257–1263. https://doi.org/10.1271/bbb.70747

Hynönen, U., & Palva, A. (2013). Lactobacillus surface layer proteins: Structure, function and applications. *Applied Microbiology and Biotechnology*, *97*(12), 5225–5243. https://doi.org/10.1007/s00253-013-4962-2

Illumina Inc. (2017). Illumina sequencing introduction. *Illumina Sequencing Introduction*, *October*, 1–8. https://www.illumina.com/documents/products/illumina_sequencing_introduction.pdf

Janesch, B., Messner, P., & Schäffer, C. (2013). Are the surface layer homology domains essential for cell surface display and glycosylation of the S-layer protein from Paenibacillus alvei CCM 2051T? *Journal of Bacteriology*, *195*(3), 565–575. https://doi.org/10.1128/JB.01487-12

Jeong, H., Jeong, D. E., Sim, Y. M., Park, S. H., & Choi, S. K. (2013). Genome sequence of Lysinibacillus sphaericus strain KCTC 3346T.

Genome Announcements, *1*(4), 4–5. https://doi.org/10.1128/genomeA.00625-13

Jones, G. W., Nielsen-Leroux, C., Yang, Y., Yuan, Z., Fiúza Dumas, V., Monnerat, R. G., & Berry, C. (2007). A new Cry toxin with a unique two-component dependency from Bacillus sphaericus . *The FASEB Journal*, *21*(14), 4112–4120. https://doi.org/10.1096/fj.07-8913com

Jones, G. W., Wirth, M. C., Monnerat, R. G., & Berry, C. (2008). The Cry48Aa-Cry49Aa binary toxin from Bacillus sphaericus exhibits highly restricted target specificity. *Environmental Microbiology*, *10*(9), 2418–2424. https://doi.org/10.1111/j.1462-2920.2008.01667.x

Jurat-Fuentes, J. L., & Jackson, T. A. (2012). Bacterial entomopathogens. In *Insect Pathology* (Second Edi). Elsevier Inc. https://doi.org/10.1016/B978-0-12-384984-7.00008-7

Kellen, W. R., Clark, T. B., Lindegren, J. E., Ho, B. C., Rogoff, M. H., & Singer, S. (1965). Bacillus sphaericus Neide as a pathogen of mosquitoes. *Journal of Invertebrate Pathology*, *7*(4), 442–448. https://doi.org/10.1016/0022-2011(65)90120-5

Kemenkes RI. (2020). *Penyakit Virus Zika (Zika Fever)*. Https://Infeksiemerging.Kemkes.Go.Id/Penyakit-Virus/Penyakit-Virus-Zika-Zika-Fever. https://infeksiemerging.kemkes.go.id/penyakit-virus/penyakit-virus-zika-zika-fever

Kern, J., & Schneewind, O. (2010). BslA, the S-layer adhesin of B. anthracis, is a virulence factor for anthrax pathogenesis. *Molecular Microbiology*, *75*(2), 324–332. https://doi.org/10.1111/j.1365-2958.2009.06958.x

Kimura, M. (1980). A simple method for estimating evolutionary rates of base substitutions through comparative studies of nucleotide sequences. *Journal of Molecular Evolution*, *16*(2), 111–120. https://doi.org/10.1007/BF01731581

Krauthammer, M., Rzhetsky, A., Morozov, P., & Friedman, C. (2000). Using BLAST for identifying gene and protein names in journal articles. *Gene*, *259*(1–2), 245–252. https://doi.org/10.1016/S0378-1119(00)00431-5

Kumar, S., Stecher, G., Li, M., Knyaz, C., & Tamura, K. (2018). MEGA X: Molecular evolutionary genetics analysis across computing platforms. *Molecular Biology and Evolution*, *35*(6), 1547–1549. https://doi.org/10.1093/molbev/msy096

Labourel, A., Frandsen, K. E. H., Zhang, F., Brouilly, N., Grisel, S., Haon, M., Ciano, L., Ropartz, D., Fanuel, M., Martin, F., Navarro, D., Rosso, M. N., Tandrup, T., Bissaro, B., Johansen, K. S., Zerva, A., Walton, P. H., Henrissat, B., Leggio, L. Lo, & Berrin, J. G. (2020). A fungal family of lytic polysaccharide monooxygenase-like copper proteins. *Nature*

Chemical Biology, *16*(3), 345–350. https://doi.org/10.1038/s41589-019-0438-8

Lacey, L. A., Day, J., & Heitzman, C. M. (1987). Long-term effects of Bacillus sphaericus on Culex quinquefasciatus. *Journal of Invertebrate Pathology*, *49*(1), 116–123. https://doi.org/10.1016/0022-2011(87)90133-9

