

DAFTAR PUSTAKA

- Adhitama, R.M., Munifah, I., Yanto, D.H.Y., & Meryandini, A. (2023). Biodegradation of Low-Density Polyethylene Microplastic by New Halofilt Bacteria Isolated From Saline Mud in Bledug Kuwu, Indonesia. *Bioresource Technology Reports*, 22 : 1-9.
- Adnan, M., Siddiqui, A.J., Ashraf, S.A., Snoussi, M., Badraoui, R., Ibrahim, A.M.M., Alreshidi, M., Sachidanandan, M., & Patel, M. (2023). Characterization and Process Optimization for Enhanced Production of Polyhydroxybutyrate (PHB)-Based Biodegradable Polymer from *Bacillus flexus* Isolated from Municipal Solid Waste Landfill Site. *Polymers*, 15(1407): 1-21.
- AfifaHussain, N., Baqar, Z., Mumtaz, M., El-Sappah, A. H., Show, P. L., Iqbal, H. M. N., *et al.* (2022). Bioprospecting Fungal-Derived Value-Added Bioproducts for Sustainable Pharmaceutical Applications. *Sustain Chem Pharm.* 29, 100755.
- Akaraonye, E., Keshavarz, T., & Roy, I. (2010). Production of Polyhydroxyalkanoates: The Future Green Materials of Choice. *J. Chem. Technol. Biotechnol*, 85 (6): 732-743.
- Akihary, C. V., & Kolondam, B. J. (2020). Pemanfaatan Gen 16S RNAa sebagai Perangkat Identifikasi Bakteri untuk Penelitian-penelitian di Indonesia. *Pharmacon*, 9(1): 16-22.
- Albuquerque, P.B.S., & Malafaia, C.B. (2018). Perspectives on the Production, Structural Characteristics And Potential Applications Of Bioplastics Derived From Polyhydroxyalkanoates. *Int. J. Biol. Macromol*, 107: 615-625.
- Aljuraifani, A.A., Bereeka, M.M., & Ghazwani, A.A. (2018). Bacterial Biopolymer (*Polyhydroxyalkanoate*) Production from Low-Cost Sustainable Sources. *Wiley Microbiology Open*, 1-7.
- Anderson, A.J., & Dawes, E.A. (1990). Occurrence, Metabolism, Metabolic Role, and Industrial Uses of Bacterial Polyhydroxyalkanoates. *Microbiol. Rev*, 54: 450–472.
- Anderson, A.J., & Dawes, E.A. (1990). Occurrence, Metabolism, Metabolic Role, and Industrial Uses of Bacterial Polyhydroxyalkanoates. *Microbiol. Rev*, 54: 450-452.
- Aono, R. (1990). The poly- α - and - β -1,4- Glucuronic Acid Moiety of Teichuronopeptide from The Cell Wall of The Alkalophilic *Bacillus* strain C-125. *Biochem J*, 270: 363-367.

- Arianto, P.E. (2023). Pengaruh Penambahan Bakteri Proteolitik *Priestia flexa* dalam Pakan terhadap Pertumbuhan Lele (*Clarias* sp.) pada Tahap Pembesaran. *Skripsi*. Fakultas Pertanian, Universitas Gadjah Mada.
- Arifiyanto, A., Setyaningrum, E., Nukmal, N., & Aeny, T.N. (2021). Short Communication: In Vitro Antimicrobial and Antimalarial Screening of a Crude Extract of *Streptomyces* sp. AB8 Isolated from Lapindo Mud Volcano Area, Sidoarjo, Indonesia. *Biodiversitas*, 22(7): 2817-2823.
- Aryaraj, D., & Pramitha, V.S. (2021). Extraction and Characterization of Polyhydroxybutyrate (PHB) from *Bacillus flexus* MHO57386.1 Isolated from Marine Sponge *Oceanopia arenosa* (Rao, 1941). *Marine Science and Technology Bulletin*, 10(2): 170-185.
- Asy'ari, M., Aditiawati, P., Akhmaloka, P., & Hertadi, R. (2015). Cloning and Sequence Analysis of Lipase Gene of Halophilic Bacteria Isolated from Mud Crater Bledug Kuwu, Central Java, Indonesia. *Biosciences Biotechnology Research Asia*, 12(3): 1903-1912.
- Asy'ari, M., Parwata, O.P., Aditiawati, P., Akhmaloka., & Hertadi, R. (2014). Isolation and Identification of Halostable Lipase Producing Bacteria from the Bledug Kuwu Mud Crater Located at Purwodadi-Grobogan, Central Java, Indonesia. *Journal of Pure and Applied Microbiology*, 8(5): 3387-3396.
- Atanasov, A.G., Zotchev, S.B., Dirsch, V.M. *et al.* (2021). Natural Products in Drug Discovery: Advances and Opportunities. *Nat. Rev. Drug Discov*, 20: 200–216.
- Atlas, R.M. (2010). *Handbook of Microbiological Media 4th Edition*. New York : CRC Press, Taylor and Francis Group.
- Aznury, M., Setiadi, T., & Pancoro, A. (2010). Pengaruh Sumber Karbon terhadap Produksi Bioplastik Polihidroksialkanoat (PHA) dengan *Ralstonia eutropha*. *Jurnal Teknik Kimia Indonesia*, 9(1): 28-32.
- Baikar, V., Rane, A., & Deopurkar, R. (2017). Characterization of Polyhydroxyalkanoate Produced by *Bacillus megaterium* VB89 Isolated from Nisargruna Biogas Plant. *Appl Biochem Bioethanol*, 1-13.
- Baker, G.C., Smith, J.J., & Cowan, D.A. (2003). Review and Re-analysis of Domain-Specific 16S Primers. *J Microbiol Methods*, 55(3): 541-555.
- Baker-Austin, C., & Dopson, M. (2007). Life in Acid: pH Homeostasis in Acidophiles. *Trends Microbiol*, 15: 165–171.
- Banciu, H.L., & Sorokin, D.Y. (2013). Adaptation in Haloalkaliphiles and Natronophilic Bacteria. *Polyextremophiles*, 121-178.

- Basnett, P., Marcello, E., & Lukasiewicz, B. et al. (2020). Antimicrobial Materials with Lime Oil and A Poly(3-Hydroxyalkanoate) Produced Via Valorisation of Sugar Cane Molasses. *J Funct Biomater*, 11: 24.
- Beattie, A. J., Hay, M., Magnusson, B., de Nys, R., Smeathers, J., & Vincent, J. F. V. (2011). Ecology and Bioprospecting. *Austral Ecol*, 36: 341–356.
- Beattie, A., Hay, M., Magnusson, B., Nys, R., Smeathers, J., & Vincent, J. (2010). Ecology and Bioprospecting. *Austral Ecology* 36(3): 341-356.
- Beattie, A.J., Barthlott, W., Elisabetsky, E., et al. (2005). *New Products and Industries from Biodiversity*. In: Hassan, R.; Scholes, R.; Ash, N., Editors. *Ecosystems and Human Well-Being*. Washington D.C: Millennium Ecosystem Assessment, Island Press p. 273-95.
- Becker, J., & Wittmann, C. (2020). Microbial Production of Extremolytes - Highvalue Active Ingredients For Nutrition, Health Care, and Well-Being. *Curr. Opin. Biotechnol.* 65: 118–128.
- Ben-David, A., & Davidson, C. E. (2014). Estimation Method for Serial Dilution Experiments. *Journal of Microbiological Methods*, 107: 214-221.
- Bernard, M. (2014). Industrial Potential Of Polyhydroxyalkanoate Bioplastic: A Brief Review. USURJ: Univ Sask Undergrad Res J.
- Bhimani, A.A., Bhimani, H.D., Vaghela, N.R., & Gohel, S.D. (2024). Cultivation Methods, Characterization, and Biocatalytic Potential of Organic Solid Waste Degrading Bacteria Isolated From Sugarcane Rhizospheric Soil and Compost. *Biologia*, 79: 953-974.
- Bhuwal, A.K., Singh, G., Aggarwal, N.K., Goyal, V., & Yadav, A. (2013). Isolation and Screening of Polyhydroxyalkanoates Producing Bacteria From Pulp, Paper, and Cardboard Industry Wastes. *Intl J Biomaterials*, 752821: 1-10.
- Boschetti, T., Toscani, L., Shouakar-Stash, O., Iacumin, P., Venturelli, G., Mucchino, C., Frape, S. (2010). Salt Waters of the Northern Apennine Foredeep Basin (Italy): Origin and Evolution. *Aquat. Geochem*, 17:1-38.
- Bugnicourt, E., Cinelli, P., Lazzeri, A., & Alvarez, V., (2014). Polyhydroxyalkanoate (PHA): Review of Synthesis, Characteristics, Processing and Potential Applications in Packaging. *Express Polym. Lett*, 8: 791-808.
- Bunu, S.J., Otele, D., Alade, T., & Dodoru, R.T. (2020). Determination of Serum DNA Purity among Patients Undergoing Antiretroviral Therapy using NanoDrop-1000 Spectrophotometer and Polymerase Chain Reaction. *Biomedical and Biotechnology Research Journal (BBJR)*, 4: 214-219.

