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# DAFTAR PUSTAKA

Abramson, J., Adler, J., Dunger, J., Evans, R., Green, T., Pritzel, A., Ronneberger, O., Willmore, L., Ballard, A. J., Bambrick, J., Bodenstein, S. W., Evans, D. A., Hung, C.-C., O'Neill, M., Reiman, D., Tunyasuvunakool, K., Wu, Z., Žemgulytė, A., Arvaniti, E., Beattie, C., Bertolli, O., Bridgland, A., Cherepanov, A., Congreve, M., Cowen-Rivers, A. I., Cowie, A., Figurnov, M., Fuchs, F. B., Gladman, H., Jain, R., Khan, Y. A., Low, C. M. R., Perlin, K., Potapenko, A., Savy, P., Singh, S., Stecula, A., Thillaisundaram, A., Tong, C., Yakneen, S., Zhong, E. D., Zielinski, M., Žídek, A., Bapst, V., Kohli, P., Jaderberg, M., Hassabis, D. & Jumper, J. M. (2024). Accurate structure prediction of biomolecular interactions with AlphaFold 3. *Nature*, *630*(8016), 493–500. https://doi.org/10.1038/s41586-024-07487-w

Allen, J. F. (2004). Cytochrome $b_6f$: Structure for signalling and vectorial metabolism. *Trends in Plant Science*, *9*(3), 130–137. https://doi.org/10.1016/j.tplants.2004.01.009

Altschul, S. F., Gish, W., Miller, W., Myers, E. W., & Lipman, D. J. (1990). Basic local alignment search tool. *Journal of molecular biology*, *215*(3), 403-410.

Altschul, S. (1997). Gapped BLAST and PSI-BLAST: A new generation of protein database search programs. *Nucleic Acids Research*, *25*(17), 3389–3402. https://doi.org/10.1093/nar/25.17.3389

Arif, R. I., Lestari, S. U., Sari, V. I., & Rahmah, A. (2023). Pengaruh media tanam dan persentasi naungan terhadap pertumbuhan stroberi Mencir (*Fragaria ananassa*). *Jurnal Agrotela, 3*(1), 9–16.

Aristya, G. R., Dyatama, G. R., Zuyyina, C., Maulina, N. T. A., Arif, M. F., Musthofa, A., & Kasiamdari, R. S. (2023). Relationship analysis of FaPYR1 and FaCHS genes encoding fruit ripening of three species of strawberries (*Fragaria* spp.) fruit. *Biodiversitas Journal of Biological Diversity, 24*(1), 87–95. https://doi.org/10.13057/biodiv/d240112

Arshad, K. T., Li, C., Li, L., Wang, J., Chen, J., & Zhao, Y. (2025). Genome-wide identification and expression profiling of bHLH transcription factors associated with ferulic acid biosynthesis in Angelica sinensis. *Frontiers in Plant Science*, *16*, 1718585. https://doi.org/10.3389/fpls.2025.1718585

Bailey, T. L., Boden, M., Buske, F. A., Frith, M., Grant, C. E., Clementi, L., Ren, J., Li, W. W., & Noble, W. S. (2009). MEME SUITE: Tools for motif discovery and searching. *Nucleic Acids Research*, *37*(Web Server), W202–W208. https://doi.org/10.1093/nar/gkp335

Bailey, T. L., Johnson, J., Grant, C. E., & Noble, W. S. (2015). The MEME Suite. *Nucleic Acids Research*, *43*(W1), W39–W49. https://doi.org/10.1093/nar/gkv416

Bailey, T. L., Williams, N., Misleh, C., & Li, W. W. (2006). MEME: Discovering and analyzing DNA and protein sequence motifs. *Nucleic Acids Research*, *34*(Web Server), W369–W373. https://doi.org/10.1093/nar/gkl198

Bruijns, B., Hoekema, T., Oomens, L., Tiggelaar, R., & Gardeniers, H. (2022). Performance of spectrophotometric and fluorometric DNA quantification methods. *Analytica, 3*(3), 371–384. https://doi.org/10.3390/analytica3030025

Buljević, N., Preiner, D., Šikuten, I., & Tomaz, I. (2025). Comparison of Different DNA Isolation Methods from Grapevine (*Vitis vinifera*) Leaves. *Separations*, *12*(11), 316. https://doi.org/10.3390/separations12110316

Chandler, C. K., Legard, D. E., Dunigan, D. D., Crocker, T. E., & Sims, C. A. (2000). `Earlibrite' Strawberry. *HortScience*, *35*(7), 1363–1365. https://doi.org/10.21273/HORTSCI.35.7.1363

Chen, C., Chen, H., Zhang, Y., Thomas, H. R., Frank, M. H., He, Y., & Xia, R. (2020a). TBtools: An Integrative Toolkit Developed for Interactive Analyses of Big

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Biological Data. *Molecular Plant*, *13*(8), 1194–1202. https://doi.org/10.1016/j.molp.2020.06.009