Lacey, L. A., Grzywacz, D., Shapiro-Ilan, D. I., Frutos, R., Brownbridge, M., & Goettel, M. S. (2015). Insect pathogens as biological control agents: Back to the future. *Journal of Invertebrate Pathology*, *132*, 1–41. https://doi.org/10.1016/j.jip.2015.07.009

Lacey, L. A., & Undeen, A. H. (1986). Microbial control of black flies and mosquitoes. *Annual Review of Entomology*, *31*(February 1986), 265–296. https://doi.org/10.1146/annurev.en.31.010186.001405

Langmead, B., & Salzberg, S. L. (2012). Fast gapped-read alignment with Bowtie 2. *Nature Methods*, *9*(4), 357–359. https://doi.org/10.1038/nmeth.1923

Lekakarn, H., Promdonkoy, B., & Boonserm, P. (2015). Interaction of Lysinibacillus sphaericus binary toxin with mosquito larval gut cells: Binding and internalization. *Journal of Invertebrate Pathology*, *132*, 125–131. https://doi.org/10.1016/j.jip.2015.09.010

Li, H., & Durbin, R. (2009). Fast and accurate short read alignment with Burrows-Wheeler transform. *Bioinformatics*, *25*(14), 1754–1760. https://doi.org/10.1093/bioinformatics/btp324

Li, H., Handsaker, B., Wysoker, A., Fennell, T., Ruan, J., Homer, N., Marth, G., Abecasis, G., & Durbin, R. (2009). The Sequence Alignment/Map format and SAMtools. *Bioinformatics*, *25*(16), 2078–2079. https://doi.org/10.1093/bioinformatics/btp352

Limpanawat, S., Promdonkoy, B., & Boonserm, P. (2009). The C-terminal domain of BinA Is responsible for bacillus sphaericus binary toxin BinA-BinB interaction. *Current Microbiology*, *59*(5), 509–513. https://doi.org/10.1007/s00284-009-9468-x

Liu, J. W., Porter, A. G., Wee, B. Y., & Thanabalu, T. (1996). New gene from nine Bacillus sphaericus strains encoding highly conserved 35.8-kilodalton mosquitocidal toxins. *Applied and Environmental Microbiology*, *62*(6), 2174–2176. https://doi.org/10.1128/aem.62.6.2174-2176.1996

Lozano, L. C., Ayala, J. A., & Dussán, J. (2011). Lysinibacillus sphaericus S-layer protein toxicity against Culex quinquefasciatus. *Biotechnology Letters*, *33*(10), 2037–2041. https://doi.org/10.1007/s10529-011-0666-9

Manimegalai, K., & Sukanya, S. (2014). Biology of the filarial vector, Culex

quinquefasciatus (Diptera:Culicidae). *Int.J.Curr.Microbiol.App.Sci*, *3*(4), 718–724. http://www.ijcmas.com

Manjeet, K., Purushotham, P., Neeraja, C., & Podile, A. R. (2013). Bacterial chitin binding proteins show differential substrate binding and synergy with chitinases. *Microbiological Research*, *168*(7), 461–468. https://doi.org/10.1016/j.micres.2013.01.006

Miller, J. R., Koren, S., & Sutton, G. (2010). Assembly algorithms for next-generation sequencing data. *Genomics*, *95*(6), 315–327. https://doi.org/10.1016/j.ygeno.2010.03.001

Musso, D., & Gubler, Du. J. (2016). Zika Virus. *Clinical Microbiology Reviews*, *29*(3), 487–524. https://doi.org/10.1001/jamadermatol.2016.1635

Newell, P. D., Roco, C. A., Fricker, A. D., Merkel, S. M., & Chandrangsu, P. (2013). A Small-Group Activity Introducing the Use and Interpretation of BLAST †. *Journal of Microbiology & Biology Education*, *14*(2), 238–243. https://doi.org/10.1128/jmbe.v14i2.637

Nielsen, R., Paul, J. S., Albrechtsen, A., & Song, Y. S. (2011). Genotype and SNP calling from next-generation sequencing data. *Nature Reviews Genetics*, *12*(6), 443–451. https://doi.org/10.1038/nrg2986

Nishiwaki, H., Nakashima, K., Ishida, C., Kawamura, T., & Matsuda, K. (2007). Cloning, functional characterization, and mode of action of a novel insecticidal pore-forming toxin, sphaericolysin, produced by Bacillus sphaericus. *Applied and Environmental Microbiology*, *73*(10), 3404–3411. https://doi.org/10.1128/AEM.00021-07

