

JBEI Publications - FY2025

Core Publications:

1. Taylor B.R., Kumar N., Mishra D.K., Simmons B.A., Choudhary H., Sale K.L. (2024) "Computational Advances in Ionic Liquid Applications for Green Chemistry: A Critical Review of Lignin Processing and Machine Learning Approaches." *Molecules*. doi: 10.3390/molecules29215073
2. Cowie A. E., Pereira J. H., DeGiovanni A., McAndrew R. P., Palayam M., Peek J. O., Muchlinski A. J., Yoshikuni Y., Shabek N., Adams P. D., Zerbe, P. (2024) "The crystal structure of *Grindelia robusta* 7,13-copalyl diphosphate synthase reveals active site features controlling catalytic specificity." *The Journal of biological chemistry*. doi: 10.1016/j.jbc.2024.107921
3. Tian Y., Gao Y., Turumtay H., Akyuz Turumtay E., Chai Y.N., Choudhary H., Park J.H., Wu C.Y., De Ben C. M., Dalton J., Louie K.B., Harwood T., Chin D., Vu K.M., Bowen B.P., Shih P.M. Baidoo E.E.K., Northen T.R., Simmons B.A., Hutmacher R., Atim J., Putnam D.H., Scown C.D., Mortimer J.C., Scheller H.V., Eudes A. (2024) "Engineered reduction of S-adenosylmethionine alters lignin in sorghum." *Biotechnology for Biofuels and Bioproducts*. doi: 10.1186/s13068-024-02572-8
4. Rachbauer L., Granda C. B., Shrestha S., Fuchs W., Gabauer W., Singer S. W., Simmons B. A., Urgun-Demirtas M. (2024) "Energy and nutrient recovery from municipal and industrial waste and wastewater - a perspective." *Journal of industrial microbiology & biotechnology*. doi: 10.1093/jimb/kuae040
5. Gupta, K., Tian Y., Eudes A., Scheller H. V., Singh A. K., Adams P. D., Andeer P. F., Northen T. R. (2024) "EcoFAB 3.0: a sterile system for studying sorghum that replicates previous field and greenhouse observations." *Frontiers in plant science*. doi: 10.3389/fpls.2024.1440728
6. Harrison B. P., McNeil W. H., Dai T., Campbell J. E., Scown C. D. (2024) "Site Suitability and Air Pollution Impacts of Composting Infrastructure for California's Organic Waste Diversion Law." *Environmental science & technology*. doi: 10.1021/acs.est.4c06371
7. Markel K, Waldburger L, Shih PM (2024) "Expression of a mammalian RNA demethylase increases flower number and floral stem branching in *Arabidopsis thaliana*." *Plant Direct*. doi: 10.1002/pld3.70000
8. Szarzanowicz, M. J., Waldburger, L. M., Busche, M., Geiselman, G. M., Kirkpatrick, L. D., Kehl, A. J., Tahmin, C., Kuo, R. C., McCauley, J., Pannu, H., Cui, R., Liu, S., Hillson, N. J., Brunkard, J. O., Keasling, J. D., Gladden, J. M., Thompson, M. G., Shih, P. M. (2024) "Binary vector copy number engineering improves *Agrobacterium*-mediated transformation." *Nature biotechnology*. doi: 10.1038/s41587-024-02462-2
9. Liu, S., Chou, M.-Y., Benucci, G. M. N., Eudes, A., Bonito, G. (2024) "Genetic modification of the shikimate pathway to reduce lignin content in switchgrass (*Panicum virgatum* L.) significantly impacts plant microbiomes." *Microbiology spectrum*. doi: 10.1128/spectrum.01546-24
10. Balestrini, V. P., Pinto, O. H. B., Simmons, B. A., Gladden, J. M., Krüger, R. H., Quirino, B. F. (2024) "Analysis of novel bacterial metagenome-assembled genomes from lignin-degrading microbial consortia." *Current research in microbial sciences*. doi: 10.1016/j.crmicr.2024.100302
11. Agarwala S., O'Malley M.A., Eng T. (2024) "Editorial Reflections on BioEnergy: Perspectives from 2024." *Curr Opin Biotechnol*. doi: 10.1016/j.copbio.2024.103243
12. Theobald S., Vesth T., Nybo J.L., Frisvad J.C., Kjærboelling I., Mondo S., LaButti K., Haridas S., Riley R., Kuo A.A., Salamov A.A., Pangilinan J., Lipzen A., Koriabine M., Yan M., Barry K., Clum A., Lyhne E.K., Drula E.D., Wiebenga A., Müller A., Lubbers R.J.M., Kun R.S., dos Santos Gomes A.C., Mäkelä M.R., Henrissat B., Simmons B.A., Magnuson J.K., Hoof J.B., Mortensen U.H., Dyer P.S., Momany M., Larsen T.O., Grigoriev I.V., Baker S.E., de Vries R.P., Andersen M.R. (2025) Comparative genomics of *Aspergillus nidulans* and section *Nidulantes*. *Current Research in Microbial Sciences*. doi: 10.1016/j.crmicr.2025.100342
13. Aremo, A.-A. E., Oluwadare, A. O., Aremo, J. O., Celik, H., Heyne, J., Han, Y., Simmons, B. A. (2025) "Characterization of *Kariya* (*Hildegardia barteri* (Mast.) Kosterm) Seed Oil Fatty Acid Methyl Ester Prepared from Basic Catalytic Transesterification." *Sustainability*. doi: 10.3390/su17030858
14. Butkovich, L. V., Leggieri, P. A., Lillington, S. P., Navaratna, T. A., Swift, C. L., Malinov, N. G., Zalunardo, T. R., Vining, O. B., Lipzen, A., Wang, M., Yan, J., Ng, V., Grigoriev, I. V., O'Malley, M. A. (2024) "Separation of life stages within anaerobic fungi (*Neocallimastigomycota*) highlights differences in global transcription and metabolism." *Fungal genetics and biology*. doi: 10.1016/j.fgb.2024.103958

