Yi Yang

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Profile

Dr. Yang holds a B. S. degree in Biological Science and Biotechnology and Ph. D. degree in Biochemistry from Tsinghua University. From 1999 to 2005, he worked as research fellow in B.L. Vallee' s lab in Harvard Medical School, and then in J.L Loscalzo' s lab in Boston University School of Medicine. In 2005, he returned to Harvard Medical School as Instructor of Medicine. Dr. Yang joined the faculty of newly founded School of Pharmacy, and State Key Laboratory of Bioreactor in East China University of Science and Technology in 2006, as a Specially Appointed Professor of Biochemistry. In 2012, he win the National Outstanding Young Scientist Award in 2012. In 2014, he became the deputy director of the State Key Laboratory of Bioreactor Engineering. In 2015, he was named as the Chang Jiang Scholar Distinguished Professor. In 2016, he was named as National Young Scientific and Technological Innovation Leading Talent.

Dr. Yang has authored or co-authored more than 80 research articles, many of them published in high profile journals such as Nature Biotechnology, Nature Methods, Cell Metabolism, J Am Chem Soc, Angew. Chem., PNAS and Embo J. He also filed more than 20 international and domestic invention patents, with eight of them already issued. The optogenetic technologies developed in Dr. Yang' s lab are currently utilized in more than 650 labs worldwide.

Research Field

1. Genetically encoded sensors for cellular metabolites and life activities. We are currently developing protein based sensors by fusion of fluorescent proteins and specific sensing domains. These sensors may be used conveniently for monitoring various intracellular events. Particularly, we have recently obtained highly responsive NADH, glucose and cAMP sensors for live cell imaging.
2. Small molecular fluorescent probes for specific labeling and imaging of protein thiol post translational modifications, including protein S-nitrosation, disulfides, sulfenic acid and vicinal dithiols. We developed new fluorescent imaging methods for cellular protein disulphide, S-nitrosation, sulfenic acid and vicinal dithiols. Ongoing studies include regulation of protein thiol proteome and their functional implications.
3. Optogenetics modules and circuits. We are currently developing synthetic proteins which are activated by light. These proteins may be used for control of gene expression, enzyme catalysis and labeling of live cells and animals in a spatiotemporal manner.
4. High content, high throughput genetic and drug screening. Our new methodologies make it possible to identify genes and chemicals that regulate global cellular metabolism in a large scale. These genes and chemicals have the potential to be used in disease diagnosis and treatments.
5. Protein expression systems and bio-manufacturing technologies. We are currently working on next generation bioreactor technologies with improved efficiency and reduced emission.

Research results and selected published papers

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14. Zhao, Y., and Yang, Y. * Profiling metabolic states with genetically encoded fluorescent biosensors for NADH. Curr Opin Biotechnol 2015, 31, 86-92.
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