Chen, Y., Liu, N., Wang, H., Luo, H., Xie, Z., Yu, H., Chang, Y., Zheng, B., Zheng, X., Sheng, J., Jiang, Y., Ye, S., Hua, Y., Ma, H., & Li, F. (2025). Comparative chloroplast genomics of Rutaceae: Structural divergence, adaptive evolution, and phylogenomic implications. *Frontiers in Plant Science*, *16*, 1675536. https://doi.org/10.3389/fpls.2025.1675536

Cheng, H., Li, J., Zhang, H., Cai, B., Gao, Z., Qiao, Y., & Mi, L. (2017). The complete chloroplast genome sequence of strawberry ( *Fragaria* × *ananassa* Duch.) and comparison with related species of Rosaceae. *PeerJ*, *5*, e3919. https://doi.org/10.7717/peerj.3919

Daniell, H., Lin, C. S., Yu, M., & Chang, W. J. (2016). Chloroplast genomes: diversity, evolution, and applications in genetic engineering. *Genome biology*, *17*(1), 134. https://doi.org/10.1186/s13059-016-1004-2

Delahaye, C., & Nicolas, J. (2021). Sequencing DNA with nanopores: Troubles and biases. *PloS one*, *16*(10), e0257521. https://doi.org/10.1371/journal.pone.0257521

Demchak, K., Elkner, T. E., Esslinger, C. J., Frazier, M., Gulser, S. D., Halbrendt, J. M., Harper, J. K., Krawczyk, G., Richards, K. M., Heckman, J. R., Majek, B. A., Nitzsche, P., Oudemans, P. V., Pavlis, G., Polk, D., Rodriguez-Saona, C., Sciarappa, W. J., Ward, D. L., Johnson, G. C., ... Jett, L. W. (2013). *The Mid-Atlantic Berry Guide*. Penn State Cooperative Extension.

Dewanata, P. A., & Mushlih, M. (2021). Differences in DNA purity test using UV-Vis spectrophotometer and nanodrop spectrophotometer in type 2 diabetes mellitus patients. *Indonesian Journal of Innovation Studies, 15*(8), 1–6.

Dewi, N. K., Arffien, A., Nurhayana, H. F., & Saefudin, A. (2024). Strawberry distribution in Ciwidey: An analysis of value chain and price disparity. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian, 8*(3), 756–770.

DiMeglio, L. M., Staudt, G., Yu, H., & Davis, T. M. (2014). A phylogenetic analysis of the genus *Fragaria* (strawberry) using intron-containing sequence from the ADH-1 gene. *PLOS ONE, 9*(7), e102237. https://doi.org/10.1371/journal.pone.0102237

Direktorat Jenderal Hortikultura. (2024). *Angka tetap hortikultura tahun 2024*. Kementerian Pertanian Republik Indonesia.

Dobson, L., Szekeres, L. I., Gerdán, C., Langó, T., Zeke, A., & Tusnády, G. E. (2023). TmAlphaFold database: Membrane localization and evaluation of AlphaFold2 predicted alpha-helical transmembrane protein structures. *Nucleic Acids Research*, *51*(D1), D517–D522. https://doi.org/10.1093/nar/gkac928

Doyle, J. J., & Doyle, J. L. (1987). A rapid DNA isolation procedure for small quantities of fresh leaf tissue. *Phytochemical bulletin, 19,* 11-15.

Drake, Z. C., Seffernick, J. T., & Lindert, S. (2022). Protein complex prediction using Rosetta, AlphaFold, and mass spectrometry covalent labeling. *Nature Communications*, *13*(1), 7846. https://doi.org/10.1038/s41467-022-35593-8

Duan, Y., Tang, H., & Yu, X. (2023). Phylogenetic and AlphaFold predicted structure analyses provide insights for A1 aspartic protease family classification in Arabidopsis. *Frontiers in Plant Science*, *14*, 1072168. https://doi.org/10.3389/fpls.2023.1072168

Edger, P. P., Poorten, T. J., VanBuren, R., Hardigan, M. A., Colle, M., McKain, M. R., Smith, R. D., Teresi, S. J., Nelson, A. D. L., Wai, C. M., Alger, E. I., Bird, K. A., Yocca, A. E., Pumplin, N., Ou, S., Ben-Zvi, G., Brodt, A., Baruch, K., Swale, T., Shiue, L., Acharya, C. B., Cole, G. S., Mower, J. P., Childs, K. L., Jiang, N., Lyons, E., Freeling, M., Puzey, J. R. & Knapp, S. J. (2019). Origin and evolution of the octoploid strawberry genome. *Nature Genetics*, *51*(3), 541–547. https://doi.org/10.1038/s41588-019-0356-4

Food and Agriculture Organization of the United Nations. (2023). FAOSTAT statistical

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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database. **https://www.fao.org/faostat/en/#data/QCL**

Finazzi, G., Minagawa, J., & Johnson, G. N. (2016). The cytochrome $b_6f$ complex: A regulatory hub controlling electron flow and the dynamics of photosynthesis? In W. A. Cramer & T. Kallas (Eds.), *Cytochrome complexes: Evolution, structures, energy transduction, and signaling* (pp. 437–452). Springer Netherlands.