- Burdon, K.L.J. (1946). Bacterial Fatty Materials in Bacterial and Fungi Revealed by Staining Dried Fixed Slide Preparations. *J. Bacteriol*, 52: 665–678.
- Burhanudinnur, M. (2019). Karakteristik Gunung Lumpur Zona Rembang dan Implikasinya Terhadap Lapangan Migas di Jawa Timur. *Lembaran Publikasi Minyak dan Gas Bumi*, 53(3): 123-149.
- Carvajal, J.H., Mendivelso, D., Obando, G., Forero, H., Gomez, J.F., Vasquez, L., Mora, H., Cardenas, R., Castiblanco, C.R., Franco, J.V., Ruge, G., Pinzon, L., Prada, M.A., Imbachi, O. (2011). Características del Volcanismo De Lodo del Caribe Central Colombiano. *Technical report*. Instituto Colombiano De Geología Y Minería INGEOMINAS.
- Chang, Y.-H., Cheng, T.-W., Lai, W.-J., Tsai, W.-Y., Sun, C.-H., Lin, L.-H., & Wang, P.-L. (2012). Microbial Methane Cycling in A Terrestrial Mud Volcano in Eastern Taiwan, *Environ. Microbiol*, 14(4): 895–908.
- Chatalingath, N., Kingsly, J.S., & Gunasekar, A. (2023). Biosynthesis and Biodegradation of Poly(3-Hydroxybutyrate) from *Priestia flexa*; A Promising Mangrove Halophyte Towards The Development of Sustainable Eco-Friendly Bioplastics. *Microbiological Research*, 267: 1-9.
- Chen, B.Y., Shiau, T.J., Wei, Y.H., Chen, W.M., Yu, B.H., Yen, C.Y., & Hsueh, C.C. (2012). Feasibility Study of Polyhydroxyalkanoate Production for Materials Recycling Using Naturally Occurring Pollutant Degraders. *Journal of Taiwan Institute of Chemical Engineers*, 43: 455-458.
- Chen, C., Hsu, S., Lin, M., Hsu, Y. (2015). Mass Production of C50 Carotenoids by *Haloferax mediterranei* in Using Extruded Rice Bran and Starch Under Optimal Conductivity of Brined Medium. *Bioprocess Biosyst. Eng*, 38: 2361-2367.
- Chen, G.Q. (2010). *Plastics from Bacteria, Microbiology Monographs*. Berlin Heidelberg : Springer-Verlag.
- Chen, G-Q., & Wu, Q. (2005). The Application of Polyhydroxyalkanoates as Tissue Engineering Materials. *Biomaterials*, 26: 6565–6578.
- Chetia, J. (2019). Isolation and Characterization of PHA Producing Bacteria from Sewage Samples of Assam. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(4): 10686-10692.
- Choonut, A., & Sangkharak, K. (2019). Biofuel from Polyhydroxyalkanoates (PHAs). *ASEAN J Sci Technol Rep*, 22(2): 1-8.
- Church, D.L., Cerruti, L., Gurtler, A., Griener, T., Zelanzy, A., & Emler, S. (2020). Performance and Application of 16S rRNA Gene Cycle Sequencing

- for Routine Identification of Bacteria in the Clinical Microbiology Laboratory. *Clinical Biology Reviews*, 33(4): 1-74.
- Ciesielka, J.M., & Kiewisz, R. (2016). Bacterial Polyhydroxyalkanoates: Still Fabulous?. *Microbiological Research*, 192: 271-282.
- Ciesielski, S., Mozejko, J., & Przybyłek, G. (2010a). The Influence of Nitrogen Limitation on mcl-PHA Synthesis by Two Newly Isolated Strains of *Pseudomonas* sp. *J. Ind. Microbiol. Biotechnol*, 37: 511-520.
- Ciesielski, S., Pokój, T., & Klimiuk, E. (2010b). Cultivation-Dependent and -Independent Characterization of Microbial Community Producing Polyhydroxyalkanoates from Raw Glycerol. *J. Microb. Biot*, 20: 853-861.
- Cubidez, C., Gutiérrez-Cortés, C., & Suarez, H. (2023). Bioprospecting in Food Production: an Approximation of The Current State in Colombia. *Revista Facultad Nacional de Agronomía Medellín*, 76(1): 1-20.
- Darma, S., Harsoprayitno, S., Setiawan, B., Hadyanto., Sukhyar, R., Soedibjo, A.W., Ganefianto, N., & Stimac, J. (2010). Geothermal Energy Update: Geothermal Energy Development and Utilization in Indonesia. *Proceedings World Geothermal Congress 2010 Bali*, 1-13.
- de Graaf, M., Bijmans, M.F., Abbas, B., Euverink, G.J., Muyzer, G., & Janssen, A.J. (2011). Biological Treatment of Refinery Spent Caustics Under Halo-Alkaline Conditions. *Bioresour Technol*, 102: 7257–7264.
- De Waard, P., Van der Wal, H., Huijberts, G.N., & Eggink, G. (1993). Heteronuclear NMR Analysis of Unsaturated Fatty Acids in Poly (3-Hydroxyalkanoates). Study of Beta-Oxidation in *Pseudomonas putida*. *J. Biol. Chem*, 268: 315-319.
- Defoirdt, T., Halet, D., & Vervaeren. *et al.* (2007). The Bacterial Storage Compound Poly-B-Hydroxybutyrate *protects artemia* Franciscana From Pathogenic *Vibrio campbellii*. *Environ Microbiol*, 9: 445-452.
- Desouky, S.E., El-Shiekh, H.H., Elabd, H., & Shehab, A.M. (2014). Screening, Optimization and Extraction of Polyhydroxyalkanoates (PHAs) from *Bacillus thuringiensis*. *Journal of Advances in Biology & Biotechnology*, 1(1): 40-54.
- Dienye, B.N., Abu, G.O., & Agwa, O.K. (2023). Screening and Biochemical Characterization of Indigenous Polyhydroxyalkanoates Producing Bacteria. *Journal of Advances in Microbiology*, 23(2): 43-55.
- Doi, Y., Tamaki, A., Kunioka, M., & Soga, K. (1988). Production of Copolyesters of 3-Hydroxybutyrate and 3-Hydroxyvalerate by *Alcaligenes*

