

CV. Dr. Youjun Zhang

Project leader, Center of Plant Systems Biology and Biotechnology

Max-Planck-Institute of Molecular Plant Physiology

Date of Birth: 24.06.1985



Scientific career

09.2002-06.2006 B.S, Grass Science, School of Pastoral Agriculture Science and Technology, Lanzhou University, China.

01.2009-12.2011 Master of Philosophy, Plant biochemistry, School of Biological Science, the University of Hong Kong, Hong Kong, China.

04.2013-03.2016 PhD, plant biochemistry, International Max Planck Research School 'Primary Metabolism and Plant Growth' and University of Potsdam, Potsdam, Germany.

04.2016-11.2017 Post-doctoral researcher, Max Planck Institute of Molecular Plant Physiology "Central carbon metabolism" group

Science 11.2017 Project leader, Center of Plant Systems Biology and Biotechnology/Max-Planck-Institute of Molecular Plant Physiology, metabolon and synthetic biology
<https://cpsbb.eu/departments/department-plant-metabolomics/youjun-zhang/>

Research interest

Plant synthetic biology, metabolism, secondary metabolites pathway, substrate channeling and biochemistry

Representative publications (# Co-first author, * corresponding author)

1. **Youjun Zhang**, Katherine FM Beard, Corné Swart, Susan Bergmann, Ina Krahnert, Zoran Nikoloski, Alexander Graf, R. George Ratcliffe, Lee J. Sweetlove, Alisdair R. Fernie*, Toshihiro Obata. (2017) Protein-protein interactions and metabolite channeling in the plant tricarboxylic acid cycle **Nature Communications** 8 (1), 1-11
2. **Youjun Zhang**, Corné Swart, Saleh Alseekh, Liang Jiang, Toshihiro Obata, Alexander Graf, Alisdair R. Fernie*. (2017) The extra-pathway interactome of the TCA cycle: expected and unexpected metabolic interactions **Plant Physiology** 177 (3), 966-979
3. **Youjun Zhang***, Arun Sampathkumar, Sandra Mae-Lin Kerbler, Corné Swart, Kumar Seerangan, Alexander Graf, Alisdair R. Fernie*. (2020) A novel glycolytic metabolon mediate the interaction between the mitochondria and chloroplast **Nature Communications** 11 (1), 1-15
4. **Youjun Zhang***, Jonas Giese, Sandra Mae-Lin Kerbler, Beata Siemiatkowska, Leonardo Perez de Souza, David Barbosa Medeiros, Jessica Alpers, Dirk K. Hinch, Danilo M. Daloso, Mark Stitt, Iris Finkemeier* and Alisdair R. Fernie*. (2021) Two mitochondrial phosphatases, PP2c63 and Sal2, are required for posttranslational regulation of the TCA cycle in Arabidopsis **Molecular plant** 14 (7), 1104-1118
5. Weiyi Zhang#, **Youjun Zhang#**, Haiji Qiu#, Yafei Guo#, Haoliang Wan#, Xiaoliang Zhang, Federico Scossa, Saleh Alseekh, Qinghua Zhang, Pu Wang, Li Xu, Maximilian H-W Schmidt, Xinxin Jia, Daili Li, Anting Zhu, Fei Guo, Wei Chen, Dejiang Ni, Björn Usadel, Alisdair R. Fernie, Weiwei Wen*. (2020) Genome assembly of wild tea tree DASZ reveals pedigree and selection history of tea varieties **Nature Communications** 11 (1), 1-12

Currently more than 50 publications

Dr. Youjun Zhang

Youjun Zhang 02. May. 2022.

