

Synthetic Biology of Cyanobacteria: www.utu.fi/sbc

Publications (25.11.2019)



Thiel K, Patrikainen P, Nagy C, Fitzpatrick D, Pope N, Aro EM, Kallio P. (2019) Redirecting photosynthetic electron flux in the cyanobacterium *Synechocystis* sp. PCC 6803 by the deletion of flavodiiron protein Flv3. *Microbial Cell Factories*, 18: 189.

<https://doi.org/10.1186/s12934-019-1238-2>

Carbonell, V. (2019). Cyanobacteria as biocatalysts for the production of volatile hydrocarbons. *Annales Universitatis Turkuensis A I* 601 (Ph.D Thesis).

<http://urn.fi/URN:ISBN:978-951-29-7583-9>

Carbonell, V., Vuorio, E., Aro, E.M., Kallio, P. (2019) Enhanced stable production of ethylene in photosynthetic cyanobacterium *Synechococcus elongatus* PCC 7942. *World Journal of Microbiology and Biotechnology* 35:77. <https://doi.org/10.1007/s11274-019-2652-7>

Kämäräinen, J. (2018) Photosynthetic cyanobacteria as future biotechnological hosts; considerations in regards to metabolite toxicity and cofactor redox balance. *Annales Universitatis Turkuensis A I* 592 (Ph.D Thesis). <http://urn.fi/URN:ISBN:978-951-29-7376-7>

Kämäräinen, J., Nylund, M., Aro, E-M., and Kallio, P. (2018) Comparison of ethanol tolerance between potential cyanobacterial production hosts. *Journal of Biotechnology* 283: 140-145.

<https://doi.org/10.1016/j.jbiotec.2018.07.034>

Kreula, S., Kaewphan, S., Ginter, F., and Jones, P. R. (2018) Finding novel relationships with integrated gene-gene association network analysis of *Synechocystis* sp. PCC 6803 using species-independent textmining. *PeerJ* 6:e4806. <https://doi.org/10.7717/peerj.4806>

Thiel, K., Mulaku, E., Dandapani, H., Nagy, C., Aro, E-M., Kallio, P. (2018) Translation efficiency of heterologous proteins is significantly affected by the genetic context of RBS sequences in engineered cyanobacterium *Synechocystis* sp. PCC 6803. *Microbial Cell Factories* 17(1):34. <https://doi.org/10.1186/s12934-018-0882-2>

Vuorijoki, L. (2017) Targeted Proteomics in Characterizing Iron-Deprived Cyanobacteria : Insights Into The Regulation of Iron-Sulfur Cluster Biogenesis. *Annales Universitatis Turkuensis A I* 566 (Ph.D Thesis).

<http://urn.fi/URN:ISBN:978-951-29-6967-8>

Patrikainen, P., Carbonell, V., Thiel, K., Aro, E-M and Kallio, P. (2017) Comparison of orthologous cyanobacterial aldehyde deformylating oxygenases in the production of volatile C3-C7 alkanes in engineered *E. coli*. *Metabolic Engineering Communications* 5: 9-18.

<https://doi.org/10.1016/j.meten.2017.05.001>

Georg J, Kostova G, Vuorijoki L, Schön V, Kadowaki T, Huokko T, Baumgartner D, Müller M, Klähn S, Allahverdiyeva Y, Hihara Y, Futschik ME, Aro EM, Hess WR (2017) Acclimation of oxygenic photosynthesis to

iron starvation is controlled by the sRNA IsaR1. *Current Biology* 27: 1–12.

<http://dx.doi.org/10.1016/j.cub.2017.04.010>

Vuorijoki L, Kallio P, Aro E-M (2017) SRM dataset of the proteome of inactivated iron-sulfur cluster biogenesis regulator SufR in *Synechocystis* sp. PCC 6803. *Data in Brief* 11: 572-575.

<http://doi.org/10.1016/j.dib.2017.03.012>

Vuorijoki, L., Tiwari, A., Kallio, P. & Aro, EM. (2017) Inactivation of iron-sulfur cluster biogenesis regulator SufR in *Synechocystis* sp. PCC 6803 induces unique iron-dependent protein-level responses. *Biochimica et Biophysica Acta - General Subjects*. 1861(5 Pt A):10851098.

<http://dx.doi.org/10.1016/j.bbagen.2017.02.020>

Thiel, K.; Vuorio, E.; Aro, EM. & Kallio, P (2017) The effect of enhanced acetate influx on *Synechocystis* sp. PCC 6803 metabolism. *Microb Cell Fact* 16(21): 1-12. <https://dx.doi.org/10.1186/s12934-017-0640-x>

Kämäräinen, J.; Huokko, T.; Kreula, S.; Jones, PR.; Aro, EM. & Kallio, P. (2016) Pyridine nucleotide transhydrogenase PntAB is essential for optimal growth and photosynthetic integrity under low-light mixotrophic conditions in *Synechocystis* sp. PCC 6803. *New Phytol.* 214(1): 194–204.