- eutrophus* from Butyric and Pentanoic Acids. *Appl Microbiol Biotechnol*, 28: 330-334.
- Duarte, O., & Velho, L. (2009). La Bioprospección Como Un Mecanismo De Cooperación Internacional Para Fortalecimiento De Capacidades En Ciencia Y Tecnología En Colombia. *Ciência da Informação* (Brasil), 38(3): 96-110.
- Durovic, P., Kutay, U., Schelper, C., & Dennis, P.P. (1994). Strain Identification and 5S rRNA Gene Characterization of the Hyperthermophilic Archaeobacterium *Sulfolobus acidocaldarius*. *Journal of Bacteriology*, 176(2): 514-517.
- Edbeib, M.F., Wahab, R.A., & Huyop, F. (2016). Halophiles: Biology, Adaptation, and Their Role in Decontamination of Hypersaline Environments. *World J Microbiol Biotechnol*, 32:135.
- Elain, A., Fellic, M.L., Corre, Y.M., Grand, A.L., Tilly, V.L., Audic, J.L., & Bruzaud, S. (2015). Rapid and Qualitative Fluorescence-Based Method for The Assessment of PHA Production in Marine Bacteria During Batch Culture. *World Journal Microbiology and Biotechnology*, 31(10): 1555-1563.
- Elisanti, A.D., Ardianto, E.T., Ida, N.C., & Hendriyanto, E. (2020). Efektifitas Paparan Sinar UV dan Alkohol 70% terhadap Total Bakteri Pada Uang Kertas yang Beredar di Masa Pandemi COVID-19. *Jurnal Riset Kefarmasian Indonesia*, 2(2): 113-121.
- Faniyan, O., Akepe, V., & Cock, I.E. (2023). Analyzing Bacterial Species from Different Environments Using Direct 16S rRNA Gene Sequencing Methods. *Pharmacognosy Communication*, 13(1): 24-33.
- Felsenstein J. (1985). Confidence Limits on Phylogenies: An Approach Using The Bootstrap. *Evolution* 39:783-791.
- Fiedler, S., Steinbuchel, A., & Rehm, B.H. (2002). The Role of The Fatty Acid Beta-Oxidation Multienzyme Complex From *Pseudomonas oleovorans* in Polyhydroxyalkanoate Biosynthesis: Molecular Characterization of The fadBA Operon from *P. oleovorans* and of The Enoyl-CoA Hydratase Genes phaJ from *P. oleovorans* and *Pseudomonas putida*. *Arch. Microbiol*, 178: 149-160.
- Frolova, A.A., Merkel, A.Y., Kopitsyn, D.S., & Slobodkin, A.I. (2024). *Petrocella pelovolcani* sp. nov., an Alkaliphilic Anaerobic Bacterium Isolated from Terrestrial Mud Volcano. *Microbiology*, 93(4): 391-398.
- García, G., Sosa-Hernández, J.E., Rodas-Zuluaga, L.I., Castillo-Zacarías, C., Iqbal, H., & Parra-Saldívar, R. (2021). Accumulation of PHA in the

- Microalgae *Scenedesmus* sp. under Nutrient-Deficient Conditions. *Polymers*, 13(131): 1-23.
- Gobi, K., & Vadivelu, V. M. (2015). Polyhydroxyalkanoate Recovery and Effect of In Situ Extracellular Polymeric Substances Removal From Aerobic Granules. *Bioresource Technology*, 189: 169-176.
- Grant, WD., & Sorokin, D.Y. (2011). *Distribution and Diversity of Soda Lake Alkaliphiles*. In: Horikoshi K (Ed) *Extremophiles Handbook*. Tokyo: Springer pp 27-54.
- Greenspan, P., Mayer, E.P., & Fowler, S.D. (1985). Nile Red: A Selective Fluorescent Stain for Intracellular Lipid Droplets. *J Cell Biol*, 100: 965-973.
- Guerrini, S., Borreani, G., & Voojjs, H. (2017). *Biodegradable Materials In Agriculture: Case Histories And Perspectives*. In *Soil Degradable Bioplastics For A Sustainable Modern Agriculture*; Malinconico, M., Ed. Berlin/Heidelberg, Germany : Springer.
- Gupta, R., Patel, S., Saini, N., & Chen, S. (2020). Robust Demarcation of 17 Distinct *Bacillus* Species Clades, Proposed as Novel Bacillaceae Genera, by Phylogenomics and Comparative Genomic Analyses: Description of *Robertmurraya kyonggiensis* sp. Nov. and Proposal for An Emended Genus *Bacillus* Limiting It Only to The Members of The *Subtilis* and *Cereus* Clades of Species. *International Journal of Systematic and Evolutionary Microbiology*, 70: 5753-5798.
- Hahn, S.K., Chang, Y.K., Kim, B.S., Chang, H.N. (1994). Optimization of Microbial Poly 3-Hydroxybutyrate Recover Using Dispersions of Sodium Hypochlorite Solution and Chloroform. *Biotechnol Bioeng*, 44: 256-261.
- Hall, B.G., Acar, H., Nandipati, A., & Barlow, M. (2013). Growth Rates Made Easy. *Molecular Biology Evolution*, 31(1): 232-238.
- Heinrich, D., Madkour, M.H., Al-Ghamdi, M.A., Shabbaj, I.I., & Steinbüchel, A. (2012). Large Scale Extraction Of Poly(3-Hydroxybutyrate) from *Ralstonia eutropha* H16 using Sodium Hypochlorite. *AMB Express*, 2 (59).
- Higgins, G.E., & Saunders, J.B. (1974). Mud Volcanoes – Their Nature and Origin: Contribution tapi The Geology and Paleobiology of The Carribean and Adjacent Areas. *Vehandlungen der Naturforschenden Gesellschaft in Basel*, 84: 101-152.
- Hongjun, L., Xi, Z., Yan, H., Cece, Q., Cheng, S., Rong, L., & Qirong, S. (2018). Production of Free Amino Acid and Short Peptide Fertilizer from

- Rapeseed Meal Fermentation Using *Bacillus flexus* NJNPD41 for Promoting Plant Growth. *Pedosphere*, 28(2): 261-268.
- Horikoshi, K. (1999). Alkaliphiles: Some Applications of Their Products for Biotechnology. *Microbiol. Mol. Biol. Rev.*, 63: 735-750.
- Hu, H., Natarajan, V.P., Wang, F. (2021). Towards Enriching and Isolation of Uncultivated Archaea from Marine Sediments Using A Refined Combination of Conventional Microbial Cultivation Methods. *Mar Life. Sci Technol*, 3: 231-242.
- Huijberts, G.N.M., Eggink, G., De Waard, P., Huisman, G.W., & Witholt, B. (1992). *Pseudomonas putida* KT2442 Cultivated on Glucose Accumulates Poly(3-Hydroxyalkanoates) Consisting of Saturated and Unsaturated Monomers. *Appl. Environ. Microbiol.* 58: 536-544.
- Ibrahim, R., Aranjani, J.M., Prasanna, N., Biswas, A., & Gayam, P.K.R. (2025). Production, Isolation, Optimization, and Characterization of Microbial PHA from *Bacillus australimaris*, *Scientific Reports*, 15(8395): 1-16.
- Iskandar, A.U., Ethica, S.N., Mukaromah, A.H., Sulistyaninhtyas, A.R., & Darmawanti, S. (2010). Molecular Systematic and Phylogenetic Analysis of Indigenous Bacterial Isolates with Potential as Bioremediation Agent Based on 16S rRNA Gene Analysis. *IOP Conf. Series: Earth and Environmental Science*, 743: 1-10.
- Israni, N., & Shivakumar, S. (2019). *Polyhydroxyalkanoates in Packaging*, in: *Biotechnological Applications of Polyhydroxyalkanoates*. Singapore : Springer Singapore.
- Jaber, N.N. (2019). Isolation and Identification of Polyhydroxyalkanoates from Two Strains of *Clostridium bifermentans* Isolated from The Soil Near The Gas Station in Basrah City. *Biomedical Journal of Scientific & Technical Research*, 13(2): 9888-9892.
- Jacquel, N., Lo, C.W., Wei, Y.H., Wu, H.S., Wang, S.S. (2008). Isolation and Purification Of Bacterial Poly(3-Hydroxyalkanoates). *Biochemical Engineering Journal*, 39: 15-27.
- James, N., & Umesh, M. (2023). Multifarious Potential of Biopolymer-Producing *Bacillus subtilis* NJ14 for Plant Growth Promotion and Stress Tolerance in *Solanum lycopersicum* L. an *Cicer arietinum* L.: A Way Toward Sustainable. *Molecular Biotechnology*, 66: 1031-1050.
- Jira, J., Rezek, B., Kriha, V., Artemenko, A., Matolínová, I., Skakalova, V., Stenclova, P., & Kromka, A. (2018). Inhibition of *E. coli* Growth by Nanodiamond and Graphene Oxide Enhanced by Luria-Bertani Medium. *Nanomaterials*, 140.