Oei, C., Hindley, J., & Berry, C. (1992). Binding of purified Bacillus sphaericus binary toxin and its deletion derivatives to Culex quinquefasciatus gut: Elucidation of functional binding domains. *Journal of General Microbiology*, *138*(7), 1515–1526. https://doi.org/10.1099/00221287-138-7-1515

Oliveira, C. D., Tadei, W. P., & Abdalla, F. C. (2009). Occurrence of apocrine secretion in the larval gut epithelial cells of Aedes aegypti L., Anopheles albitarsis Lynch-Arribálzaga and Culex quinquefasciatus say (Diptera: Culicidae): a defense strategy against infection by Bacillus sphaericus Neide? *Neotropical Entomology*, *38*(5), 624–631. https://doi.org/10.1590/s1519-566x2009000500010

Overbeek, R., Olson, R., Pusch, G. D., Olsen, G. J., Davis, J. J., Disz, T., Edwards, R. A., Gerdes, S., Parrello, B., Shukla, M., Vonstein, V., Wattam, A. R., Xia, F., & Stevens, R. (2014). The SEED and the Rapid Annotation of microbial genomes using Subsystems Technology (RAST). *Nucleic Acids Research*, *42*(D1), 206–214. https://doi.org/10.1093/nar/gkt1226

Peña-Montenegro, T. D., Lozano, L., & Dussán, J. (2015). Genome sequence and description of the mosquitocidal and heavy metal tolerant strain Lysinibacillus sphaericus CBAM5. *Standards in Genomic Sciences*, *10*(FEBRUARY2015). https://doi.org/10.1186/1944-3277-10-2

Peña, G., Miranda-Rios, J., De La Riva, G., Pardo-López, L., Soberón, M., & Bravo, A. (2006). A Bacillus thurigiensis S-layer protein involved in toxicity against Epilachna varivestis (Coleoptera: Coccinellidae). *Applied and Environmental Microbiology*, *72*(1), 353–360. https://doi.org/10.1128/AEM.72.1.353-360.2006

petersen, L. R., Jamieson, D. J., Powers, A. M., & Honein, M. A. (2016). Zika virus. *Zika Virus*, *March 2015*, 313–320. https://doi.org/10.5206/uwomj.v85i2.4143

Priest, F. G., Goodfellow, M., & Todd, C. (1988). A Numerical Classification of the Genus Bacillus. *Journal of General Microbiology*, *134*, 1847–1882.

Promdonkoy, B., Promdonkoy, P., Wongtawan, B., Boonserm, P., & Panyim, S. (2008). Cys31, Cys47, and Cys195 in BinA are essential for toxicity of a binary toxin from Bacillus sphaericus. *Current Microbiology*, *56*(4), 334–338. https://doi.org/10.1007/s00284-007-9065-9

Putri, L. K. (2019). *Isolasi dan Uji Patogenisitas Bakteri Lysinibacillus sphaericus NEIDE dari Tanah Sekitar Perakaran terhadap Larva Culex quinquefasciatus SAY*. Universitas Gadjah Mada.

Quick, V. S., & Sikela, J. (n.d.). *Percent Identity of Genomic DNA and Amino Acid Sequences*. Center for Academic Research and Training in Anthropogeny. Retrieved March 1, 2021, from https://carta.anthropogeny.org/moca/topics/percent-identity-genomic-dna-and-amino-acid-sequences#:~:text=Percent identity refers to a,to a degree reflects relatedness.

Quinlan, A. R., & Hall, I. M. (2010). BEDTools: A flexible suite of utilities for comparing genomic features. *Bioinformatics*, *26*(6), 841–842. https://doi.org/10.1093/bioinformatics/btq033

Rahman, A., Nahar, N., Jass, J., Olsson, B., & Mandal, A. (2016). Complete genome sequence of Lysinibacillus sphaericus B1-CDA, a bacterium that accumulates arsenic. *Genome Announcements*, *4*(1), 1–3. https://doi.org/10.1128/genomeA.00999-15

Rey, A., Silva-Quintero, L., & Dussán, J. (2016a). Complete genome sequence of the larvicidal bacterium Lysinibacillus sphaericus strain OT4b.25. *Genome Announcements*, *4*(3), 10–11. https://doi.org/10.1128/genomeA.00257-16

Rey, A., Silva-Quintero, L., & Dussán, J. (2016b). Complete genome

sequence of the larvicidal bacterium Lysinibacillus sphaericus strain OT4b.25. *Genome Announcements*, *4*(3), 10–12. https://doi.org/10.1128/genomeA.00257-16

