

DAFTAR PUSTAKA

- Alwi, M., Latifah, M., dan Umrah. 2012. Identifikasi Actinomycetes yang Terdapat pada Tanah di Sekitar Danau Lindu Sulawesi Tengah. *Biocelbes*. 6(1): 1-10
- Amir, H, B.G.Murcitra, Uji Microtetra-zolium (MTT) Ekstrak Metanol Daun *Phaleriamacrocarpa* (Scheff.) Boerl Terhadap Sel Kanker Payudara MCF7 , Alotrop, 2017: 1 (1) :27-32
- Balas. 1968. Karst Region in Indonesia. *Karszt-Es Barkangkutatas*. Vol 5
- Balraj, J., Kiruthika, P., dan Anggayarkanni, J. 2014. Isolation of Pigmented Marine Bacteria *Exiguobacterium* sp. From Peninsular Region of India and a Study on Biological Activity of Purified Pigment. *International Journal of Scientific and Technology Research*. 3(3): 2277.
- Barton, H.A., dan Northup, D.E. 2004. Geomicrobiology in Cave Environments: Past, current and future perspective. *Journal of cave and Karst Studies*, 69(1): 163-178
- Beatty, R. A. 1941. The Pigmentation of Cavernicolous Animals: Carotenoid Pigments in the Cave Environment. *Biochemical and Zoological Laboratories*. 144
- Berbers, B., Assia, S., Cristina, G. G., Patrick, P., Fabrice, A., Kathleen, M., Ralf, W., Kevin, V., Nancy, H. C., Roosens., dan Sigrid, C. J. 2020. Combining Short and Long Read Sequencing to Characterize Antimicrobial Resistance Genes on Plasmids Applied to an Unauthorized Genetically Modified *Bacillus*. *Scientific Reports*. 10: 4310
- Brooks, G. F., Jawetz, E., Melnick, J. L., and Adelberg, E. A. 2013. Jawetz, Melnick and Adelberg's Medical Microbiology. *Climate Change 2013 - The*
- Chandra, M. A. 2023. Identification of bacterial morphology and catalase test on *Propionibacterium acnes* bacteria. Health management and pharmacy exploration. 1(2): 45-5-
- Chen, H., Hulten, K., & Clarridge III, J. E. (2002). Taxonomic sub groups of *Multicoccus* relate with clinical presentation. *J. Clin. Microbiol*, 441
- ul, A. T., Norli, I., Baharin, A., Muaz, M. Z. M., dan Leong, K,acterial Flagellum versus Carbon Nanotube: A Review Articleential of Bacterial Flagellum as a Sustainable and Greenfor the Synthesis of Nanotubes. MDPI. 13(1): 21



- Diana E. Northup, Clifford N. Dahm, Leslie A. Melim, Michael N. Spilde, Laura J. Crossey, Kathy H. Lavoie, Lawrence M. Mallory, Penelope J. Boston, Kimberley I. Cunningham and Susan M. Barns. 2000. Evidence for geomicrobiological interactions in Guadalupe caves. *Journal of Cave and Karst Studies* 62(2): 80-90
- Donkor, E. S. 2013. Sequencing of Bacterial Genomes: Principles and Insights Into Pathogenesis and Development of Antibiotics. *Genes*. 4: 556-572
- Ercole, C., Paola, C., Giorgio, C., dan Aldo, L. 2001. Deposition Of Calcium Carbonate in Karst Caves: Role of Bacteria in Stiffe's Cave. *International Speleothem Journal*. 2001: 69-79
- Fauzi, M. N., dan Joko. 2021. Uji kualitatif dan uji aktivitas antioksidan ekstrak etanolik buah maja dengan metode DPPH. *Riset farmasi*. 5(1): 25
- Garibyan, L., dan Avashia, N. (2013). "Polymerase Chain Reaction". *Journal of Investigative Dermatology*. 133, e6.
- Gascoyne, M., Derek, C. F., dan Henry, P. S. 1983. Rates of Cave and Landform Development in The Yorkshire Dales From Speleothem Age Data. *Earth Surface Processes and Landforms*. 8: 557-568
- Gross, 6, J. 1991. Pigmen in vegetables. Van – 3 - Nastrand Reinhold, New York, 351 pp
- Haryono, E., dan Adji, T. Geomorfologi dan Hidrologi Karst: Bahan Ajar. 45.
- Ikhsanuddin, A., dan Endah, R. 2023. Karakterisasi dan uji Aktivitas Actinomycetes penghasil antibiotic terhadap multi drug resistant bacteria. *UGM Repository*. 14(12): 1107
- Kim, M. C. 2005. Antioxidant Activity and Cultural Characterization of Metabolites from Marine Bacteria and Fungus. Jeju National University. Thesis
- Khushboo., Arun, K., dan Tabarak, M. 2023. Characterization and selection of probiotic lactic acid bacteria from different dietary sources for development of functional foods. *Biotechnological Applications of Lactic Acid Bacteria*. Vol. 14
- Kuntari, Z. Sumpomo. Nurhamidah. 2017. Aktivitas antioksidan metabolit sekunder endofit akar tanaman kelor. *Penelitian dan Ilmu Kimia*. 1(2): 80-