Other publications

1. Stefan Timm, Nicole Klaas, Janice Niemann, Kathrin Jahnke, Saleh Alseekh, **Youjun Zhang**, Paulo V.L. Souza, Liang Yu Hou, Peter Geigenberger, Danilo M. Daloso, Alisdair R. Fernie, Mart in Hagemann (2022). Simultaneous adjustments of major mitochondrial pathways through redox regulation of dihydrolipoamide dehydrogenase (mtLPD1) **bioRxiv** 2022. 486831
2. Thorsten Stefan*, Xu Na Wu, **Youjun Zhang**, Alisdair Fernie and Waltraud X. Schulze. (2022) Regulatory modules of metabolites and protein phosphorylation in Arabidopsis genotypes with altered sucrose allocation **Frontiers in Plant Science** 2022.891405
3. Dhika Amanda, Felix P. Frey, Ulla Neumann, Marine Przybyl, Jan Šimura, **Youjun Zhang**, Zongliang Chen, Andrea Gallavotti, Alisdair R. Fernie, Karin Ljung, Iván F. Acosta, (2022) Auxin boosts energy generation pathways to fuel pollen maturation in barley, **Current Biology** 21, 32022
4. Alisdair R. Fernie*, **Youjun Zhang**. (2022) The Bacillus subtilis glutamate anti-metabolon **Nature Metabolism** 4, 161-162
5. Kezhen Qing, Alisdair R. Fernie*, **Youjun Zhang***. (2021) The Assembly of Super-Complexes in the Plant Chloroplast **Biomolecules** 11 (12), 1839
6. **Youjun Zhang**, Federico Scossa, and Alisdair R. Fernie*. (2021) The genomes of Taxus species unveil novel candidates in the biosynthesis of toxoids **Molecular Plant** 14(11):1773-1775
7. Tong Wu, Sandra M. Kerbler, Alisdair R. Fernie and **Youjun Zhang***. (2021) Plant cell cultures as heterologous bio-factories for secondary metabolite production **Plant Communications** 2 (5), 1-12
8. Sandra M. Kerbler, Roberto Natale, Alisdair R. Fernie and **Youjun Zhang***. (2021) Affinity purification Mass Spectrometry Methods to Study Biomolecular Complexes in plant **International Journal of Molecular Sciences** 22 (13), 7101
9. Fayeze Aarabi*, Apidet Rakpenthai, Rouhollah Barahimipour, Michal Gorka, **Youjun Zhang**, Mohamed A. Salem, Nooshin Omranian, Franziska Brückner, Zoran Nikoloski, Patrick Giavalisco, Alexander Graf, Takayuki Tohge, Alisdair R. Fernie, Rainer Hoefgen*. (2021) Sulfur deficiency-induced genes affect seed protein accumulation and composition under sulfate deprivation **Plant Physiology** 187 (4), 2419-2434
10. Luis M. Cervela-Cardona, Takuya Yoshida, **Youjun Zhang**, Masaaki Okada, Alisdair Fernie and Paloma Mas. (2021) Circadian control of metabolism by the clock component TOC1 **Frontiers in Plant Science** 12, 1126
11. Lara Pereira, Manoj Sapkota, Michael Alonge, Yi Zheng, **Youjun Zhang**, Hamid Razifard, Nathan K. Taitano, Michael Schatz, Zachary Lippman, Alisdair R. Fernie, Ying Wang, Zhangjun Fei, Ana L. Caicedo, Denise M. Tieman, Esther van der Knaap. (2021) Natural genetic diversity in tomato flavor genes **Frontiers in Plant Science** 12, 914
12. Juan C. Moreno, Rubén Vicente, Bruno E. Rojas, Michal Gorka, Monika Kosmacz, Juan S. Peralta-Ariza, **Youjun Zhang**, Saleh Alseekh, Dorothee Childs, Marcin Luzarowski, Matías D. Hartman, Carlos M. Figueroa, Alberto A. Iglesias, Alisdair R. Fernie, Aleksandra Skirycz*. (2021) Tyr-Asp inhibition of glyceraldehyde 3-phosphate dehydrogenase affects plant redox metabolism **EMBO Journal** 40,e106800
13. **Youjun Zhang***, Alisdair R. Fernie*. (2020) On the detection and functional significance of the protein-protein interactions of mitochondrial carriers **Biomolecules** 10(8),1107
14. **Youjun Zhang** Alisdair R. Fernie*. (2020) Resolving the metabolon: is the proof in the metabolite? **EMBO reports** 21(8),e50774
15. **Youjun Zhang***, Ina Krahnert, Antje Bolze, Yves Gibon, Alisdair R. Fernie. (2020) Adenine nucleotide and nicotinamide adenine dinucleotide measurements in plants **Current Protocols in Plant Biology** 5 (3), e20115
16. **Youjun Zhang***, Alisdair R. Fernie*. (2020) Metabolons, Enzyme-Enzyme Assemblies that Mediate Substrate Channeling, and Their Roles in Plant Metabolism **Plant Communications** 2 (1), 100081
17. **Youjun Zhang**, Alisdair R. Fernie*. (2020) Stable and temporary enzyme complexes and metabolons involved in energy and redox metabolism **Antioxidants & Redox Signaling** 35 (10), 788-807