Rojas-Pinzón, P. A., & Dussán, J. (2017a). Contribution of Lysinibacillus sphaericus hemolysin and chitin-binding protein in entomopathogenic activity against insecticide resistant Aedes aegypti. *World Journal of Microbiology and Biotechnology*, *33*(10), 0. https://doi.org/10.1007/s11274-017-2348-9

Rojas-Pinzón, P. A., & Dussán, J. (2017b). Contribution of Lysinibacillus sphaericus hemolysin and chitin-binding protein in entomopathogenic activity against insecticide resistant Aedes aegypti. *World Journal of Microbiology and Biotechnology*, *33*(10), 1–9. https://doi.org/10.1007/s11274-017-2348-9

Rosselló-Mora, R., & Amann, R. (2001). The species concept for prokaryotes. *FEMS Microbiology Reviews*, *25*(1), 39–67. https://doi.org/10.1016/S0168-6445(00)00040-1

Russell, B. L., Jelley, S. A., & Yousten, A. A. (1989). Carbohydrate metabolism in the mosquito pathogen Bacillus sphaericus 2362. *Applied and Environmental Microbiology*, *55*(2), 294–297. https://doi.org/10.1128/aem.55.2.294-297.1989

Rutherford, K., Parkhill, J., Crook, J., Horsnell, T., Rice, P., Rajandream, M.-A., & Barrell, B. (2000). Artemis: Sequence Visualization and Annotation. *Bioinformatics*, *16*, 944–945.

Sakakibara, J., Nagano, K., Murakami, Y., Higuchi, N., Nakamura, H., Shimozato, K., & Yoshimura, F. (2007). Loss of adherence ability to human gingival epithelial cells in S-layer protein-deficient mutants of Tannerella forsythensis. *Microbiology*, *153*(3), 866–876. https://doi.org/10.1099/mic.0.29275-0

Sanitt, P., Promdonkoy, B., & Boonserm, P. (2008). Targeted mutagenesis at charged residues in Bacillus sphaericus BinA toxin affects mosquito-larvicidal activity. *Current Microbiology*, *57*(3), 230–234. https://doi.org/10.1007/s00284-008-9180-2

Seemann, T. (2014). Prokka: Rapid prokaryotic genome annotation. *Bioinformatics*, *30*(14), 2068–2069. https://doi.org/10.1093/bioinformatics/btu153

Settem, R. P., Honma, K., Nakajima, T., Phansopa, C., Roy, S., Stafford, G. P., & Sharma, A. (2013). A bacterial glycan core linked to surface (S)-layer proteins modulates host immunity through Th17 suppression. *Mucosal Immunology*, *6*(2), 415–426. https://doi.org/10.1038/mi.2012.85

Shimotahira, N., Oogai, Y., Kawada-Matsuo, M., Yamada, S., Fukutsuji, K., Nagano, K., Yoshimura, F., Noguchi, K., & Komatsuzawa, H. (2013). The surface layer of Tannerella forsythia contributes to serum resistance and oral bacterial coaggregation. *Infection and Immunity*, *81*(4), 1198–1206. https://doi.org/10.1128/IAI.00983-12

Singkhamanan, K., Promdonkoy, B., Chaisri, U., & Boonserm, P. (2010). Identification of amino acids required for receptor binding and toxicity of the Bacillus sphaericus binary toxin. *FEMS Microbiology Letters*, *303*(1), 84–91. https://doi.org/10.1111/j.1574-6968.2009.01865.x

Sleytr, U. B., & Beveridge, T. J. (1999). Bacterial S-layers. *Trends in Microbiology*, *7*(6), 253–260. https://doi.org/10.1016/S0966-842X(99)01513-9

Smith, A. W., Cámara-Artigas, A., Brune, D. C., & Allen, J. P. (2005). Implications of high-molecular-weight oligomers of the binary toxin from Bacillus sphaericus. *Journal of Invertebrate Pathology*, *88*(1), 27–33. https://doi.org/10.1016/j.jip.2004.10.005

Sogandi, S. (2018). *Biologi Molekuler: Identifikasi Bakteri Secara Molekuler* (Issue July). Universitas 17 Agustus 1945.