1 Hari, S. 2017. Kandungan Beta Karoten dan Aktivitas an Radikal Bebas Terhadap DPPH (1,1-difenil 2-pikrilhidrazil) ah Blewah (*Cucumis melo var. Cantalupensis L*) Secara metri Ev-Vis. *Farmasi Sains dan Komunitas*. 14(1): 37-42

- Mary, S. N., dan Sumathi. 2017. Screening of inhibitory activity of lactic acid bacteria from fresh meat. *International Journal of Advanced Science and Research*. 2(4): 56-59
- Mudgal VN, Madaan A. Mudgal, Misra. 2010. Dietary polyphenols and human health. *Asian Journal Biochemistry*. 5: 154-162.
- Muladno. (2010). *Teknologi Rekayasa Genetik Edisi Kedua*. Bogor : IPB Press
- Nagappan H, Pee PP, Kee SHY, Ow JT, Yan SW, Chew LY, Kong KW. 2017. Malaysian brown seaweeds *Sargassum siliculosum* and *Sargassum polycystum*: low density lipoprotein (LDL) oxidation, angiotensin converting enzyme (ACE), α -amylase and α -glucosidase inhibition activities. *Food Research International*. 1-9. antioxidant activity. *Journal Science Technology*. 26(2): 211-219
- Naufal, A., Endang, K., dan Budi, R. 2017. Identifikasi Jenis Pigmen dan Uji Potensi Antioksidan Ekstrak Pigmen Bakteri *Serratia marcescens* Hasil Isolasi dari Sedimen Sumber Air Panas Gedong Songo. *Bioma*. 2: 95-103
- Nugroho, T. A., Eko, H., dan Suratman, W. 1999. Kawasan Karst dan Prospek Pengembangannya di Indonesia. *Seminar PIT Universitas Indonesia*
- Nuhung, S. 2016. Karst Maros Pangkep Menuju Geopark Dunia (Tinjauan Dari Aspek Geologi Lingkungan). *Journal Plano Madani*. 5(1): 1-7
- Nursanti, R. 2023. Skrining dan Identifikasi Bakteri Endofit Asal Tanaman Langsung (*Lansium domesticum*) dan Jaloh (*Salix tetrasperma*). *Jurnal Bioleuser*. 7(3): 57-60
- Paetkau, D., Lisette, P. W., Peter, L. C., Lance, C., dan Curtis, S. 1997. An Empirical Evaluation of Genetic Distance Statistics Using Microsatellite Data From Bear (Ursidae) Populations. *Genetic Society of America*. 147(4): 1943-1957
- Pelczar, M. J. dan Chan, E. C. S. 1986. *Dasar-Dasar Mikrobiologi*. Jilid I. UI Press. Jakarta.
- Physical Science Basis*. 53: 1-30.



eresia, A. J. P. 2022. Isolasi dan Karakterisasi bakteri amilolitik dari tanah rizosfer desa tegalwaton Kabupaten Semarang. *idikan dan sains biologi*. 5(2): 63072

nca, A. 2023. Identification of Bacteriocin Gene in *Lactobacillus*. *Universitas Jendral Ahmad Yani*. 53: 3-8

