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Education:

PhD: UC, Riverside (Microbiology) MS: Wuhan University (Microbiology) BS: Hubei University

General Areas of Expertise:

Bioenergy, lignocellulosic biofuels, metabolic engineering, systems biology, and synthetic biology

Short Bio:

Shihui YANG, Ph. D., Professor of Microbiology at College of Life Sciences, Hubei University. "Chutian Scholars" distinguished professor and recipient of Hubei Province "Hundred Talent Program". Prof. Yang received his Ph.D. degree in microbiology from the University of California at Riverside in 2005. He worked in Oak Ridge National Laboratory as a Research Associate and National Renewable Energy Laboratory as a staff Scientist before joining Hubei University in 2016. His research interest is focusing on metabolic engineering, synthetic biology, and renewable bioproducts. He has 40 papers published in prestigious journals including Nature Biotechnology and PNAS with 1400 citations and an H-index of 21. He also serves the scientific community as an editor of international journals such as PLoS ONE, Energies, Frontiers in Microbiology etc., as well as a reviewer for international journal such as Science, PNAS, PLoS Genetics, Biotechnology for Biofuels, and BMC Genomics etc..

Five Representative Publications:

Yang, S.#, Mohagheghi, A., Franden, A., Chou, Y-C., Dowe, N., Himmel, M. E., and Zhang, M#. 2016. Metabolic engineering of Zymomonas mobilis for 2,3-butanediol production from lignocellulosic biomass sugars. Biotechnol Biofuels 9:189.
Yang, S.#, Franden, A., Chou, Y-C., Brown, S. D., Pienkos, P. T., and Zhang, M#. 2014. Insights into acetate toxicity in Zymomonas mobilis 8b using different substrates. Biotechnol Biofuels 7:140.
Yang, S., Land, M. L., Klingeman, D. M., Pelletier, D. A., Lu, S. T., Martin, S. L., Guo, H. B., Smith, J. C., and Brown, S. D. 2010. Paradigm for industrial strain improvement identifies sodium acetate tolerance loci in Zymomonas mobilis and Saccharomyces cerevisiae. Proc. Natl. Acad. Sci. USA. 107: 10395–10400.
Yang, S., Pappas, K. M., Hauser, L. J., Land, M. L., Chen, G-L, Hurst, G.B. et al. 2009. Improved genome annotation for Zymomonas mobilis. Nat. Biotechnol. 27: 893 -4.
Wang, W*#., Yang, S.*#, Pienkos, P. T., and Johnson, D. 2014. Connecting lignin-degradation pathway with pretreatment inhibitor sensitivity of Cupriavidus necator. Front. Microbiol. 5:247.

FEWSTERN Symposium 2017 Presentation Title and Abstract:

Develop Zymomonas mobilis as a chassis for biotechnology and synthetic biology

A key barrier for economic lignocellulosic biofuel and biochemical production is the development and deployment of robust microbial biocatalysts capable of utilizing non-native substrates with high productivities and yields. Using the bioethanol producing strain Zymomonas mobilis as a model, I will discuss our efforts to better understand biomass pretreatment hydrolysate inhibitor tolerance and nonnative sugar utilization using omics-based approaches (e.g. genome resequencing, transcriptomics, and proteomics), and insights we have obtained from these studies including the relationship between robustness and productivity for economic lignocellulosic biofuel production. In addition, I will also present our work to develop Z. mobilis for other bioproducts using lignocellulosic biomass such as 2,3-butanediol. Additionally, I will discuss our current effort to develop Z. mobilis as a chassis for synthetic biology practice as well as the technical challenges we experienced and potential solutions to address them.