Foyer, C. H., Neukermans, J., Queval, G., Noctor, G., & Harbinson, J. (2012). Photosynthetic control of electron transport and the regulation of gene expression. *Journal of Experimental Botany*, *63*(4), 1637–1661. https://doi.org/10.1093/jxb/ers013

GBIF. (2025). *Fragaria* × *ananassa* (Weston) Rozier. Global Biodiversity Information Facility. https://www.gbif.org/species/3029912

Greiner S, Lehwark P, Bock R. OrganellarGenomeDRAW (OGDRAW) version 1.3.1: expanded toolkit for the graphical visualization of organellar genomes. *Nucleic Acids Res.* 2019;47(W1):W59–W64. https://doi.org/10.1093/nar/gkz238

Hamel, P., Olive, J., Pierre, Y., Wollman, F.-A., & De Vitry, C. (2000). A new subunit of cytochrome $b_6f$ complex undergoes reversible phosphorylation upon state transition. *Journal of Biological Chemistry, 275*(22), 17072–17079. https://doi.org/10.1074/jbc.M001468200

Han, H., Jang, Y. J., Han, K., Park, H.-N., Kim, D.-S., Lee, S., & Oh, Y. (2025). Chromosome-level genome assembly of cultivated strawberry ‘Seolhyang’ (*Fragaria* × *ananassa*). *Scientific Data, 12*(1), 1002. https://doi.org/10.1038/s41597-025-05191-6

Hanif, Z., & Ashari, H. (2012). Sebaran stroberi (*Fragaria x ananassa*) di Indonesia. In *Prosiding Seminar Nasional Pekan Inovasi Teknologi Hortikultura Nasional* (Vol. 5, pp. 87–95).

Hancock, J. F. (2020). Strawberry species. In *Strawberries* (2nd ed., pp. 1–31). CABI. https://doi.org/10.1079/9781789242270.0001

Hao, J., Liang, Y., Ping, J., Li, J., Shi, W., Su, Y., & Wang, T. (2022). Chloroplast gene expression level is negatively correlated with evolutionary rates and selective pressure while positively with codon usage bias in *Ophioglossum vulgatum* L. *BMC Plant Biology*, *22*(1), 580. https://doi.org/10.1186/s12870-022-03960-8

Hardigan, M. A., Lorant, A., Pincot, D. D. A., Feldmann, M. J., Famula, R. A., Acharya, C. B., Lee, S., Verma, S., Whitaker, V. M., Bassil, N., Zurn, J., Cole, G. S., Bird, K., Edger, P. P., & Knapp, S. J. (2021). Unraveling the Complex Hybrid Ancestry and Domestication History of Cultivated Strawberry. *Molecular Biology and Evolution*, *38*(6), 2285–2305. https://doi.org/10.1093/molbev/msab024

Haryati, S., Yuliastuti, E. R., Sudiaz, R., Simbolon, H., Eriza, N., Apriyadi, T. E., Dewi, E. K., Baroroh, R. A., Tama, Y. C. P., & Wijaya, R. (2023). *Pedoman budi daya stroberi*. Pertanian Press.

Hazman, M., Kabil, F., Abd Elhamid, S., & Nick, P. (2020). Double lysis: an integrative time-saving method yielding high-quality RNA from strawberry. *Journal of Genetic Engineering and Biotechnology*, *18*(1), 22.

Healey, A., Furtado, A., Cooper, T., & Henry, R. J. (2014). Protocol: A simple method for extracting next-generation sequencing quality genomic DNA from recalcitrant plant species. *Plant Methods, 10*(1), 21. https://doi.org/10.1186/1746-4811-10-21

Henry, R. J. (2022). Progress in plant genome sequencing. *Applied Biosciences*, *1*(2), 113–128. https://doi.org/10.3390/applbiosci1020008

Hu, T., Chitnis, N., Monos, D., & Dinh, A. (2021). Next-generation sequencing technologies: An overview. *Human Immunology*, *82*(11), 801–811. https://doi.org/10.1016/j.humimm.2021.02.012

Huang, B., Huang, Z., Ma, R., Chen, J., Zhang, Z., & Yrjälä, K. (2021). Genome-wide identification and analysis of the heat shock transcription factor family in moso bamboo *(Phyllostachys edulis). Scientific Reports*, *11*(1), 16492.

UNIVERSITAS GADJAH MADA
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https://doi.org/10.1038/s41598-021-95899-3

Hussain, S. Z., Naseer, B., Qadri, T., Fatima, T., & Bhat, T. A. (2021). *Fruits grown in highland regions of the Himalayas: Nutritional and health benefits*. Springer International Publishing.