18. **Youjun Zhang**, Aleksandra Skirycz, Alisdair R. Fernie*. (2020) An Abundance and Interaction Encyclopedia of Plant Protein Function **Trends in Plant Science** 25 (7), 627-630
19. **Youjun Zhang***, Moxian Chen, Mitchell Rey Toleco, Jing, Yue, Vivien Strotmann, Jianghua Zhang, Yvonne Stahl, and Alisdair R. Fernie*. (2020) A highly efficient agrobacterium-mediated method for transient gene expression and functional studies in multiple plant species **Plant Communications** 1 (5), 100028
20. Mo-Xian Chen, **Youjun Zhang**, Alisdair R, Fernie, Ying-Gao Liu*, Fu-Yuan Zhu*. (2020) SWATH-MS based proteomics: Strategies and Applications in Plants **Trends in Biotechnology** 39 (5), 433-437
21. Alisdair R. Fernie*, **Youjun Zhang**, Arun Sampathkumar. (2020) Cytoskeleton Architecture Regulates Glycolysis Coupling Cellular Metabolism to Mechanical Cues **Trends in Biochemical Sciences** 45 (8), 637-638
22. Takayuki Tohge, Federico Scossa, Regina Wendenburg, Pierre Frasse, Ilse Balbo, Mutsumi Watanabe, Saleh Alseekh, Sagar Sudam Jadhav, Jay C Delfin, Marc Lohse, Patrick Giavalisco, Bjoern Usadel, **Youjun Zhang**, Jie Luo, Mondher Bouzayen, Alisdair R Fernie*. (2020). Exploiting natural variation in tomato to define pathway structure and metabolic regulation of fruit polyphenolics in the lycopersicum complex **Molecular plant** 13 (7), 1027-1046
23. M. Rey Toleco, Thomas Naake, **Youjun Zhang**, Joshua L. Heazlewood and Alisdair R. Fernie*. (2020) Plant Mitochondrial Carriers: Molecular Gatekeepers that Help to Regulate Plant Central Carbon Metabolism **Plants** 9(1), 117
24. Moxian Chen, Fu-yuan Zhu, Bei Gao, Kai-Long Ma, **Youjun Zhang**, Alisdair Fernie, Xi Chen, Neng-Hui Ye, Qi-Juan Hu, Yuan Tian, Di Zhang, Tiejuan Liu, Jianhua Zhang, and Ying-Gao Liu*. (2020) Full-length transcript-based proteogenomics of rice improves its genome and proteome annotation **Plant Physiology** 182 (3), 1510-1526
25. Jinsheng Zhu, Sylvain Loubéry, Larissa Broger, **Youjun Zhang**, Laura Lorenzo-Orts, Anne Utz-Pugin, Alisdair R Fernie, Chang Young-Tae, Michael Hothorn*. (2020), A genetically validated approach to detect inorganic polyphosphates in plants **The Plant Journal** 102 (3), 507-516
26. **Youjun Zhang***, Roberto Natale, Adilson Pereira Domingues Junior, Mitchell Rey Toleco, Beata Siemiatkowska, Norma Fàbregas, Alisdair R. Fernie. (2019) Rapid identification of protein-protein interactions in plants **Current Protocols in Plant Biology** 4 (4), e20099
27. Jinsheng Zhu, Kelvin Lau, Robert Puschmann, Robert K. Harmel, **Youjun Zhang**, Verena Pries, Philipp Gaugler, Larissa Broger, Amit K. Dutta, Henning Jessen, Gabriel Schaaf, Alisdair R. Fernie³, Ludwig A. Hothorn, Dorothea Fiedler, Michael Hothorn*. (2019) Two bifunctional inositol pyrophosphate kinases/phosphatases control plant phosphate homeostasis **Elife** 8, e43582
28. Ole Reinholdt, Saskia Schwab, **Youjun Zhang**, Jean-Philippe Reichheld, Alisdair R. Fernie, Martin Hagemann, Stefan Timm*. (2019) Redox-regulation of photorespiration through mitochondrial thioredoxin o1 **Plant Physiology** 181 (2), 442-457
29. **Youjun Zhang**, Alisdair Fernie*. (2018) On the role of the Tricarboxylic Acid Cycle in Plant Productivity. **Journal of Integrative Plant Biology** 60 (12), 1199-1216
30. Alisdair R. Fernie*, **Youjun Zhang** and Lee J. Sweetlove*. (2018). Passing the baton: substrate channelling in respiratory metabolism **Research** 1, 1539325
31. Tie-Yuan Liu, Mo-Xian Chen, **Youjun Zhang**, Ying-Gao Liu, Fu-Yuan Zhu, Yuan Tian, Alisdair R Fernie, Nenghui Ye, Jianhua Zhang*. (2018) Comparative metabolite profiling of two switchgrass ecotype varieties reveals differences in drought stress responses and rhizosphere size **Planta** 250 (4), 1355-1369
32. Yi Zhang, **Youjun Zhang**, Heather E. McFarlane, Toshihiro Obata, Andreas Richter, Mark Lohse⁷, Bernhard Grimm, Staffan Persson, Alisdair R. Fernie, Patrick Giavalisco*. (2018) Inhibition of TOR represses nutrient consumption, which improves greening after extended periods of etiolation **Plant Physiology** 178 (1), 101-117
33. Federico Scossa, Maria Benina, Saleh Alseekh, **Youjun Zhang** and Alisdair R. Fernie*. (2018) The integration of metabolomics and next-generation sequencing data to elucidate the pathways of natural product metabolism in medicinal plants **Planta Medica** 84 (12/13), 855-873
34. Yuling Zhang, Rita Giuliani, **Youjun Zhang**, Yang Zhang, Wagner Luiz Araujo, Baichen Wang, Peng Liu, Qi Sun, Asaph Cousins, Gerald Edwards, Alisdair Fernie, Thomas P Brutnell, Pinghua Li*. (2018) Characterization of maize leaf pyruvate orthophosphate dikinase using high throughput sequencing **Journal of Integrative Plant Biology** 60 (8), 670-690