- Rab, S dan Sam, S, 1982. Geologi Lembar Ujung Pandang, Benteng dan Sinjai, Bandung : Pusat Penelitian dan Pengembangan Geologi
- Raharja, H., Anis, Z., dan Dony, P. 2023. Biochemical analysis of candidate probiotic bacteria was isolated from the digestive tract of the Banana shrimp (*Penaeus merguensis*). *Acta Aquatica*. 10(2): 158-162.
- Rahmawati, A., Muflihunna., dan Laode. 2022. Analisis aktivitas antioksidan produk buah mengkudu dengan metode DPPH. UMI
- Respati, N. Y., Evy, Y., dan Anna, R. 2017. Optimization pf temperature and pH of phosphate solubilizing bacteria growth media from isolated of thermopilic bacteria. *Biologi*. 6(7): 423
- Rukmana, G dan Zulaika, E. 2017 Isolasi Bakteri Karbonoklastik dari Pegunungan Kapur. *Jurnal Sains dan Seni ITS*. ITS. 6(2): 2337-3520.
- Rusterholtz, K. & Mallory, L.M. 1994. Density, activity and diversity of bacteria indigenous to a karstic aquifer. *Microbial Ecology* 28: 79-99.
- Safavieh, M., Minhas, U. A., Mona, T., dan Mohammed, Z. 2012. Microfluid Electrochemical Assay For Rapid Detection and Qualification of *Eschericia coli*. *Biosensor and Bioelectronics*. 31:525-528
- Shabani, A., Mohammed, Z., Beatrice, A., Christopher, A., Marquette., Marcus, F. L., dan Rosemonde, M. 2008. Bacteriophage-Modified Microarrays for the Direct Impedeimetric Detection of Bacteria. *Analysis Chem*. 80: 9475-9482
- Sutikno dan Eko Haryono. 2000. Perlindungan Fungsi Kawasan Karst. Seminar Perlindungan Penghuni Kawasan Karst: masa lalu, masa kini, dan masa yang akan datang terhadap Fungsi Lingkungan Hidup. PSLM UNS. Surakarta 11 November 2000.
- Trudgil, S. 1985. Field Observations of Limestone Weathering and Erosion in The Malham District, North Yorkshire. *Field Studies*. 6: 201-236
- Tyas, N. D., Rina, V., dan Rini, N. 2016. Konservasi dan Pemanfaatan Berkelanjutan Kawasan Karst Gunung Sewu Sebagai Bagian Geopark untuk Mempertahankan Fungsi Ekologi. *Symposium on Biology Education*. 2528-5726
- Adenise, L. W., dan Carlos, R. S. 2016. Bacterial Flagellum on Nanotube: A Review Article on the Potential of Bacterial Flagellum as a Sustainable and Green Substance for the Synthesis of Nanotubes. 3(6): 56-78