IndexBox. (2024). *World strawberry market: Consumption, market size and trends*. https://app.indexbox.io/report/081010/0

Isobe, S., Shirasawa, K., & Hirakawa, H. (2020). Advances of whole genome sequencing in strawberry with NGS technologies. *The Horticulture Journal, 89*(2), 108–114. https://doi.org/10.2503/hortj.UTD-R012

Jumper, J., Evans, R., Pritzel, A., Green, T., Figurnov, M., Ronneberger, O., Tunyasuvunakool, K., Bates, R., Žídek, A., Potapenko, A., Bridgland, A., Meyer, C., Kohl, S. A. A., Ballard, A. J., Cowie, A., Romera-Paredes, B., Nikolov, S., Jain, R., Adler, J., Back, T., Petersen, S., Reiman, D., Clancy, E., Zielinski, M., Steinegger, M., Pacholska, M., Berghammer, T., Bodenstein, S., Silver, D., Vinyals, O., Senior, A. W., Kavukcuoglu, K., Kohli, P. and Hassabis, D. (2021). Highly accurate protein structure prediction with AlphaFold. *Nature*, *596*(7873), 583–589. https://doi.org/10.1038/s41586-021-03819-2

Kalendar, R., Ivanov, K. I., Samuilova, O., Kairov, U., & Zamyatnin, A. A. (2023). Isolation of High-Molecular-Weight DNA for Long-Read Sequencing Using a High-Salt Gel Electroelution Trap. *Analytical Chemistry*, *95*(48), 17818–17825. https://doi.org/10.1021/acs.analchem.3c03894

Kasiamdari, R. S., Aristya, G. R., & Inayati, E. (2017). Phylogenetic relationships of nine cultivars of strawberries (*Fragaria* spp.) based on anatomical and morphological characters. *Planta Tropika: Journal of Agro Science, 5*(2), 116–126. https://doi.org/10.18196/pt.2017.072.116-126

Khetan, D., Gupta, N., Chaudhary, R., & Shukla, J. (2019). Comparison of UV spectrometry and fluorometry-based methods for quantification of cell-free DNA in red cell components. *Asian Journal of Transfusion Science*, *13*(2), 95. https://doi.org/10.4103/ajts.AJTS_90_19

Kong, J., Xiong, R., Qiu, K., Lin, X., Li, D., Lu, L., Zhou, J., Zhu, S., Liu, M., & Sun, Q. (2024). Genome-wide identification and characterization of the laccase gene family in *Fragaria vesca* and its potential roles in response to salt and drought stresses. *Plants*, *13*(23), 3366. https://doi.org/10.3390/plants13233366

Koryati, T., Ningsih, H., Erdiandini, I., Paulina, M., Firgiyanto, R., & Junairiah, Sari, V. K. (2022). *Pemuliaan tanaman*. Yayasan Kita Menulis.

Lee, P. Y., Costumbrado, J., Hsu, C.-Y., & Kim, Y. H. (2012). Agarose Gel Electrophoresis for the Separation of DNA Fragments. *Journal of Visualized Experiments*, *62*, 3923. https://doi.org/10.3791/3923

Li, C., Cai, C., Tao, Y., Sun, Z., Jiang, M., Chen, L., & Li, J. (2021). Variation and evolution of the whole chloroplast genomes of *Fragaria* spp. (Rosaceae). *Frontiers in Plant Science, 12*, 754209. https://doi.org/10.3389/fpls.2021.754209

Li, F., Liu, Y., Wang, J., Xin, P., Zhang, J., Zhao, K., Zhang, M., Yun, H., & Ma, W. (2022). Comparative analysis of chloroplast genome structure and phylogenetic relationships among six taxa within the genus *Catalpa* (Bignoniaceae). *Frontiers in Genetics, 13*, 845619. https://doi.org/10.3389/fgene.2022.845619

Lin, Y., She, M., Zhao, M., Yu, H., Xiao, W., Zhang, Y., Li, M., Chen, Q., Zhang, Y., Wang, Y., He, W., Wang, X., Tang, H., & Luo, Y. (2024). Genome-wide analysis and functional validation reveal the role of late embryogenesis abundant genes in strawberry (*Fragaria* × *ananassa*) fruit ripening. *BMC Genomics, 25*(1), 228. https://doi.org/10.1186/s12864-024-10085-9

Liston, A., Cronn, R., & Ashman, T.-L. (2014). *Fragaria*: A genus with deep historical roots and ripe for evolutionary and ecological insights. *American Journal of*

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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*Botany, 101*(10), 1686–1699. https://doi.org/10.3732/ajb.1400140

Liu, Q., Li, S., He, D., Liu, J., He, X., Lin, C., Li, J., Huang, Z., Huang, L., Nie, G., Zhang, X., & Feng, G. (2025). Comparative analysis of codon usage patterns in the chloroplast genomes of *Fagopyrum* species. *Agronomy, 15*(5), 1190. https://doi.org/10.3390/agronomy15051190

Lu, Y., Li, M., Gao, Z., Ma, H., Chong, Y., Hong, J., Wu, J., Wu, D., Xi, D., & Deng, W. (2025). Advances in whole genome sequencing: Methods, tools, and applications in population genomics. *International Journal of Molecular Sciences*, *26*(1), 372. https://doi.org/10.3390/ijms26010372

Lu, Y. Y., Noble, W. S., & Keich, U. (2024). A BLAST from the past: Revisiting blastp's E-value. *Bioinformatics, 40*(12), btae729. https://doi.org/10.1093/bioinformatics/btae729