- Kanavaki, I., Drakonaki, A., Geladas, E.D., Spyros, A., Xie, H., & Tsiotis, G. (2021). Polyhydroxyalkanoate (PHA) Production in *Pseudomonas* sp. phDV1 Strain Grown on Phenol as Carbon Sources. *Microorganisms*, 9(1636): 1-11.
- Kanekar, P.P., Kanekar, S.P., Kelkar, A.S., & Dhakephalkar, P.K. (2012). *Halophiles – Taxonomy, Diversity, Physiology and Applications*. In: Satyanarayana, T., Johri, B. (eds) *Microorganisms in Environmental Management*. Dordrecht : Springer.
- Kirk, R.G., & Ginzburg, M. (1972). Ultrastructure of Two Species of *Halobacterium*. *J Ultrastruct Res*, 41: 80-94.
- Koller, M. (2017). Production of Polyhydroxyalkanoate (PHA) Biopolyesters by Extremophiles?. *MOJ Polym Sci*, 1: 1-9.
- Koller, M., Marsalek, L., de Sousa Dias, M.M., & Braunegg, G. (2017). Producing Microbial Polyhydroxyalkanoate (PHA) Biopolyesters in a Sustainable Manner. *N Biotechnol*, 37: 24-38.
- Kopf, A. J. (2002). Significance of Mud Volcanism. *Reviews of Geophysics*, 40(2): 1-52.
- Kopf, A., Klaeschen, D., & Mascle, J. (2001). Extreme Efficiency of Mud Volcanism in Dewatering Accretionary Prisms. *Earth Planetary Sci Lett*, 189: 295-313.
- Kourmentza, C., Placido, J., Venetsaneas, N., Burniol-Figols, A., Varrone, C., Gavala, H., Reis, M. (2017). Recent Advances And Challenges Towards Sustainable Polyhydroxyalkanoate (PHA) Production. *Bioengineering*, 4.
- Krulwich, T.A., Sachs, G., & Padan, E. (2011). Molecular Aspects of Bacterial pH Sensing and Homeostasis. *Nat Rev Microbiol*, 9: 330–343.
- Kunasundari, B., & Sudesh, K. (2011). Isolation and Recovery of Microbial Polyhydroxyalkanoates. *Express Polym Lett*, 5: 620-634.
- Kushner, D. (1978). *Life in High Salt and Solute Concentrations: Halophilic Bacteria*. In *Microbial Life in Extreme Environments* (ed. water. Kushner, D. J). London: Academic Press.
- Lane, D.J., Pace, B., Olsen, G.J., Stahl, D.A., Sogin, M.L., & Pace, N.R. (1985). Rapid Determination of 16S Ribosomal RNA Sequences for Phylogenetic Analyses. *Proc Natl Acad Sci USA*, 82: 6955-6959.
- Lansink, A.G.W. (1968). Thin Layer Chromatography and Histochemistry of Sudan Black B. *Histochemistry*, 16, 68-84.

- Larasati, S.J.H., Sabdono, A., & Sibero, M.T. (2021). Identifikasi Molekuler Kapang Asosiasi Spons menggunakan Metode DNA Barcoding. *Journal of Marine Research*, 10(1): 48-54.
- Larsen, H. (1962). *Halophilism*, in I. C. Gunsalus and R. Y. Stanier, Eds., *The Bacteria—A Treatise on Structure and Function. Vol. IV. The Physiology of Growth*. New York : Academic Press.
- Latif, A.A., & Osman, G. (2017). Comparison of Three Genomic DNA Extraction Methods to Obtain High DNA Quality From Maize. *Plant Methods*, 13(1): 1-9.
- Lee, Y. N. (2003). Calcite Production by *Bacillus amyloliquefaciens* CMB01. *The Journal of Microbiology*, 41: 345-348.
- Lee, Y.F., Sridewi, N., Ramanathan, S., & Sudesh, K. (2015). The Influence of Electrospinning Parameters and Drug Loading on Polyhydroxyalkanoate (PHA) Nanofibers For Drug Delivery. *Int. J. Biotechnol. Well Ind*, 4: 103-113.
- Lee, C.W., Song, B.K., Jegal, J., & Kimura, Y. (2013). Cell Adhesion and Surface Chemistry of Biodegradable Aliphatic Polyesters: Discovery of Particularly Low Cell Adhesion Behavior on Poly(3-[RS]-Hydroxybutyrate). *Macromol Res*, 21: 1305-1313.
- Legat, A., Gruber, C., Zangger, K., Wanner, G., & Lotter, H.S. (2010). Identification of Polyhydroxyalkanoates in Halococcus and Other Haloarchaeal Species. *Appl Microbiol Biotechnol*, 87: 1119-1127.
- Lestari, N.C., & Maulana, F. (2020). Bioprospek Sungai Biuku Desa Selanjung sebagai Desa Wisata Edukasi Alam. *Jurnal Pendidikan Hayati*, 6(4): 179-188.
- Li, N., Huang, H., & Chen, D. (2014). Fluid Sources and Chemical Processes Inferred from Geochemistry of Pore Fluids and Sediments of Mud Volcanoes in The Southern Margin of The Junggar Basin, Xinjiang, Northwestern China. *Applied Geochemistry*, 46: 1-9.
- Liu, C.C., Kar, S., Jean, J.S., Wang, C.H., Lee, Y.C., Sracek, O., Li, Z., Bundschuh, J., Yang, H.J., & Chen, C.Y. (2013). Linking Geochemical Processes in Mud Volcanoes with Arsenic Mobilization Driven by Organic Matter. *Journal of Hazardous Materials*, 262: 980-988.
- Liu, C.C., Maity, J.P., Jean, J.S., Sracek, O., Kar, S., Li, Z., Bundschuh, J., Chen, C.Y., & Lu, H.Y. (2011). Biogeochemical Interactions Among The Arsenic, Iron, Humic Substances, and Microbes in Mud Volcanoes in Southern Taiwan. *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances and Environmental Engineering*, 46(11): 1218-1230.