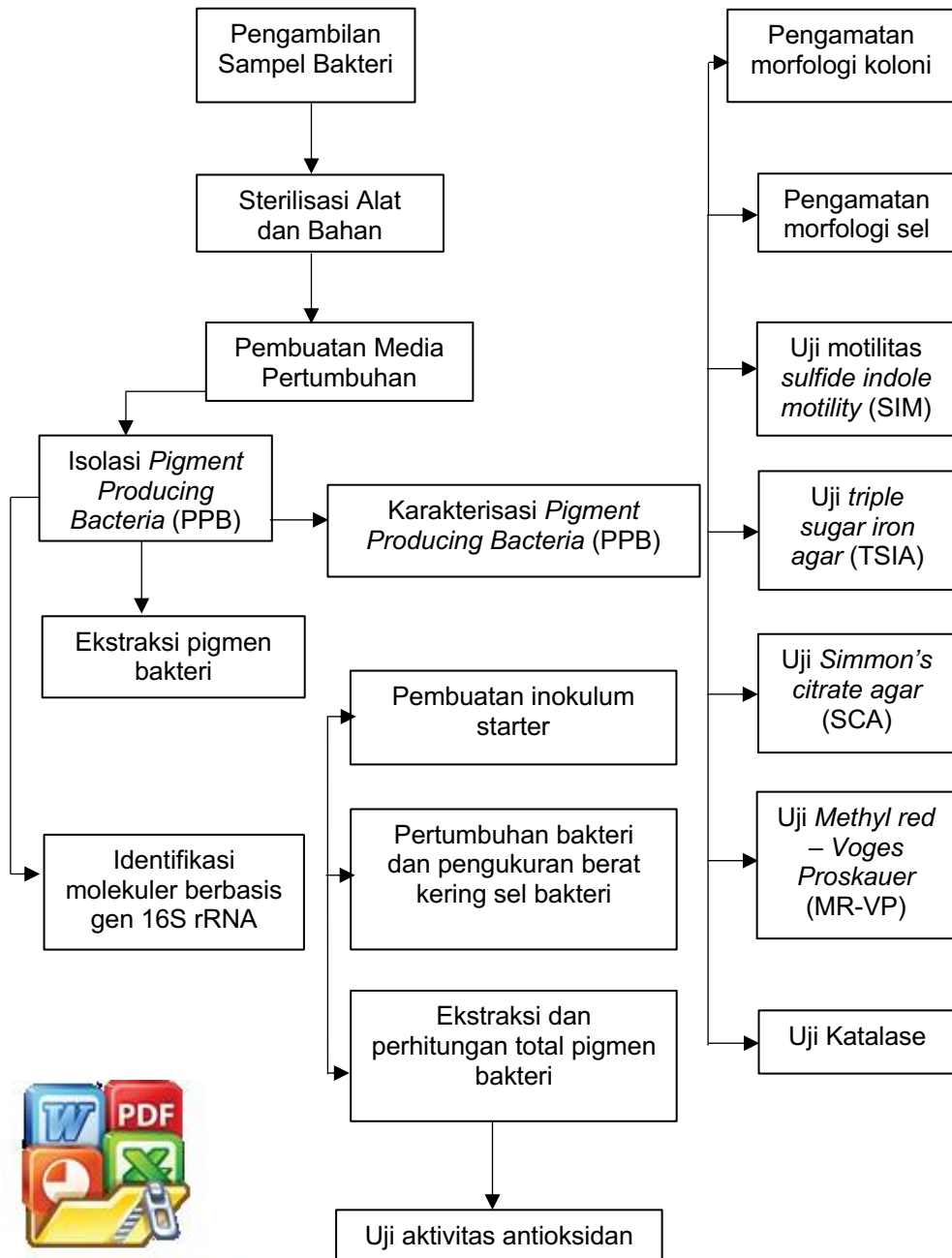


- Venil, C. K., Velmurugan, P., Dufossé, L., Renuka Devi, P., and Veera Ravi, A. 2020. Fungal pigments: Potential coloring compounds for wide ranging applications in textile dyeing. *J. fungi* 6:68
- Wang, Y., Yuqing, B., Wei, Z., dan Ruonan, G. 2023. Mphy gene is involved in temperature-regulated pigment metabolism in *Monascus*. *Biophysical journal*. 538 a. 2612- 2616
- Weecharangsan, W., Opanasopit, P., Sukma, M., Ngawhirunpat, T., Sotanaphun, U., Siripong, P. Antioxidative and Neuroprotective Activities of Extracts from The Fruit Hull of Mangosteen (*Garcinia mangostana* Linn.). *Med Princ Pract*. 2006, 15, 281-287
- Windono, T., Soediman, S., Yudawati, U., Ermawati, E., Srielita, Erowati, T. I. Uji Peredam Radikal Bebas terhadap 1,1-Diphenyl-2-Picrylhydrazyl (DPPH) dari Ekstrak Kulit Buah dan Biji Anggur (*Vitis vinifera* L.) Probolinggo Biru dan Bali. *Artocarpus*. 2001, 1, 34-43
- Woese, C. R., Stackebrandt, R., Macke, T. J., & Fox, G. E. (1985). A phylogenetic definition of the major eubacterial taxa. *Syst. Appl. Microbiol*, 6, 143–151
- Wright, M. H., Joseph, A., dan Anthony, C. G. 2017. Bacterial DNA Extraction Using Individual Enzymes and Phenol / Chloroform Separation. *Journal of Microbiology and Biology Education*. 18(2): 1-3
- Yadav, N. S., Issar, S., dan Gaur, R. K. 2024. Biochemical characterization of bacteria isolated from rizosphere soils of sugarcane grown in Uttar Pradesh. *Research Jurnal of Biotechnology*. 19(3): 2503
- Yati, S. J., Sumpono., I Nyoman, C. 2018. Potensi aktivitas antioksidan metabolit sekunder dari bakteri endofit pada daun kelor. *Penelitian dan Ilmu Kimia*. 2(1): 82-87
- Yenusi, T. N. B., Popy, I. L. A., Iriani, I. B., Jockje, A. I., dan Alsida, R. T. 2023. Identifikasi dan uji penangkapam radikal bebas 2,2 Difenil-1-pikrilhydrazil (DPPH) dari ekstrak kasar pigmen bakteri simbiosis rumput laut. *Laot Ilmu kelautan*. 5(1): 74
- Zhang, J., Peidong, S., Huihuang, C., Meng, Q., Bo, Y., dan Xu, Z. 2023. Impact of reactive oxygen species on cell activity and structural integrity of Gram-positive and Gram-negative bacteria in electrochemical disinfection system. *ture Science Foundation of China*. 451(3)