Maghini, D. G., Moss, E. L., Vance, S. E., & Bhatt, A. S. (2021). Improved high-molecular-weight DNA extraction, nanopore sequencing and metagenomic assembly from the human gut microbiome. *Nature Protocols*, *16*(1), 458–471. https://doi.org/10.1038/s41596-020-00424-x

Malhotra, Y., John, J., Yadav, D., Sharma, D., Vanshika, Rawal, K., Mishra, V., & Chaturvedi, N. (2025). Advancements in protein structure prediction: A comparative overview of AlphaFold and its derivatives. *Computers in Biology and Medicine*, *188*, 109842. https://doi.org/10.1016/j.compbiomed.2025.109842

Malone, L. A., Proctor, M. S., Hitchcock, A., Hunter, C. N., & Johnson, M. P. (2021). Cytochrome $b_6f$ – Orchestrator of photosynthetic electron transfer. *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, *1862*(5), 148380. https://doi.org/10.1016/j.bbabio.2021.148380

Mao, J., Wang, Y., Wang, B., Li, J., Zhang, C., Zhang, W., Li, X., Li, J., Zhang, J., Li, H., & Zhang, Z. (2023). High-quality haplotype-resolved genome assembly of cultivated octoploid strawberry. *Horticulture Research*, *10*(1), uhad002. https://doi.org/10.1093/hr/uhad002

Maolidan, E. (2022). Preferensi konsumen stroberi di "Lumbung Stroberi" Desa Pandanrejo Kecamatan Bumiaji Kota Batu. *Jurnal Ilmiah Mahasiswa Agroinfo Galuh, 9*(3), 1283–1294. https://doi.org/10.25157/jimag.v9i3.8411

Masago, K., Fujita, S., Oya, Y., Takahashi, Y., Matsushita, H., Sasaki, E., & Kuroda, H. (2021). Comparison between fluorimetry (Qubit) and spectrophotometry (NanoDrop) in the quantification of DNA and RNA extracted from frozen and FFPE tissues from lung cancer patients: A real-world use of genomic tests. *Medicina, 57*(12), 1375. https://doi.org/10.3390/medicina57121375

Masi, R., Dungga, N. E., & Yanti, C. W. B. (2015). Peningkatan kualitas produksi stroberi melalui pemanfaatan bio-slurry cair. *J. Agrotan*, *1*(1), 45-56.

Mirabello, C., Wallner, B., Nystedt, B., Azinas, S., & Carroni, M. (2024). Unmasking AlphaFold to integrate experiments and predictions in multimeric complexes. *Nature Communications, 15*(1), 8724. https://doi.org/10.1038/s41467-024-52951-w

Monzon, A. M., Zea, D. J., Fornasari, M. S., Saldaño, T. E., Fernandez-Alberti, S., Tosatto, S. C. E., & Parisi, G. (2017). Conformational diversity analysis reveals three functional mechanisms in proteins. *PLOS Computational Biology, 13*(2), e1005398. https://doi.org/10.1371/journal.pcbi.1005398

Motohashi, K. (2019). Development of highly sensitive and low-cost DNA agarose gel electrophoresis detection systems and evaluation of non-mutagenic and loading dye-type DNA-staining reagents. *PLOS ONE, 14*(9), e0222209. https://doi.org/10.1371/journal.pone.0222209

Muktiari, A. K., Azzahra, I. P., Azhara, S. H., & Kuntari, W. (2024). Studi literatur strategi pemasaran strawberry di pasar tradisional dan pasar digital. *Jurnal Ilmiah Nusantara, 1*(4), 462–472.

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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Negi, S., Stenton, S. L., Berger, S. I., Canigiula, P., McNulty, B., Violich, I., Gardner, J., Hillaker, T., O'Rourke, S. M., O'Leary, M. C., Carbonell, E., Austin-Tse, C., Lemire, G., Serrano, J., Mangilog, B., VanNoy, G., Kolmogorov, M., Vilain, E., O'Donnell-Luria, A., … Paten, B. (2025). Advancing long-read nanopore genome assembly and accurate variant calling for rare disease detection. *The American Journal of Human Genetics*, *112*(2), 428–449. https://doi.org/10.1016/j.ajhg.2025.01.002

Olsson, S., Bautista, R., Claros, M. G., Heuertz, M., & Scotti, I. (2025). De novo assembled nuclear, chloroplast, and mitochondrial genomes show high intraspecific variation in the tropical rainforest species *Symphonia globulifera*. *G3: Genes, Genomes, Genetics*, *15*(11), jkaf208. https://doi.org/10.1093/g3journal/jkaf208

Orde, K., & Sideman, R. (2023). *Strawberry production guide: For the Northeast, Midwest, and Eastern Canada.* University of New Hampshire Cooperative Extension.

Panggabean, T. S. U., & Sofian, A. (2024). Growth and production response of strawberry (*Fragaria ananassa*) 'Mencir' variety to the application of NPK 32-10-10 fertilizer and liquid organic banana peel fertilizer in verticulture media. *Jurnal Agrofolium, 4*(2), 379–385.