35. Xuemin Ma, **Youjun Zhang**, Veronika Turečková, Gang-Ping Xue, Alisdair R Fernie, Bernd Mueller-Roeber, Salma Balazadeh. (2018) The NAC transcription factor SINAP2 regulates leaf senescence and fruit yield in tomato **Plant Physiology** 177 (3), 1286-1302
36. Mariette Andersson, Helle Turesson, Stéphanie Arrivault, **Youjun Zhang**, Ann-Sofie Fält, Alisdair R Fernie, Per Hofvander*. (2018). Inhibition of plastid PPase and NTT leads to major changes in starch and tuber formation in potato **Journal of Experimental Botany** 69(8): 1913-1924.
37. Semidán Robaina-Estévez, Danilo M Daloso, **Youjun Zhang**, Alisdair R Fernie, Zoran Nikoloski*. (2017) Resolving the central metabolism of Arabidopsis guard cells **Scientific Reports** 7 (1), 1-13
38. Fu-Yuan Zhu, Mo-Xian Chen, Lu Shi, Neng-Hui Ye, Jing-Fang Yang, Yun-Ying Cao, **Youjun Zhang**, Takuya Yoshida, Alisdair R. Fernie, Lin Su, Tie-Yuan Liu, Tao Fan, Ge-Fei Hao, Shi Xiao, Ying-Gao Liu, Jianhua Zhang*. (2017) Proteogenomic analysis reveals alternative splicing and alternative translation elements of the abscisic acid response in Arabidopsis seedlings **The Plant Journal** 91 (3), 518-533
39. Zengyu Liu, Rene Schneider, **Youjun Zhang**, Yi Zhang, Michaela Eder, Alisdair Fernie, Staffan Persson*. (2016) Cellulose-microtubule uncoupling proteins prevent lateral displacement of microtubules during cellulose synthesis in Arabidopsis **Development Cell**, 38(3),305-315.
40. Chao Liang, Shifeng Cheng, **Youjun Zhang**, Yuzhe Sun, Alisdair R. Fernie, Kang Kang, Gianni Panagiotou, Clive Lo and, Boon Leong Lim*. (2016) Transcriptomic, proteomic and metabolic changes in Arabidopsis thaliana leaves after the onset of illumination **BMC Plant Biology**16 (1), 1-17
41. Chao Liang, **Youjun Zhang**, Shifeng Cheng, Sonia Osorio, Yuzhe Sun, Alisdair R. Fernie, C. Y. M. Cheung, and Boon L. Lim*. (2015) Impacts of high ATP supply from chloroplasts and mitochondria on the leaf metabolism of Arabidopsis thaliana **Frontiers in Plant Science** 6, 922
42. Phuong Anh Pham, Vanessa Wahl, Takayuki Tohge, Laise Rosado de Souza, **Youjun Zhang**, Phuc Thi Do, Justyna J. Olas, Mark Stitt, Wagner L. Araújo, Alisdair R. Fernie*. (2015) Analysis of knockout mutants reveals non-redundant functions of poly(ADP-ribose) polymerase isoforms in Arabidopsis **Plant Molecular Biology** 89 (4), 319-338
43. **Youjun Zhang**, Feng Sun, Joerg Fettke, Mark Aurel Schöttler, Lawrence Ramsden, Alisdair R. Fernie*, Boon Leong Lim*. (2014) Heterologous expression of *AtPAP2* in transgenic potato influences carbon metabolism and tuber development **FEBS letters** 588 (20), 3726-3731
44. Feng Sun, Pui Kit Suen, **Youjun Zhang**, Chao Liang, Chris Carrie, James Whelan, Jane L. Ward, Nathaniel D. Hawkins, Liwen Jiang, Boon Leong Lim*. (2012) A dual-targeted purple acid phosphatase in Arabidopsis thaliana moderates carbon metabolism and its overexpression leads to faster plant growth and higher seed yield **New Phytologist** 194 (1), 206-219
45. **Youjun Zhang**, Laura Yu, Ka-Fu Yung, Dennis YC Leung, Sun Feng, Boon Leong Lim*. (2012). Over-expression of *AtPAP2* in *Camelina sativa* leads to faster plant growth and higher seed yield **Biotechnology for Biofuels** 5 (1), 1-10