- Maestrelli, D., Bonini, M., & Sani, F. (2019). Linking Structures with The Genesis and Activity of Mud Volcanoes: Examples from Emilia and Marche (Northern Apennines, Italy). *Int. J. Earth Sci.* 108(5): 1683-1703.
- Manik, S.S., & Simanjutak, S. (2020). Isolasi dan Screening Proteolitik Bakteri Termofilik Lumpur Panas Danau Linow Tomohon. *Jurnal Nukleus Biosains*, 1(1): 12-20.
- Mannina, G., Presti, D., Montiel-Jarillo, G., Carrera, J., & Suarez-Ojeda, M.E. (2020). Recovery of Polyhydroxyalkanoates (PHAs) from Wastewater: A Review. *Bioresource Technology*, 297: 1-12.
- Mardanov, A.V., Kadnikov, V.V., Beletsky, A.V., & Ravin, N.V. (2020). Sulfur and Methane-Oxidizing Microbial Community in a Terrestrial Mud Volcano Revealed by Metagenomics. *Microorganism*, 8 : 1-16.
- Mascarenhas, J., & Aruna, K. (2017). Screening Polyhydroxyalkonates (PHA) Accumulating Bacteria from Diverse Habitats. *Journal of Global Sciences*, 6(3): 4835-4848.
- Masum, M., & Akbar, A. (2019). The Pacific Ring of Fire is Working as a Home Country of Geothermal Resources in The World. *IOP Conference Series: Earth and Environmental Science* 249, 1-8.
- Mazzini, A., & Etiope, G. (2017). Mud Volcanism: An Update Review. *Earth Sci Rev*, 168: 81-112.
- McChalicher, C.W.J., Srienc, F., & Rouse, D.P. (2010). Solubility and Degradation Of Polyhydroxyalkanoate Biopolymers in Propylene Carbonate. *AIChE J*, 56: 1616-1625.
- Medina, M.B., Uknalis, J., & Tu, S.I. (2007). Effects of Sugar Addition in Luria Bertani (LB) Media on *Escherichia coli* O157:H7. *Journal of Food Safety*, 31: 386-394.
- Mesquita, D.P., Amaral, A.L., Leal, C., Oehmen, A., Reis, M.A.M., & Ferreira, E.C. (2015). Polyhydroxyalkanoate Granules Quantification in Mixed Microbial Cultures Using Image Analysis: Sudan Black B versus Nile Blue A Staining. *Analytica Chimica Acta*, 865: 8-15.
- Muigano, M.N., Anami, S.E., Onoguso, J.M., & Mauti, G.O. (2024). Optimized Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) Production by Moderately Haloalkaliphilic Bacterium *Halomonas alkalicola* Ext. *Internaional Journal of Polymer Science*, 1-17.
- Muigano. M.N., Anami, S.E., Onguso, J.M., & Mauti, G.O. (2024). Optimized Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) Production by Moderately Haloalkaliphilic Bacterium *Halomonas alkalicola* Ext. *International Journal of Polymer Science*, 1-17.

- Munir, S., Iqbal, S., & Jamil, N. (2015). Polyhydroxyalkanoates (PHA) Production using Paper Mill Wastewater as Carbon Source in Comparison with Glucose. *Journal of Pure and Applied Microbiology*, 9(1): 1-8.
- Nahar, S., Jeong, M-H., & Hur, J-S. (2019). Lichen-Associated Bacterium, A Novel Bioresource of Polyhydroxyalkanoate (PHA) Production and Simultaneous Degradation of Naphthalene and Anthracene. *J Microbiol Biotechnol*, 29: 79-90.
- Niemann, H., Boetius, A. (2010). *Mud Volcanoes*. In: Timmis KN, editor. *Handbook of Hydrocarbon and Lipid Microbiology part 3*. Berlin: Springer
- Nisha, J., Mudaliar, N., Senthilkumar, P., Kumar, N., & Samrot, A.V. (2012). Influence of Substrate Concentration in Accumulation Pattern of Poly(R) Hydroxyalkanoate in *Pseudomonas putida* SU-8. *Afr. J. Microbiol. Res*, 12(6): 3623-3630.
- Niyonzima, F.N., & More, S.S. (2014). Concomitant Production of Detergent Compatible Enzymes by *Bacillus flexus* XJU-1. *Brazilian Journal of Microbiology*, 45(3): 903-910.
- Noer, S. (2020). Identifikasi Bakteri secara Molekular Menggunakan 16S rRNA. *EduBiologia*, 1(1): 1-6.
- Norhafini, H., Huong, K.H., & Amirul, A.A. (2019). High PHA Density Fed-Batch Cultivation Strategies for 4HB-rich P(3HB-co-4HB) Copolymer Production by Transformant *Cupriavidus malaysiensis* USMAA1020. *International Journal of Biological Macromolecules*, 125: 1024-1032.
- Novian, M.I., Utama, P.P., & Huesin, S. (2013). Penentuan Formasi Batuan Sumber Gunung Lumpur di Sekitar Purwodadi berdasarkan Kandungan Fosil Foraminifera. *Prosiding Seminar Nasional Kebumihan Ke-6 Teknik Geologi Universitas Gadjah Mada*, 18-28.
- Obruca, S., Dvorak, P., Sedlacek, P., Koller, M., Sedlar, K., Pernicova, I., & Safranek, D. (2022). Polyhydroxyalkanoates Synthesis by Halophiles and Thermophiles: Towards Sustainable Production of Microbial Bioplastics. *Biotechnology Advances*, 58: 1-28.
- Obruca, S., Sedlacek, P., Koller, M., Kucera, D., & Pernicova, I. (2018). Involvement of Polyhydroxyalkanoates in Stress Resistance of Microbial Cells: Biotechnological Consequences and Applications. *Biotechnol Advances*, 36:856–70.
- Olguin-Lora, P., Le Borgne, S., Castorena-Cortes, G., Roldan-Carrillo, T., Zapata-Penasco, I., & Reyes-Avila J. (2011). Evaluation of Haloalkaliphilic Sulfur-Oxidizing Microorganisms with Potential Application in The

- Efuent Treatment of The Petroleum Industry. *Biodegradation*, 22: 83–93.
- Oryan, A., Alidadi, S., Moshiri, A., & Maffulli, N. (2014). Bone regenerative Medicine: Classic Options, Novel Strategies, and Future Directions. *J. Orthop. Surg. Res*, 9: 18.
- Ostle, A.G., & Holt, J.G. (1982). Nile Blue A as A Fluorescent Stain for Poly-B hydroxybutyrate. *Appl Environ Microbiol*, 44: 238-241.
- Oyemitan I. (2017). *Chapter 27 - African Medicinal Spices of Genus Piper. En: Kuete V. (Ed) Medicinal Spices And Vegetables From Africa: Therapeutic Potential Against Metabolic, Inflammatory, Infectious And Systemic Diseases.*, Cameroon: Dschang pp. 581-597.
- Padermshoke, A., Katsumoto, Y., Sato, H., Ekgasit, S., Noda, I., & Ozaki, Y. (2005). Melting Behavior of Poly(3-Hydroxybutyrate) Investigated by Two-Dimensional Infrared Correlation Spectroscopy. *Spectrochim. Acta - Part A Mol. Biomol. Spectrosc*, 61: 541–550.
- Palmisano, M., Balassone, G., Maggi, S., Arenas, A.A., Guerra, I.M.B., Valero, L.E.C., Ippolito, F., Mondillo, N., Giraldo, D.F.M., Mormone, A., Pellino, A., Putzolu, F., & Luccio, D.D. (2024). Geochemistry and mineralogy of muds and thermal waters from mud volcanoes in the NW Caribbean Coast of Colombia and their potential for pelotherapy. *Catena*, 235(107261): 1-18.
- Pandolfi, D., & Pons, M.N. (2004). Gram-Staining Characterisation of Activated Sludge Filamentous Bacteria by Automated Colour Analysis. *Biotechnology Letters*, 26: 1841-1846.
- Pantazaki, A.A., Ioannou, A.K., & Kyriakidis, D.A. (2005). A Thermostable Ketothiolase of Polyhydroxyalkanoates (PHAs) in *Thermus thermophilus*: Purification and Biochemical Properties. *Mol Cell Biochem*, 269: 27-36.
- Panzer, F., Sicali, S., Lombardo, G., Imposa, S., Gresta, S., & D'Amico, S. (2016). A Microtremor Survey to Define the Subsoil Structure in A Mud Volcanoes Area: The Case Study of Salinelle (Mt. Etna, Italy). *Environmental Earth Sciences*, 75(15): 1140-13.
- Patel, J. B. (2001). 16S rRNA Gene Sequencing for Bacterial Pathogen Identification in The Clinical Laboratory. *Mol. Diagn*, 6: 313-321.
- Peng, Q., Sun, X., Gong, T., Wu, C.Y., Zhang, T., Tan, J., & Zhang, Z-R. (2013). Injectable and Biodegradable Thermosensitive Hydrogels Loaded with Phbhhx Nanoparticles For The Sustained and Controlled Release of Insulin. *Acta Biomater*, 9: 5063-5069.