Park, S. T., & Kim, J. (2016). Trends in next-generation sequencing and a new era for whole genome sequencing. *International neurourology journal*, *20*(Suppl 2), S76–S83. https://doi.org/10.5213/inj.1632742.371

Pucker, B., Irisarri, I., De Vries, J., & Xu, B. (2022). Plant genome sequence assembly in the era of long reads: Progress, challenges and future directions. *Quantitative Plant Biology*, *3*, e5. https://doi.org/10.1017/qpb.2021.18

Purnama, R. M., Utama, I. M. S., & Budisanjaya, I. P. G. (2025). Pengaruh pelapisan nanopartikel kitosan terhadap karakteristik fisiko-kimia dan sensoris pascapanen buah stroberi (*Fragaria* sp.): The effect of chitosan nanoparticle coating on the physico-chemical and sensory characteristics of postharvest California strawberry (*Fragaria x ananassa*). *Jurnal BETA (Biosistem dan Teknik Pertanian), 13*(2), 209–217.

Rahadatul 'Aisy, N., Agustin, Y., & Supriatna, A. (2024). Perbandingan morfologi stroberi (*Fragaria* spp.) di La Fressa dan Bukit Strawberry Lembang untuk klasifikasi varietas. *Polygon: Jurnal Ilmu Komputer dan Ilmu Pengetahuan Alam, 2*(4), 123–131.

Robbins, E. H., & Kelly, S. (2023). The evolutionary constraints on angiosperm chloroplast adaptation. *Genome Biology and Evolution*, *15*(6), evad101.

Romiyadi, R., & Putri, N. A. I. (2024). Growth and yield test of various strawberry (*Fragaria* sp.) varieties in lowland areas. *Jurnal Greenation Pertanian dan Perkebunan, 2*(2), 51–59.

Rousseau-Gueutin, M., Gaston, A., Aïnouche, A., Aïnouche, M. L., Olbricht, K., Staudt, G., Richard, L., & Denoyes-Rothan, B. (2009). Tracking the evolutionary history of polyploidy in *Fragaria* L. (strawberry): New insights from phylogenetic analyses of low-copy nuclear genes. *Molecular Phylogenetics and Evolution*, *51*(3), 515–530. https://doi.org/10.1016/j.ympev.2008.12.024

Russo, A., Mayjonade, B., Frei, D., Potente, G., Kellenberger, R. T., Frachon, L., Copetti, D., Studer, B., Frey, J. E., Grossniklaus, U., & Schlüter, P. M. (2022). Low-Input High-Molecular-Weight DNA Extraction for Long-Read Sequencing From Plants of Diverse Families. *Frontiers in Plant Science*, *13*, 883897. https://doi.org/10.3389/fpls.2022.883897

Sambrook, J., Fritsch, E. F., & Maniatis, T. (1989). *Molecular cloning: A laboratory manual* (2nd ed.). Cold Spring Harbor Laboratory Press.

Satam, H., Joshi, K., Mangrolia, U., Waghoo, S., Zaidi, G., Rawool, S., Thakare, R. P., Banday, S., Mishra, A. K., Das, G., & Malonia, S. K. (2023). Next-Generation

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Sequencing Technology: Current Trends and Advancements. *Biology*, *12*(7), 997. https://doi.org/10.3390/biology12070997

Sawicki, J., Krawczyk, K., Paukszto, Ł., Maździarz, M., Kurzyński, M., Szablińska-Piernik, J., & Szczecińska, M. (2024). Nanopore sequencing technology as an emerging tool for diversity studies of plant organellar genomes. *Diversity*, *16*(3), 173. https://doi.org/10.3390/d16030173

Saudale, F. (2020). Analisis struktur gen dan protein lipid droplet associated protein (LDAP) yang berperan dalam biogenesis minyak pada tanaman jarak pagar (*Jatropha curcas* L.). *JST (Jurnal Sains dan Teknologi), 9*(2), 111–120.

Schalamun, M., Nagar, R., Kainer, D., Beavan, E., Eccles, D., Rathjen, J. P., & Schwessinger, B. (2019). Harnessing the MinION: An example of how to establish long-read sequencing in a laboratory using challenging plant tissue from *Eucalyptus pauciflora*. *Molecular Ecology Resources, 19*(1), 77–89. https://doi.org/10.1111/1755-0998.12938

Senol Cali, D., Kim, J. S., Ghose, S., Alkan, C., & Mutlu, O. (2019). Nanopore sequencing technology and tools for genome assembly: Computational analysis of the current state, bottlenecks and future directions. *Briefings in Bioinformatics*, *20*(4), 1542–1559. https://doi.org/10.1093/bib/bby017

Setiawati, M. R., Rachelita, N., Fitriatin, B. N., Nurbaity, A., Yuniarti, A., Suryatmana, P., & Hindersah, R. (2023). Pengaruh pemberian asam humat, asam fulvat, dan pupuk hayati pada media tanam terhadap beberapa sifat kimia tanah, hasil, dan kualitas buah stroberi (*Fragaria ananassa*). *Agrikultura*, *34*(2), 255-265. https://doi.org/10.24198/agrikultura.v34i2.46734