15. Banerjee, D., Menasalvas, J., Chen, Y., Gin, J. W., Baidoo, E. E. K., Petzold, C. J., Eng, T., Mukhopadhyay, A. (2025) "Addressing genome scale design tradeoffs in *Pseudomonas putida* for bioconversion of an aromatic carbon source." NPJ systems biology and applications. doi: 10.1038/s41540-024-00480-z
16. Poddar, T. K., Scown, C. D. (2025) "Technoeconomic analysis for near-term scale-up of bioprocesses." Current opinion in biotechnology. doi: 10.1016/j.copbio.2025.103258
17. Carruthers, D. N., Donnell, I., Sundstrom, E., Keasling, J. D., Lee, T. S. (2025) "Prenol production in a microbial host via the 'Repass' Pathways." Metabolic engineering. doi: 10.1016/j.ymben.2025.01.009
18. Martinez D.V., Rodriguez A., Choudhary H., Salinas J., Martinez E.J., Davydovich O., Geiselman G.M., Gladden J.M., Simmons B.A., Kent M.S. (2025) "Deconstructing poplar lignin from ionic liquid pretreatment for biological conversion through sulfonation and Fenton chemistry." RSC Sustainability. doi: 10.1039/D5SU00039D
19. Dan Q., Chiu Y., Lee N., Pereira J.H., Rad B., Zhao X., Deng K., Rong Y., Zhan C., Chen Y., Cheong S., Li C., Gin J.W., Rodrigues A., Northern T.R., Backman T.W.H., Baidoo E.E.K., Petzold C.J., Adams P.D., Keasling J.D. (2025) "A polyketide-based biosynthetic platform for diols, amino alcohols and hydroxy acids." Nat Catal. doi: 10.1038/s41929-025-01299-5
20. Baral N., Banerjee D., Eng T., Simmons B.A., Mukhopadhyay A., Scown C. (2025) "Microbial Pathways for Cost-Effective Low-Carbon Renewable Indigoidine." ACS Sustainable Chemistry & Engineering. doi: 10.1021/acssuschemeng.4c09962
21. Adler B.A., Al-Shimary M.J., Patel J.R., Armbruster E.G., Colognori D., Charles E.J., Miller K.V., Lahiri A., Cui M.L., Oromi-Bosch A., Voelker A., Trinidad M., Lee J., Beurnier S., Boger R., Nomburg J., Barrangou R., Mutalik V.K., Schoeniger J.S., Pogliano J.A., Savage D.F., Doudna J.A., Cress B.F. (2025) "CRISPRi-ART enables functional genomics of diverse bacteriophages using RNA-binding dCas13." Nature Microbiology. doi: 10.1038/s41564-025-01935-7
22. Lin H.H., Chukwusom J., Lee H., Shanks B.H. (2025) "Elucidating the Role of Water on Limonene Oxidation with H₂O₂ over γ -Al₂O₃." Chem & Bio Engineering. doi: 10.1021/cbe.4c00151
23. Kohler A.J., Khan M.H., Shanks B.H. (2025) "Identification of Sabatier Descriptors for Hydrodeoxygenation Activity and Selectivity on Supported Molybdenum Oxide Catalysts." ACS Catalysis. doi: 10.1021/acscatal.4c07504
24. Zhan, C., Lan, G., Dan, Q., Qin, N., Pearson, A., Mellinger, P., Liu, Y., Wang, Z., Cheong, S., Dou, C., Li, C., Haushalter, R., Keasling, J. D. (2025) "Hybrid biological-chemical strategy for converting polyethylene into a recyclable plastic monomer using engineered *Corynebacterium glutamicum*." Metabolic engineering. doi: 10.1016/j.ymben.2025.03.007