- Pfuller, U., Franz, H., & Prei, A. (1977). Sudan Black B: Chemical Structure and Histochemistry of the Blue Main Components. *Histochemistry*, 54: 237-250.
- Phanse, N., Chincholikar, A., Patel, B., Rathore, P., Vyas, P., & Patel, M. (2011). Screening of PHA (Polyhydroxyalkanoate) Producing Bacteria from Diverse Sources. *International Journal of Biosciences*, 1(6): 27-32.
- Philip, S., Keshavarz, R., & Roy, I. (2007). Polyhydroxyalkanoates: Biodegradable Polymers with A Range of Applications. *J. Chem. Technol. Biotechnol*, 82: 233-247.
- Poirier, Y. (1999). Green Chemistry Yields A Better Plastic. *Nat. Biotechnol*, 17: 960-961.
- Poli, A., Di Donato, P., Abbamondi, G.R., & Nicolaus, B. (2011). Synthesis, Production, and Biotechnological Applications of Exopolysaccharides and Polyhydroxyalkanoates by Archaea. *Archaea*, 1-11.
- Poli, A., Di Donato, P., Abbamondi, G.R., & Nicolaus, B. (2011). Synthesis, Production, and Biotechnological Applications of Exopolysaccharides and Polyhydroxyalkanoates by Archaea. *Archaea*.
- Poltronieri, P., & Kumar, P. (2017). *Polyhydroxyalkanoates (PHAs) in Industrial Applications*. In *Handbook of Ecomaterials*; Martínez, L., Kharissova, O., Kharisov, B., Eds. Springer: Cham, Switzerland.
- Potter, M.; Madkour, M.H.; Mayer, F.; Steinbuchel, A. Regulation of phasin expression and polyhydroxyalkanoate (PHA) granule formation in *Ralstonia eutropha* H16. *Microbiology* 2002, 148, 2413–2426
- Potter, M.; Steinbuchel, A. Biogenesis and Structure of Polyhydroxyalkanoate Granules; Springer: Berlin/Heidelberg, Germany, 2006; pp. 109–136.
- Purohit, M.K., Raval, V.H., & Sigh, S.P. (2014). Haloalkaliphilic Bacteria: Molecular Diversity and Biotechnological Applications. *Geomicrobiology and Biogeochemistry, Soil Biology*, 39: 61-79.
- Qi, Q., & Rehm, B.H. (2001). Polyhydroxybutyrate Biosynthesis in *Caulobacter crescentus*: Molecular Characterization of The Polyhydroxybutyrate Synthase. *Microbiology*, 147: 3353–3358.
- Quillaguamán, J., Guzmán, H., Van-Thuoc, D., Hatti-Kaul, R. (2010). Synthesis and Production of Polyhydroxyalkanoates by Halophiles: Current Potential and Future Prospects. *Appl Microbiol Biotechnol*, 85:1687–1696.
- Radjasa, O.K., Steven, R., Natanael, Y., Nugrahapraja, H., Radjasa, S.K., Kristianti, T., Moeis, M.R., Trinugroho, J.P., Suharya, H.B.,

- Rachmatsyah, A.O., Dwijayanti, A., Putri, M.R., Fretes, C.E.D., Siallagan, Z.L., Fadil, M., Opier, R.D.A., Farahyah, J.D., Rahmawati, V., Rizanti, M., Humaira, Z., Prihatmanto, A.S., Hananto, N.D., Susanto, R.D., Cahyadi, A., Elfahmi, E., Priharto, N., Kamarisima, K., & Dwivany, F.M. (2024). From the Depths of The Java Trench: Genomic Analysis of *Priestia flexa* JT4 Reveals Bioprospecting and Lycopene Production Potential. *BMC Genomics*, 25(1259): 1-18.
- Rai, R., Keshavarz, T., Roether, J.A., & Boccaccini, A.R., Roy, I. (2011). Medium Chain Length Polyhydroxyalkanoates, Promising New Biomedical Materials for The Future. *Mater. Sci. Eng. R. Rep*, 72: 29-47.
- Ranjbaran, M. & Sotohian, F. (2015). Environmental Impact and Sedimentary Structures of Mud Volcanoes in Southeast of the Caspian Sea basin, Golestan province, Iran, Caspian. *J. Env. Sci*, 13(4): 391-405.
- Rastogi, V.K., & Samyn, P. (2015). Bio-Based Coatings for Paper Applications. *Coatings*, 5: 887-930.
- Raza, Z.A., Abid, S., & Banat, I.M. (2018). Polyhydroxyalkanoates: Characteristics, Production, Recent Developments and Applications. *International Biodeterioration & Biodegradation*, 126: 45-56.
- Rehm, B.H., & Steinbüchel, A. (1999). Biochemical and Genetic Analysis of PHA Synthases and Other Proteins Required for PHA Synthesis. *Int J Biol Macromol*, 25: 3-19.
- Rehm, B.H.A. (2007). Biogenesis of Microbial Polyhydroxyalkanoate Granules: A Platform Technology for The Production of Tailor-Made Bioparticles. *Curr. Issues Mol. Biol*, 9: 41-62.
- Reid, W.V., Laird, S.A., Meyer, C.A., *et al.* (1993). *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development*. Washington DC: World Resources Institute. p. 341.
- Ren, Q., Ruth, K., Thöny-Meyer, L., & Zinn, M. (2010). Enantiomerically Pure Hydroxycarboxylic Acids: Current Approaches and Future Perspectives. *Appl Microbiol Biotechnol*, 87: 41-52.
- Risna, Y.K., Harimutri, S., Wihanoyo., & Widodo. (2022). Kurva Pertumbuhan Isolat Bakteri Asam Laktat dari Saluran Pencernaan Itik Lokal Asal Aceh. *Jurnal Peternakan Indonesia*, 24(1): 1-7.
- Rousseaux, S., Hartmann, A., & Soulas, G. (2001). Isolation and Characterisation of New Gram-Negative and Gram-Positive Atrazine Degrading Bacteria from Different French Soils. *FEMS Microbiology Ecology*, 36: 211-22.

- Sabdaningsih, A., & Lunggani, A.T. (2020). Isolasi dan Karakterisasi Morfologi Bakteri Halofilik dari Bledug Kuwu, Kabupaten Grobogan. *Bioma*, 22(1): 46-52.
- Saitou, N., & Nei, M. (1987). The Neighbor-Joining Method: A New Method for Reconstructing Phylogenetic Trees. *Molecular Biology and Evolution*, 4: 406-425.
- Salwan, R., & Sharma, V. (2022). Genomics of Prokaryotic Extremophiles to Unfold The Mystery of Survival in Extreme Environments. *Microbiological Research*, 264(127156): 1-12.
- Samrot, A.V.; Avinesh, R.B.; Sukeetha, S.D.; Senthilkumar, P. Accumulation of poly[(R)-3-hydroxyalkanoates] in *Enterobacter cloacae* SU-1 during growth with two different carbon sources in batch culture. *Appl. Biochem. Biotechnol.* 2011, 163, 195–203.
- Sanches-Gonzales, M., Gamez-Blanco, A., Escalante, A., Valladares, A.G., & Olevera, C. (2011). Isolation and Characterization of New Facultative Alkaliphilic *Bacillus flexus* Strains From Maize Processing Waste Water (Nejayote). *Letters in Applied Microbiology*, 52: 413-419.
- Saravanan, K., Umesh, M., & Kathrivel, P. (2022). Microbial Polyhydroxyalkanoates (PHAs): A Review on Biosynthesis, Properties, Fermentation Strategies and Its Prospective Applications for Sustainable Future. *Journal of Polymers and the Environment*, 30: 4903-4935.
- Schlegel, H.G., Gottschalk, G., & von Bartha, R. (1961). Formation and Utilization of Poly- β -Hydroxybutyric Acid by *Knallgas* Bacteria (*Hydrogenomonas*). *Nature*, 191: 463-465.
- Schloss, P.D., Handelsman, J. (2005). Introducing DOTUR, a Computer Program for Defining Operational Taxonomic Units and Estimating Species Richness. *Applied and Environmental Microbiology*, 71(3): 1501-1506.
- Schoeborn, L., Yates, P.S., & Grinton, B.E. (2004). Liquid Serial Dilution Is Inferior to Solid Media for Isolation of Cultures Representative of the Phylum-Level Diversity of Soil Bacteria. *Applied and Environmental Microbiology*, 70(7): 4363-4366.
- Sepanian, E., Sepahy, A.A. & Hosseini, F. (2018). Isolation and Characterization of Bacterial Species from Ain Mud Volcano, Iran. *Microbiology*, 87(2): 282-289.
- Shah, K.R. (2012). FTIR Analysis of Polyhydroxyalkanoates by Novel *Bacillus* sp. AS 3-2 from Soil of Kadi Region, North Gujarat, India. *J Biochem Tech*, 3(4): 380-383.