Shillito, R. D., Whitt, S., Ross, M., Ghavami, F., De Vleesschauwer, D., D'Halluin, K., Van Hoecke, A., & Meulewaeter, F. (2021). Detection of genome edits in plants—From editing to seed. *In Vitro Cellular & Developmental Biology - Plant*, *57*(4), 595–608. https://doi.org/10.1007/s11627-021-10214-z

Siregar, I. Z., Dwiyanti, F. G., Pratama, R., Matra, D. D., & Majiidu, M. (2021). Generating long-read sequences using Oxford Nanopore Technology from *Diospyros celebica* genomic DNA. *BMC Research Notes*, *14*(1), 75. https://doi.org/10.1186/s13104-021-05484-0

Sondari, N., & Amalia, L. (2020). Mengidentifikasi beberapa varietas tanaman stroberi bersama petani di Kecamatan Pasirjambu Kabupaten Bandung. *Qardhul Hasan: Media Pengabdian Kepada Masyarakat*, *6*(1), 16-21.

Soliha, A., Rosyidah, A., & Nurhidayati, N. (2022). Pengaruh aplikasi berbagai macam pupuk organik dan KNO3 terhadap pertumbuhan dan hasil tanaman stroberi (*Fragaria* sp.) varietas Mencir. *AGRONISMA, 10*(2), 227–232.

Song, Y., Li, C., Liu, L., Hu, P., Li, G., Zhao, X., & Zhou, H. (2023). The population genomic analyses of chloroplast genomes shed new insights on the complicated ploidy and evolutionary history in *Fragaria*. *Frontiers in Plant Science, 13*, 1065218. https://doi.org/10.3389/fpls.2022.1065218

Song, Y., Shen, M., Cao, F., & Yang, X. (2024). Compare analysis of codon usage bias of nuclear genome in eight Sapindaceae species. *International Journal of Molecular Sciences, 26*(1), 39. https://doi.org/10.3390/ijms26010039

Srimiati, M., Habibah, P., Dinya Zahra, A., Harsanti, F., & Ratu Maharani, A. R. (2023). Effect of strawberry powder substitution on the organoleptic of instant pudding: Pengaruh substitusi bubuk stroberi terhadap karakteristik puding instan. *Media Gizi Indonesia, 18*(1), 74–81. https://doi.org/10.20473/mgi.v18i1.74-81

Stoppel, R., & Meurer, J. (2013). Complex RNA metabolism in the chloroplast: An update on the *psb*B operon. *Planta, 237*(2), 441–449. https://doi.org/10.1007/s00425-012-1782-z

Štorchová, H., & Krüger, M. (2024). Methods for assembling complex mitochondrial genomes in land plants. *Journal of Experimental Botany, 75*(17), 5169–5174.

UNIVERSITAS GADJAH MADA
**Karakterisasi Gen pet Penyusun Kompleks Sitokrom b6f pada Genom Kloroplas Fragaria Ã— ananassa â€˜Mencirâ€™ Berbasis Complete Chloroplast Genome**
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**Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/**

Su, L., Yu, H., Zhang, J., Zhao, X., Liu, X., & Li, Q. (2021). enome-wide identification and expression analysis of Aux/IAA gene family in strawberry (*Fragaria vesca*). *BIOCELL*, *45*(4), 1153–1166. https://doi.org/10.32604/biocell.2021.014499

Suzuki, H., & Morton, B. R. (2016). Codon adaptation of plastid genes. *PLOS ONE, 11*(5), e0154306. https://doi.org/10.1371/journal.pone.0154306

Tikhonov, A. N. (2014). The cytochrome $b_6f$ complex at the crossroad of photosynthetic electron transport pathways. *Plant Physiology and Biochemistry, 81*, 163–183. https://doi.org/10.1016/j.plaphy.2013.12.011

Tillich M, Lehwark P, Pellizzer T, Ulbricht-Jones ES, Fischer A, Bock R, & Greiner S. (2017). GeSeq – Versatile and accurate annotation of organelle genomes. *Nucleic Acids Research, 45*(W1), W6–W11. https://doi.org/10.1093/nar/gkx391

Turrahmi, M., Nurhidayani, N., Hasyimuddin, H & Pabendon, M.B. 2021. Uji kualitas dan kuantitas tanaman jewawut (*Setaria italica*) di Balai Penelitian Tanaman Serealia Kabupaten Maros. *Filogeni: Jurnal Mahasiswa Biologi, 1*(2), 57–62.