LAMPIRAN

Lampiran 1. Alur Penelitian



Lampiran 2. Pengambilan Sampel



Lampiran 3. Pengukuran Nilai OD untuk perhitungan total pigmen



Lampiran 4. Surat keterangan hasil uji aktivitas antioksidan DPPH

LABORATORIUM KIMIA PAKAN
JURUSAN NUTRISI DAN MAKANAN TERNAK
FAKULTAS PETERNAKAN
UNIVERSITAS HASANUDDIN

HASIL ANALISIS BAHAN

No	Kode Sampel	Antioksidan (%DH DPPH)
1	LTP 6A	15,66
2	LTP 6B	15,80
3	LTP 6C	14,35



Malikassar, 3 Mei 2024

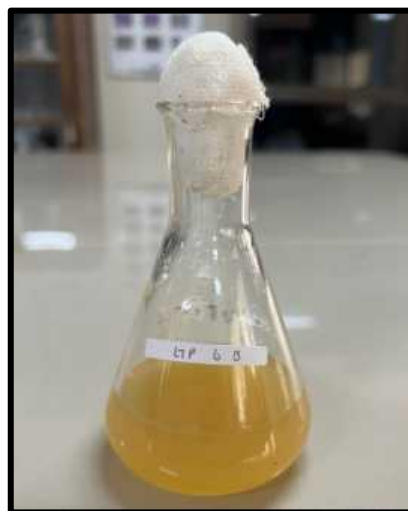
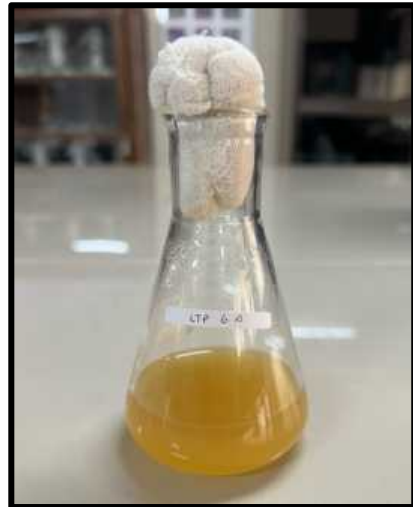
Analisis

Muhammad Syahrul

Nip. 19790603 2001 12 1 001



Lampiran 5. Pertumbuhan Bakteri Inokulum pada medium cair setelah inkubasi



Lampiran 6. Urutan Basa Nukleotida hasil BLAST NCBI *Exiguobacterium* sp.