- Shah, S., & Kumar, A. (2021). Production and Characterization of Polyhydroxyalkanoates from Industrial Waste Using Soil Bacterial Isolates. *Brazilian Journal of Microbiology*, 52: 715-726.
- Sharma, P.K., Munir, R.I., Plouffe, J., Shah, N., Kievit, T.D., & Levin, D.B. (2018). Polyhydroxyalkanoate (PHA) Polymer Accumulation and pha Gene Expression in Phenazine (phz⁻) and Pyrrolnitrin (prn⁻) Defective Mutants of *Pseudomonas chlororaphis* PA23. *Polymers*, 10(1203): 1-18.
- Sheeks, M.M.E., Mostafa, A.E., Diwany, A.I.E., Ismail, A.M.S., & Omar, T.H. (2014). Poly-3-hydroxybutyrate (PHB) Production by *Bacillus flexus* ME-77 Using Some Industrial Wastes. *Rend. Fis. Acc. Lincei*, 1-11.
- Singh, S.P. (2006). *Environmental Microbiology Extreme Environments and Extremophiles*. Rajkot: Departement of Biosciences Saurashtra University.
- Siswati, N. D., Puspa, S. D., & Reza, A. W. (2017). Fermentasi Buah Sukun Menjadi Bioetanol. *Jurnal Teknik Kimia*, 11(2): 56-59.
- Sitinjak, E.S., Sapiee, B., Ramdhan, A.M., Hidayati, A.N., Azhari, Y.A., & Adriyansyah, N.F. (2023). Surface Geology Analysis on The Relationship between Fault Creep and Overpressure in Grobogan, Central Java, Indonesia. *The Second International Seminar on Earth Science and Technology*, 1-13.
- Smibert, R.M., & Krieg, N.R. (1981). *General Characterization*. In *Manual of Methods for General Bacteriology*; Gerhardt, P., Murray, R.G.E., Costilow, R.N., Nester, E.W., Wood, W.A., Krieg, N.R., Phillips, G.B., Eds. Washington, DC, USA: American Society for Microbiology, pp. 409-443.
- Soni, S., Chhokar, V., Beniwal, V., Kumar, R., Badgujjar, H., Chauhan, R., Dudeja, S., & Kumar, A. (2023). Cost effective Media Optimization for PHB Production by *Bacillus badius* MTCC 13004 Using the Statistical Approach. *International Hjournal of Biological Macromolrcules*, 233: 1-9.
- Sorokin, D.Y., & Kuenen, J.G. (2005). Haloalkaliphilic Sulfur-Oxidizing Bacteria in Soda Lakes. *FEMS Microbiol Rev*, 29: 685-702.
- Sorokin, D.Y., Tourova, T.P., Kolganova, T.V., Detkova, E.N., Galinski, E.A., & Muyzer, G. (2011c). Culturable Diversity of Lithotrophic Haloalkaliphilic Sulfate-Reducing Bacteria in Soda Lakes and The Description of *Desulfonatronum thioautotrophicum* sp. nov., *Desulfonatronum thiosulfatophilum* sp. nov., *Desulfonatronovibrio thiodismutans* sp. nov., and *Desulfonatronovibrio magnus* sp. nov. *Extremophiles* 15(3): 391-401.

- Subari, A., Razak, A. & Sumarmin, R. (2021). Phylogenetic analysis of *Rasbora* spp. based on the mitochondrial DNA COI gene in Harapan Forest. *Jurnal Biologi Tropis*, 21(1): 89-94.
- Sudesh, K., Abe, H., & Doi, Y. (2000). Synthesis, Structure and Properties of Polyhydroxyalkanoates: Biological Polyesters. *Prog Polym Sci*, 25: 1503-1555.
- Sun, J., Guo, J., Yang, Q., & Huang, J. (2019). Diluted Conventional Media Improve The Microbial Cultivability from Aquarium Seawater. *J. Microbiol*, 57: 759-768.
- Suriyamongkol, P., Weselake, R., Narine S. Moloney, M. & Shah, S. (2007). Biotechnological Approaches for The Production of Polyhydroxyalkanoates in Microorganisms and Plants: A Review. *Biotechnology Advances*, 25(2): 148-175.
- Swathi, K., & Ranjani, N.S. (2015). Production, Isolation, Screening And Extraction of Polyhydroxybutyrate (PHB) from *Bacillus* sp. Using Treated Sewage Sample. *Int J Pharm Bio Sci*, 5: 58–64.
- Sysoev, M., Grötzinger, S.W., Renn, D., Eppinger, J., Rueping, M., & Karan, R. (2021). Bioprospecting of Novel Extremozymes From Prokaryotes-The Advent of Culture-Independent Methods. *Front Microbiol*, 12: 630013.
- Tamura K., Nei M., and Kumar S. (2004). Prospects for Inferring Very Large Phylogenies by Using The Neighbor-Joining Method. *Proceedings of the National Academy of Sciences (USA)*, 101: 11030-11035.
- Tamura K., Stecher G., and Kumar S. (2021). *MEGA II: Molecular Evolutionary Genetics Analysis Version II*. Molecular Biology and Evolution.
- Tao, H., Bausch, C., Richmond, C., Blattner, F.R., & Conway, T. (1999). Functional Genomics: Expression Analysis of *Escherichia coli* Growing on Minimal and Rich Media. *American Society for Microbiology*, 181(20): 6425-6440.
- Thamar, J., & Pethani, B. (2013). *Isolation and Characterization of Potent Bioactive Compounds by Haloalkaliphilic Bacteria From Coastal Area of Bhavnagar, Eastern Gujarat*. In: Thamar J, Pethani B (Eds) *Antimicrobial Metabolites of Haloalkaliphilic Actinomycetes*. Germany: Lambert Academic Publishing, Germany.
- Tipu, H.N., & Shabbir, A. (2015). Evolution of DNA Sequencing. *Journal of The College and Surgeons Pakistan*, 25(3): 210-215.
- Tringe, S.G., & Hugenholtz, P. (2008). A Renaissance for The Pioneering 16S rRNA Gene. *Curr Opin Microbiol*, 11(5): 442-446.