Conference attendance

- **Youjun Zhang** Alisdair Fernie. The metabolic engineering of flavonoid pathway in the plant cell culture GASB II Synthetic Biology Made in Germany 27th-28th September 2018, Berlin, Germany
- **Youjun Zhang**, Toshihiro Obata, Alisdair Fernie. Elucidation of the TCA metabolon and the regulation of the TCA enzymes in plants, 9th International Conference for Plant Mitochondrial Biology 2015 (ICPMB 2015) in Wrocław, Poland, 2015,05.
- **Youjun Zhang**, Boon Leong Lim. Over-expression of a novel Arabidopsis phosphatase causes accelerated flowering and higher photosynthesis rate in *Camelina Sativa*", American Society of Plant Biologists 2010, Montreal, Canada, 2010.08

Awards

- 09.2021. Jeff Schell awards for outstanding research, Max Planck Institute of Molecular Plant Physiology, Germany
- 04.2013-03.2016 DAAD PhD scholarship and International Max Planck Research School 'Primary Metabolism and Plant Growth' PHD scholarship, Germany.
- 03.2012-02.2013, DAAD language scholarship, Germany
- 01.2009-12.2011, Postgraduate studentship of the University of Hong Kong, China.
- 07.2010, University Research Conference Grants of HKU, China.
- 09.2004-06.2005, National First-class Scholarship, China.
- 05.2004, "Japan DaoShengJingCi" Scholarship, China and Japan Peace & Development Foundation
- 09.2002-06.2006, University Academic Scholarships (four times), Lanzhou University, China.

References

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