Download v GenBank Graphics

Next Previous Descriptions

Exiguobacterium sp. strain Z1-19 16S ribosomal RNA gene, partial sequence

Sequence ID: PP594399.1 Length: 1435 Number of Matches: 1

Range 1: 11 to 1329 GenBank Graphics

Next Match Previous Match

Score	Expect	Identities	Gaps	Strand
2183 bits(1182)	0.0	1276/1319(97%)	30/1319(2%)	Plus/Minus
Query 11		TGCTGA-CTGCGATTACTAGCGATTCCGACTTCATGCAGGCGAGTTGCAGCCTGCAATCC		
Sbjct 1329		TGCTGACC TGC GATTACTAGCGATTCCGACTTCATGCAGGCGAGTTGCAGCCTGCAATCC		
Query 70		GAAC TGGGAACGGCTTTATGGGATTGGCTCCACCTCGCGGTCTCGCTGCCCTTTGTACCG		
Sbjct 1269		GAAC TGGGAACGGCTTTATGGGATTGGCTCCACCTCGCGGTCTCGCTGCCCTTTGTACCG		
Query 130		TCCATTGTAGCACGTGTGTAGCCCAACTCATAAGGGGCATGATGATTGACGTATCCCC		
Sbjct 1209		TCCATTGTAGCACGTGTGTAGCCCAACTCATAAGGGGCATGATGATTGACGTATCCCC		
Query 190		ACCTTCTCTCCGGTTGTACCGGAGTCTCCCTAGAGTGCCCAACTGAATGCTGGCAACT		
Sbjct 1149		ACCTTCTCTCCGGTTGTACCGGAGTCTCCCTAGAGTGCCCAACTGAATGCTGGCAACT		
Query 250		AAGGATAGGGGTTGCGCTCGTTGCGGGACTTAACCCAACTCTCACGACGAGCTGACG		
Sbjct 1089		AAGGATAGGGGTTGCGCTCGTTGCGGGACTTAACCCAACTCTCACGACGAGCTGACG		
Query 310		ACAACCATGCACCACTGTACCATTTGTCCTCGAAGGGAATACTGATCTCTCAAGCGGT		
Sbjct 1029		ACAACCATGCACCACTGTACCATTTGTCCTCGAAGGGAATACTGATCTCTCAAGCGGT		
Query 370		CAATGGGATGTCAAGAGTTGGTAAGGTTCTTCGCTTGCTCGAATTAACACATGCTC		
Sbjct 969		CAATGGGATGTCAAGAGTTGGTAAGGTTCTTCGCTTGCTCGAATTAACACATGCTC		
Query 430		CACCGCTTGTCGGGTCCCGCTCAATTCTTTGAGTTTCAGCCTTGCGGCGTACTCCCC		
Sbjct 909		CACCGCTTGTCGGGTCCCGCTCAATTCTTTGAGTTTCAGCCTTGCGGCGTACTCCCC		
Query 490		AGGCGGAGTGCTTAATGCGTTAGCTTCAGCACTGAGGGGCGAAACCCCAACACCTAG		
Sbjct 849		AGGCGGAGTGCTTAATGCGTTAGCTTCAGCACTGAGGGGCGAAACCCCAACACCTAG		
Query 550		CAC TCATCGTTTACGGCGTGGACTACAGGGTATCTAATCCTGTTGCTCCCAACGCTTT		
Sbjct 789		CAC TCATCGTTTACGGCGTGGACTACAGGGTATCTAATCCTGTTGCTCCCAACGCTTT		
Query 610		CGCGCTCAGCGTCAGTTACAGACCAAGAGTCGCTTCGCCACTGGTGTCTCCACAT		
Sbjct 729		CGCGCTCAGCGTCAGTTACAGACCAAGAGTCGCTTCGCCACTGGTGTCTCCACAT		
Query 670		CTCTACGCATTTACCGCTACACGTGGAATTCACCTCTTCTCTTCTGTACTACAGCCTTC		
Sbjct 669		CTCTACGCATTTACCGCTACACGTGGAATTCACCTCTTCTCTTCTGTACTACAGCCTTC		
Query 730		CAGTTTCCAATGGCCCTCCCGGTTGAGCGGGGGCTTTCACATCAGACTTAAAGGCGG		
Sbjct 609		CAGTTTCCAATGGCCCTCCCGGTTGAGCGGGGGCTTTCACATCAGACTTAAAGGCGG		
Query 790		CCTGCGCGGCTTTACGCCCAATAATTCCGGACAACGCTTGCCACCTACGTATTACCGCG		
Sbjct 549		CCTGCGCGGCTTTACGCCCAATAATTCCGGACAACGCTTGCCACCTACGTATTACCGCG		
Query 850		GCTGCTGGCAGTAGTTAGCCGTGGCTTCTCGTAAGGTACCGTCAAGGTACGAGCAATT		
Sbjct 489		GCTGCTGGCAGTAGTTAGCCGTGGCTTCTCGTAAGGTACCGTCAAGGTACGAGCAATT		
Query 910		CCTCTCGTACGTGTTCTTCCCTTACAACAGAGTTTACGATCCGAAACCTTCATCACTC		
Sbjct 429		CCTCTCGTACGTGTTCTTCCCTTACAACAGAGTTTACGATCCGAAACCTTCATCACTC		
Query 970		ACGCGGCGTTGCTCATCAGACTTTCGTCCATTGTGGAAGATTCCCTACTGCTGCTCTCC		
Sbjct 369		ACGCGGCGTTGCTCATCAGACTTTCGTCCATTGTGGAAGATTCCCTACTGCTGCTCTCC		
Query 1030		GTAGGAGTCTGGGCGGTGTCTCAGTCCAGTGTGGCGGATCACCTCTTCAGGTGCGCTAT		
Sbjct 309		GTAGGAGTCTGGGCGGTGTCTCAGTCCAGTGTGGCGGATCACCTCTTCAGGTGCGCTAT		