25. de Siqueira, G. M. V., Srinivasan, A., Chen, Y., Gin, J. W., Petzold, C. J., Lee, T. S., Guazzaroni, M.-E., Eng, T., Mukhopadhyay, A. (2025) "Alternate routes to acetate tolerance lead to varied isoprenol production from mixed carbon sources in *Pseudomonas putida*." Applied and environmental microbiology. doi: 10.1128/aem.02123-24
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27. Liu, D., He, J., Li, Q., Zhang, X., Wang, Y., Sun, Q., Wang, W., Zhang, M., Wang, Y., Xu, H., Fang, L., Jiang, L., Liu, S., Chen, L., Tian, Y., Liu, X., Wang, R., Zhang, Z., Chern, M., Dong, X., Wang H., Liu Y., Ronald P.C., Wan, J. (2025) "A WRKY transcription factor confers broad-spectrum resistance to biotic stresses and yield stability in rice." Proceedings of the National Academy of Sciences of the United States of America. doi: 10.1073/pnas.2411164122
28. Clauser N., Scown C.D., Pett-Ridge J., Sagues W.J. (2025) "A techno-economic assessment of carbon dioxide removal pathways via biochemical conversion of lignocellulose to biofuels and bioplastics." Renewable and Sustainable Energy Reviews. doi: 10.1016/j.rser.2025.115714
29. Kazaz, S., Tripathi, J., Tian, Y., Turumtay, H., Chin, D., Pamukçu, İ., Nimavat, M., Turumtay, E. A., Baidoo, E. E. K., Scown, C. D., Eudes, A. (2025) "In planta production of the nylon precursor beta-ketoadipate." Journal of biotechnology. doi: 10.1016/j.jbiotec.2025.04.008
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31. Zournas, A., Incha, M. R., Radivojevic, T., Blay, V., Martí, J. M., Costello, Z., Schmidt, M., Chung, T., Thompson, M. G., Pearson, A., Kinnunen, P. C., Eng, T., Lawson, C. E., Tan, S., Ogorzalek, T., Kaplan, N., Forrer, M., Backman, T., Mukhopadhyay, A., Hillson, N. J., Keasling, J.D., Garcia Martin, H. (2025) "Machine learning-led semi-automated

- medium optimization reveals salt as key for flaviolin production in *Pseudomonas putida*." *Communications biology*. doi: 10.1038/s42003-025-08039-2
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 33. Krappmann, S., Gabl, E., Pazen, T., Heizmann, A., Pöggeler, S., Krüger, T., Kniemeyer, O., Einsiedel, J., Gmeiner, P., Yu, Y., Dyer, P. S., Baker, S. E., Nowrousian, M. (2025) "Identification of an a-factor-like pheromone secreted by the heterothallic ascomycete *Aspergillus fumigatus*." *Current biology*. doi: 10.1016/j.cub.2025.03.080
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 35. Alamos, S., Szarzanowicz, M. J., Thompson, M. G., Stevens, D. M., Kirkpatrick, L. D., Dee, A., Pannu, H., Cui, R., Liu, S., Nimavat, M., Krasileva, K., Baidoo, E. E. K., Shih, P. M. (2025) "Quantitative dissection of *Agrobacterium* T-DNA expression in single plant cells reveals density-dependent synergy and antagonism." *Nature plants*. doi: 10.1038/s41477-025-01996-w
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