Vaser, R., & Šikić, M. (2020). Raven: A de novo genome assembler for long reads. *bioRxiv*. https://doi.org/10.1101/2020.08.07.242461

Wahyuni, D., Dwiyanti, F. G., Pratama, R., Majiidu, M., Rachmat, H. H., & Siregar, I. Z. (2021). Chloroplast genome draft of *Dryobalanops aromatica* generated using Oxford Nanopore Technology and its potential application for phylogenetic study. *Forests, 12*(11), 1515. https://doi.org/10.3390/f12111515

Wang, J., Ye, H., Li, X., Lv, X., Lou, J., Chen, Y., Yu, S., & Zhang, L. (2023). Genome-wide analysis of the MADS-Box gene family in *Hibiscus syriacus* and their role in floral organ development. *International Journal of Molecular Sciences, 25*(1), 406. https://doi.org/10.3390/ijms25010406

Wang, L., Xing, H., Yuan, Y., Wang, X., Saeed, M., Tao, J., Feng, W., Zhang, G., Song, X., & Sun, X. (2018). Genome-wide analysis of codon usage bias in four sequenced cotton species. *PLOS ONE*, *13*(3), e0194372. https://doi.org/10.1371/journal.pone.0194372

Wang, Z., Xu, B., Li, B., Zhou, Q., Wang, G., Jiang, X., Wang, C., & Xu, Z. (2020). Comparative analysis of codon usage patterns in chloroplast genomes of six *Euphorbiaceae* species. *PeerJ*, *8*, e8251. https://doi.org/10.7717/peerj.8251

Wen, H., Wang, L., Gong, Y., Zhang, Y., Zhao, T., Feng, C., Wang, J., & Lin, J. (2024). Genome-Wide Identification and Characterization of GRAS Transcription Factor Family in Cultivated Hybrid Sugarcane ZZ1 *(Saccharum officinarum)* and Their Role in Development and Stress. *International Journal of Molecular Sciences, 25*(24), 13470. https://doi.org/10.3390/ijms252413470

Wicke, S., Schneeweiss, G. M., dePamphilis, C. W., Müller, K. F., & Quandt, D. (2011). The evolution of the plastid chromosome in land plants: Gene content, gene order, gene function. *Plant Molecular Biology*, *76*(3–5), 273–297. https://doi.org/10.1007/s11103-011-9762-4

Wijayanti, I. K. E., Jamhari, D. H. D., & Suryantini, A. (2019). Production risk and factors influencing strawberry farming in Purbalingga Regency, Indonesia. *American-Eurasian Journal of Sustainable Agriculture, 13*(1), 9–17.

Wiryanata, I. W. G., Hut, S., & Suharjo, A. (2021). Analisis pendapatan usahatani stroberi (*Fragaria chiloensis* L). *AGRIMETA: Jurnal Pertanian Berbasis Keseimbangan Ekosistem, 11*(1), 46–56.

Wu, J., Liu, B., Cheng, F., Ramchiary, N., Choi, S. R., Lim, Y. P., & Wang, X. W. (2012). Sequencing of chloroplast genome using whole cellular DNA and solexa sequencing technology. *Frontiers in plant science*, *3*, 243. https://doi.org/10.3389/fpls.2012.00243

Xie, L., Wang, Y., Tao, Y., Chen, L., Lin, H., Qi, Z., & Li, J. (2024). Genome-wide identification and analysis of anthocyanin synthesis-related R2R3-MYB genes in *Fragaria pentaphylla*. *BMC Genomics, 25*(1),

UNIVERSITAS GADJAH MADA
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952. https://doi.org/10.1186/s12864-024-10882-2

Yang, Y., Wang, X., & Shi, Z. (2024). Comparative study on codon usage patterns across chloroplast genomes of eighteen *Taraxacum* species. *Horticulturae*, 10(5), 492. https://doi.org/10.3390/horticulturae10050492

Yoshihara, A., & Kobayashi, K. (2022). Lipids in photosynthetic protein complexes in the thylakoid membrane of plants, algae, and cyanobacteria. *Journal of Experimental Botany, 73*(9), 2735–2750. https://doi.org/10.1093/jxb/erac017

Yu, Y., Wang, X., Qu, R., OuYang, Z., Guo, J., Zhao, Y., & Huang, L. (2024). Extraction and analysis of high-quality chloroplast DNA with reduced nuclear DNA for medicinal plants. *BMC biotechnology*, *24*(1), 20. https://doi.org/10.1186/s12896-024-00845-6

Zhang, J., & Feng, M. (2025). Analysis of the Codon Usage Bias Pattern in the Chloroplast Genomes of *Chloranthus* Species (Chloranthaceae). *Genes*, *16*(2), 186. https://doi.org/10.3390/genes16020186

Zhang, Y., Miao, L., Yang, X., & Jiang, G. (2022). Genome-wide characterization and expression of the TLP gene family associated with *Colletotrichum gloeosporioides* inoculation in *Fragaria* × *ananassa*. *PeerJ*, *10*, e12979. https://doi.org/10.7717/peerj.12979

Zhao, X., Yu, F., Guo, Q., Wang, Y., Zhang, Z., & Liu, Y. (2022). Genome-wide identification, characterization, and expression profile analysis of CONSTANS-like genes in woodland strawberry (*Fragaria vesca*). *Frontiers in Plant Science, 13*, 931721.

Zhao, W., Zeng, W., Pang, B., Luo, M., Peng, Y., Xu, J., Kan, B., Li, Z., & Lu, X. (2023). Oxford nanopore long-read sequencing enables the generation of complete bacterial and plasmid genomes without short-read sequencing. *Frontiers in Microbiology, 14*, 1179966. https://doi.org/10.3389/fmicb.2023.1179966