<http://dx.doi.org/10.1111/nph.14353>

Carbonell, V., Vuorio, E., Aro, E-M., and Kallio, P. (2016) Sequence optimization of *efe* gene from *P. syringae* is not required for stable ethylene production in recombinant *Synechocystis* sp. PCC 6803. *IJIRTS* 4(1): 30–35. <http://ijirts.org/volume4issue1/IJIRTSV4I1006.pdf>

Vuorijoki, L., Isojärvi, J., Kallio, P., Kouvonen, P., Aro, E-M., Corthals, G., Jones, P. R. and Muth-Pawlak, D. (2016) Development of a quantitative SRM-based proteomics method to study iron metabolism of *Synechocystis* sp. PCC 6803. *J. Proteome Res.* 15: 266-279.

<http://dx.doi.org/10.1021/acs.jproteome.5b00800>

Akhtar, M. K., Dandapani, H., Thiel, K. and Jones, P. R. (2015) Microbial production of 1-octanol: A naturally excreted biofuel with diesel-like properties. *Metabolic Engineering Communications*. 2: 1-5.

<http://dx.doi.org/10.1016/j.meten.2014.11.001>

Pásztor, A (2015) Advanced biofuel production: Engineering metabolic pathways for butanol and propane biosynthesis. *Annales Universitatis Turkuensis A I* 514 (Ph.D Thesis). <http://urn.fi/URN:ISBN:978-951296104-7>- [UTU press release](#)

Menon, N., Pásztor, A., Menon, B.R.K., Kallio, P., Fisher, K., Akhtar, Leys, D., Jones, P.R., and Scrutton, N.S. (2015) A microbial platform for renewable propane synthesis based on a fermentative butanol pathway. *Biotechnology for Biofuels* 8:61 12p. <http://dx.doi.org/10.1186/s13068-015-0231-1>

Pásztor, A., Kallio, P., Malatinszky, D., Akhtar, M.K., & Jones, P.R. (2015) A synthetic O₂-tolerant butanol pathway exploiting native fatty acid biosynthesis in *Escherichia coli*. *Biotechnol Bioeng* 112(1):120-128. <http://0.0.3.234/bit.25324>

Kallio, P., Pásztor, A., Thiel, K., Akhtar, M. K. & Jones, P. R. (2014) An engineered pathway for the biosynthesis of renewable propane. *Nat Commun* 5(4731): 1-8. <http://dx.doi.org/10.1038/ncomms5731>

Kallio, P., Pásztor, A., Akhtar, M. K., Jones, P. R. (2014) Renewable jet fuel. *Curr. Opin. Biotechnol.* 26: 50–55 (review). <https://doi.org/10.1016/j.copbio.2013.09.006>

Vuorijoki, L., Kallio, P., Jones, P. R. (2014) Engineering Photobiological H₂-Production. *Algal Biorefineries* (1): 203-216 (review). http://dx.doi.org/10.1007/978-94-007-7494-0_8

Akhtar, K., Turner, N.J., Jones, P.R. (2013) Carboxylic acid reductase is a versatile enzyme for the conversion of fatty acids into fuels and chemical commodities. *PNAS* 110 (1), 87-92. <http://dx.doi.org/10.1073/pnas.1216516110>

Guerrero, F., Carbonell, V., Cossu, M., Correddu, D. and Jones, P. R. (2012) Ethylene synthesis and regulated expression of recombinant protein in *Synechocystis* sp. PCC 6803. *PLoS ONE* 7(11):e50470. <http://dx.doi.org/10.1371/journal.pone.0050470>

Kämäräinen, J., Knoop, H., Stanford, N.J., Guerrero, F., Akhtar, M.K., Aro, E-M., Steuer, R., Jones, P.R. (2012) Physiological tolerance and stoichiometric potential of cyanobacteria for hydrocarbon fuel production. *Journal of Biotechnology* 162 (1), 66-73. <http://dx.doi.org/10.1016/j.jbiotec.2012.07.193>

Kaewphan, S., Kreula, S., Van Landeghem, S., Van de Peer, Y., Jones, P.R., Ginter, F. (2012). Integrating Large-Scale Text Mining and Co-Expression Networks: Targeting NADP(H) Metabolism in *E. coli* with Event Extraction. In Proceedings of the Third Workshop on Building and Evaluating Resources for Biomedical Text Mining (BioTxtM 2012), 8-15. http://bioinformatics.psb.ugent.be/pdf/publications/kaewphan_et_al.pdf

Eser, B.E., Das, D., Jaehong, H., Jones, P.R., and Marsh, E.N.G. (2011) Oxygen-Independent Alkane Formation by Non-Heme Iron-Dependent Cyanobacterial Aldehyde Decarbonylase: Investigation of Kinetics and Requirement for an External Electron Donor. *Biochemistry* 50, 10743-10750. <http://dx.doi.org/10.1021/bi2012417>