- Tsuge, T. (2016). Fundamental Factors Determining The Molecular Weight of polyhydroxyalkanoate During Biosynthesis. *Polymer Journal*, 48(11): 1051–1057.
- Uma, G., Babu, M. M., Prakash, V. S. G., Nisha, S. J., & Citarasu, T. (2020). Nature And Bioprospecting of Haloalkaliphilics: A Review. *World Journal of Microbiology and Biotechnology*, 36(5).
- Van Bemmelen, R. W. (1949). *The Geology of Indonesia Vol IA, General Geology of Indonesia and Adjacent Archipelago*. Government Printing Office The Hague.
- Van-Thuoc, D.; Huu-Phong, T.; Thi-Binh, N.; Thi-Tho, N.; Minh-Lam, D.; Quillaguaman, J. Polyester production by halophilic and halofilt bacterial strains obtained from mangrove soil samples located in Northern Vietnam. *Microbiologyopen*, 1: 395–406.
- Verlinden, R.A.J., Hill, D.J., & Kenward, M.A. *et al.* (2007). Bacterial Synthesis of Biodegradable Polyhydroxyalkanoates. *J Appl Microbiol*, 102: 1437-1449.
- Vu, D.G., Do, T.C.V., Thi, L.M.D., Dang, .D.P., Khat, B.N.T., Thi, P.K.H., Do., T.M., Ha, T.D., Mac, T.V., & Nguyen, P.D.N. (2024). Enhanced Hyaluronic Acid Production from *Priestia flexa* N7 Isolates. *Biomedical and Biotechnology Research Journal (BBRJ)*, 8: 19-26.
- Wang, H., Guo, J., Chen, X., & Hongxuan, H. (2023). The Metabolomics Changes in Luria–Bertani Broth Medium under Different Sterilization Methods and Their Effects on *Bacillus* Growth. *Metabolites*, 13(958): 1-14.
- Wang, Q., Liu, X., & Qi, Q. (2014). Biosynthesis of Poly(3-Hydroxy-Butyrate-Co-3-Hydroxyvalerate) from Glucose with Elevated 3-Hydroxyvalerate Fraction Via Combined Citramalate and Threonine Pathway in *Escherichia coli*. *Appl Microbiol Biotechnol*, 98: 3923-3931.
- Wang, T.T., Ding, P., Chen, P., Xing, K., Bai, J.L., Wan, W., Jiang, J.H., & Qin, S. (2017). Complete Genome Sequence of Endophyte *Bacillus flexus* KLBMP 4941 Reveals Its Plant Growth Promotion Mechanism and Genetic Basis for Salt Tolerance. *Journal of Biotechnology*, 260: 38-41.
- Wang, Y., Qian, P.Y. (2009). Conservative Fragments in Bacterial 16S rRNA Genes and Primer Design for 16S Ribosomal DNA Amplicons In Metagenomic Studies. *PLoS One*, 4(10): e7401.
- Weibull, C. (1953). Characterization of The Protoplasmic Constituents of *Bacillus megaterium*. *J. Bacteriol*, 66: 696–702.

- Woese, C.R., Kandler, O., Wheelis, M.L. (1990). Towards a Natural System of Organisms: Proposal for The Domains Archaea, Bacteria, and Eucarya. *Proc Natl Acad Sci USA*, 87: 4576-4579.
- Woo, P.C, Lau, S.K, Teng, J.L, Tse, H., & Yuen, K.Y. (2008). Then and Now: Use of 16S rDNA Gene Sequencing for Bacterial Identification and Discovery of Novel Bacteria in Clinical Microbiology Laboratories. *Clin Microbiol Infect*, 14: 908-993.
- Wypij, M., Świecimska, M., Czarnecka, J., Dahm, H., Rai, M., & Golinska, P. (2018). Antimicrobial and Cytotoxic Activity GF Silver Nanoparticles Synthesized from Two Haloalkaliphilic Actinobacterial Strains Alone and in Combination with Antibiotics. *Journal of Applied Microbiology*, 124(6): 1411–1424.
- Xie, X., Li, S., He, H., & Liu, X. (2003). Seismic Evidence for Fluid Migration Pathways from an Overpressured System in The South China Sea. *Geofluids* 3: 245-253.
- Yamamoto, K., Toya, S., Sabidi, S., Hoshiko, Y., & Maeda, T. (2021). Diluted Luria-Bertani Medium vs. Sewage Sludge as Growth Media: Comparison of Community Structure and Diversity in The Culturable Bacteria. *Appl. Microbiol. Biotechnol*, 105: 3787-3798.
- Yan, Y., Kuramae, E.E, Klinkhamer, P.G.L., & van Veen, J.A. (2015). Revisiting The Dilution Procedure Used to Manipulate Microbial Biodiversity in Terrestrial Systems. *Appl Environ Microbiol*, 81:4246-4252.
- Yang, Y., & Sha, M. (2019). A Beginner's Guide to Bioprocess Modes-Batch, Fed-Batch, and Continuous Fermentation. *Eppendorf Application Note*, 408: 1-16.
- Yarinsa, A.A., Setiawan, P.A.W., & Wahyudi, B. (2024). Peningkatan Produksi Bioetanol dari Fermentasi Buah Sukun dengan Metode Fed-Batch Menggunakan Bakteri *Zymomonas mobilis*. *Inovasi Teknik Kimia*, 9(2): 114-121.
- Yasin, A.R., & Mayaly, I.K. (2021). Study of the Fermentation Conditions of the *Bacillus cereus* Strain ARY73 to Produce Polyhydroxyalkanoate (PHA) from Glucose. *Journal of Ecological Engineering*, 22(8): 41-53.
- Young, K.D. (2006). The Selective Value of Bacterial Shape. *Molecular Biology Reviews*, 70(3): 660-703.
- Youssef, N.H., Savage-Ashlock, K.N., McCully, A.L., Luedtke, B., Shaw, E.I., Hof, W.D., & Elshahed, M.S. (2014). Trehalose/2-Sulfotrehalose Biosynthesis and Glycine-Betaine Uptake are Widely Spread

- Mechanisms for Osmoadaptation in The Halobacteriales. *ISME J*, 8: 636-649.
- Zhang, J., Xue, Q., Gao, H., Lai, H. (2016a). Wang, P. (2016). Production of Lipopeptide Biosurfactants by *Bacillus atrophaeus* 5-2a and Their Potential Use in Microbial Enhanced Oil Recovery. *Microb Cell Fact*, 15:168.
- Zhang, X., Luo, R., Wang, Z. *et al.* (2009). Application of (R)-3-Hydroxyalkanoate Methyl Esters Derived from Microbial Polyhydroxyalkanoates as Novel Biofuels. *Biomacromol*, 10: 707.
- Zhao, B., Yan, Y., & Chen, S. (2014). How Could Haloalkaliphilic Microorganisms Contribute To Biotechnology?. *Canadian Journal of Microbiology*, 60(11): 717-727.
- Zhila, N.O., Sapozhnikova, K.Y., Kiselev, E.G., Vasiliev, A.D., Nemtsev, I.V., Shishatskaya, E.I., & Volova, T.G. (2021). Properties of Degradable Polyhydroxyalkanoates (PHAs) Synthesized by a New Strain, *Cupriavidus necator* IBP/SFU-1, from Various Carbon Sources. *Polymers*, 13(3142): 1-19.
- Zhu, J., Tian, Q., Zhu, Y., Yang, J., & Wang, M. (2018). Factors for Promoting Polyhydroxyalkanoate (PHA) Synthesis in Bio-Nutrient-Removal and Recovery System. *IOP Conference Series: Earth and Environmental Science*, 178: 1-5.
- Zinn, M., Witholt, B., & Egli, T. (2001). Occurrence, Synthesis and Medical Application of Bacterial Polyhydroxyalkanoate. *Adv Drug Deliv Rev*, 53: 5-21.
- Zou, H., Shi, M., Zhang, T., Li, L., Li, L., & Xian, M. (2017). Natural and Engineered Polyhydroxyalkanoate (PHA) Synthase: Key Enzyme in Biopolyester Production. *Appl. Microbiol. Biotechnol*, 101: 7417-7426.