***Ornithinibacillus scapharcae*.**

Download ▾ GenBank Graphics ▾ Next ▴ Previous ◀ Descriptions

Ornithinibacillus scapharcae strain N-2-1-2 16S ribosomal RNA gene, partial sequence

Sequence ID: [KU601305.1](#) Length: 1422 Number of Matches: 1

Range 1: 9 to 1327 [GenBank](#) [Graphics](#) ▾ Next Match ▴ Previous Match

Score	Expect	Identities	Gaps	Strand
2178 bits(1179)	0.0	1275/1319(97%)	30/1319(2%)	Plus/Minus
Query 11		TGCTGA-CTGCGATTACTAGCGATTCCGACTTCATGCAGGCGAGTTGCAGCCTGCAATCC		
Sbjct 1327		TGCTGACCTGCGATTACTAGCGATTCCGACTTCATGCAGGCGAGTTGCAGCCTGCAATCC		
Query 70		GAACTGGGAACGGCTTTATGGGATTGGCTCCACCTCGCGGTCTCGTGCCCTTTGTACCG		
Sbjct 1267		GAACTGGGAACGGCTTTATGGGATTGGCTCCACCTCGCGGTCTCGTGCCCTTTGTACCG		
Query 130		TCCATTGTAGCACGTGTGTAGCCCAACTCATAAGGGGCATGATGATTTGACGTATCCCC		
Sbjct 1207		TCCATTGTAGCACGTGTGTAGCCCAACTCATAAGGGGCATGATGATTTGACGTATCCCC		
Query 190		ACCTTCCCTCCGGTTTGTACCGGCAGTCTCCCTAGAGTGCCCAACTGAATGCTGGCAACT		
Sbjct 1147		ACCTTCCCTCCGGTTTGTACCGGCAGTCTCCCTAGAGTGCCCAACTGAATGCTGGCAACT		
Query 250		AAGGATAGGGGTTGCGCTCGTTGCGGGACTTAACCAACATCTCACGACACGAGCTGACG		
Sbjct 1087		AAGGATAGGGGTTGCGCTCGTTGCGGGACTTAACCAACATCTCACGACACGAGCTGACG		
Query 310		ACAACCATGCACCACTGTACCAATTGTCCCGAAGGGAAAACTTGATCTCTCAAGCGGT		
Sbjct 1027		ACAACCATGCACCACTGTACCAATTGTCCCGAAGGGAAAACTTGATCTCTCAAGCGGT		
Query 370		CAATGGGATGTCAAGAGTTGGTAAGGTTCTTCGCGTTGCTTCGAATTAACACATGCTC		
Sbjct 967		CAATGGGATGTCAAGAGTTGGTAAGGTTCTTCGCGTTGCTTCGAATTAACACATGCTC		
Query 430		CACCGCTTGTGCGGGTCCCCGTCAATTCTTTGAGTTTCAGCCTTGCGGCCGTACTCCCC		
Sbjct 907		CACCGCTTGTGCGGGTCCCCGTCAATTCTTTGAGTTTCAGCCTTGCGGCCGTACTCCCC		
Query 490		AGGCGGAGTGCTTAATGCGTTAGCTTCAGCACTGAGGGGCGGAAACCCCAACACCTAG		
Sbjct 847		AGGCGGAGTGCTTAATGCGTTAGCTTCAGCACTGAGGGGCGGAAACCCCAACACCTAG		
Query 550		CACCTATCGTTTACGGCGTGGACTACCAAGGATCTAATCCTGTTTGTCTCCCAACGCTT		