Stein, L. (2001). Genome annotation: From sequence to biology. *Nature Reviews Genetics*, *2*(7), 493–503. https://doi.org/10.1038/35080529

Suginta, W., Sirimontree, P., Sritho, N., Ohnuma, T., & Fukamizo, T. (2016). The chitin-binding domain of a GH-18 chitinase from Vibrio harveyi is crucial for chitin-chitinase interactions. *International Journal of Biological Macromolecules*, *93*, 1111–1117. https://doi.org/10.1016/j.ijbiomac.2016.09.066

Thanabalu, T., Hindley, J., Jackson-Yap, J., & Berry, C. (1991). Cloning, sequencing, and expression of a gene encoding a 100-kilodalton mosquitocidal toxin from Bacillus sphaericus SSII-1. *Journal of Bacteriology*, *173*(9), 2776–2785. https://doi.org/10.1128/jb.173.9.2776-2785.1991

Thanabalu, Thirumaran, & Porter, A. G. (1996). A Bacillus sphaericus gene encoding a novel type of mosquitocidal toxin of 31.8 kDa. *Gene*, *170*(1), 85–89. https://doi.org/10.1016/0378-1119(95)00836-5

Wang, X., King Jordan, I., & Mayer, L. W. (2014). A Phylogenetic Perspective on Molecular Epidemiology. In *Molecular Medical Microbiology: Second Edition* (Vols. 1–3). Elsevier Ltd. https://doi.org/10.1016/B978-0-12-397169-2.00029-9

Wang, Y. T., Oh, S. Y., Hendrickx, A. P. A., Lunderberg, J. M., & Schneewind, O. (2013). Bacillus cereus G9241 S-layer assembly contributes to the pathogenesis of anthrax-like disease in mice. *Journal of Bacteriology*, *195*(3), 596–605. https://doi.org/10.1128/JB.02005-12

Whitehorn, J., & Farrar, J. (2010). Dengue. *British Medical Bulletin*, *95*(1), 161–173. https://doi.org/10.1093/bmb/ldq019

WHO. (2006). Pesticides and Their Application for The Control of Vectors and Pests of Public health Importance. In *Department of Control of Neglected Tropical Diseases WHO Pesticides evaluation scheme (WHOPES)* (6th ed.). Department of Control of Neglected Tropical Diseases WHO Pesticides evaluation scheme (WHOPES).

Woese, C. R. (1987). Bacterial evolution. *Microbiological Reviews*, *51*(2), 221–271. https://doi.org/0146-0749/87/020221-51$02.00/0

Wong, E., Vaaje-Kolstad, G., Ghosh, A., Hurtado-Guerrero, R., Konarev, P. V., Ibrahim, A. F. M., Svergun, D. I., Eijsink, V. G. H., Chatterjee, N. S., & van Aalten, D. M. F. (2012). The Vibrio cholerae colonization factor GbpA possesses a modular structure that governs binding to different host surfaces. *PLoS Pathogens*, *8*(1), 1–13. https://doi.org/10.1371/journal.ppat.1002373

Wraight, S. P., Molloy, D. P., & Singer, S. (1987). Studies on the culicine mosquito host range of Bacillus sphaericus and Bacillus thuringiensis var israelensis with notes on the effects of temperature and instar on bacterial efficacy. *Journal of Invertebrate Pathology*, *49*(3), 291–302. https://doi.org/10.1016/0022-2011(87)90061-9

Yakovchuk, P., Protozanova, E., & Frank-Kamenetskii, M. D. (2006). Base-stacking and base-pairing contributions into thermal stability of the DNA double helix. *Nucleic Acids Research*, *34*(2), 564–574. https://doi.org/10.1093/nar/gkj454

Yan, W., Xiao, X., & Zhang, Y. (2017). Complete genome sequence of Lysinibacillus sphaericus LMG 22257, a strain with ureolytic activity inducing calcium carbonate precipitation. *Journal of Biotechnology*, *246*, 33–35. https://doi.org/10.1016/j.jbiotec.2017.02.016

Yousten, A. A., & Davidson, E. W. (1982). Ultrastructural Analysis of Spores and Parasporal Crystals Formed by Bacillus sphaericus 2297. *Microbiology*, *44*(6), 1449–1455.

Zerbino, D. R., & Birney, E. (2008). Velvet: Algorithms for de novo short read assembly using de Bruijn graphs. *Genome Research*, *18*(5), 821–829. https://doi.org/10.1101/gr.074492.107

Zhang, W., Wang, H., Liu, J., Zhao, Y., Gao, K., & Zhang, J. (2013). Adhesive ability means inhibition activities for lactobacillus against

pathogens and S-layer protein plays an important role in adhesion. *Anaerobe*, *22*, 97–103. https://doi.org/10.1016/j.anaerobe.2013.06.005

Zhou, Z., Peng, D., Zheng, J., Guo, G., Tian, L., Yu, Z., & Sun, M. (2011). Two groups of S-layer proteins, SLP1s and SLP2s, in Bacillus thuringiensis co-exist in the S-layer and in parasporal inclusions. *BMB Reports*, *44*(5), 323–328. https://doi.org/10.5483/BMBRep.2011.44.5.323