Sbjct 787		CACCTATCGTTTACGGCGTGGACTACCAAGGATCTAATCCTGTTTGTCTCCCAACGCTT		
Query 610		CGCGCCTCAGCGTCAGTTACAGACCAAGAGTCGCTTCGCCACTGGTGTCTCTCCACAT		
Sbjct 727		CGCGCCTCAGCGTCAGTTACAGACCAAGAGTCGCTTCGCCACTGGTGTCTCTCCACAT		
Query 670		CTCTACGCATTTACCGCTACACGTGGAATTCACCTCTTCTCTTCTGTACTCAAGCCTTC		
Sbjct 667		CTCTACGCATTTACCGCTACACGTGGAATTCACCTCTTCTCTTCTGTACTCAAGCCTTC		
Query 730		CAGTTTCCAATGGCCCTCCCGGTTGAGCGGGGGCTTTCACATCAGACTTAAAGGCCG		
Sbjct 607		CAGTTTCCAATGGCCCTCCCGGTTGAGCGGGGGCTTTCACATCAGACTTAAAGGCCG		
Query 790		CCTGCGCGCGCTTACGCCCAATAATCCGGACAACGCTTGCCACCTACGTATTACCGCG		
Sbjct 547		CCTGCGCGCGCTTACGCCCAATAATCCGGACAACGCTTGCCACCTACGTATTACCGCG		
Query 850		GCTGCTGGCACGTAGTTAGCGGTGGCTTCTCGTAAGGTACCGTCAAGGTACGAGCATTT		
Sbjct 487		GCTGCTGGCACGTAGTTAGCGGTGGCTTCTCGTAAGGTACCGTCAAGGTACGAGCATTT		
Query 910		CCTCTCGTACGTGTTCTTCCCTTACAACAGAGTTTACGATCCGAAAACTTCATCACTC		
Sbjct 427		CCTCTCGTACGTGTTCTTCCCTTACAACAGAGTTTACGATCCGAAAACTTCATCACTC		
Query 970		ACGCGGCGTTGCTCCATCAGACTTTCGTCCATTGTGGAAGATTCCCTACTGCTGCTCCC		
Sbjct 367		ACGCGGCGTTGCTCCATCAGACTTTCGTCCATTGTGGAAGATTCCCTACTGCTGCTCCC		
Query 1030		GTAGGAGTCTGGGCGTGTCTCAGTCCCAGTGTGGCCGATCACCCTCTCAGGTCGGCTAT		
Sbjct 307		GTAGGAGTCTGGGCGTGTCTCAGTCCCAGTGTGGCCGATCACCCTCTCAGGTCGGCTAT		



Lampiran 7. Hasil Perhitungan Jarak Genetik metode UPGMA MEGA XI

Species	LTP6-A	LTP6-B	LTP6-C
Ornithinibacillus scapharcae strain N-2-1-2	0,00143061614051	0,00071479640479	0,00143061614051
Exiguobacterium sp.2A11S4	0,0014306161405	0,0021474621414	0,0014306161405
Exiguobacterium sp.NIU-K2	0,0014299763755	0,0007146686713	0,0014299763755
Exiguobacterium sp.NIU-K4	0,0014299763755	0,0007146686713	0,0014299763755
Exiguobacterium sp.BDH26	0,0007147964047	0,00143061614	0,0021474621414
Exiguobacterium sp.IARI-R-140	0,0007147964047	0,0000000000	0,0007147964047

