

# Chun Yue Maurice CHEUNG

## EDUCATION

- 2009 – 2013 D.Phil. in Systems Biology (Plant Sciences), University of Oxford, U.K.**  
2010 – 2013 Thesis Title: Genome scale metabolic models of different plant tissues  
Supervisors: Prof Lee Sweetlove and Prof George Ratcliffe  
Department of Plant Sciences, University of Oxford, U.K.  
Prof David Fell and Dr Mark Poolman  
Cell Systems Modelling Group, Oxford Brookes University, U.K.
- 2009 – 2010 Lab rotations and courses in the Systems Biology Doctoral Training Centre
- 2013 Master of Arts, University of Cambridge, U.K.**
- 2006 – 2009 Bachelor of Arts (Hons) in Natural Sciences, University of Cambridge, U.K.**
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| 2009 | Natural Sciences Part II (Biochemistry)  | Class I |
|      | Final Year Project with Prof Steve Oliver  |         |
|      | Analysis of the relationship between metabolic network structure and enzyme evolution. |         |
| 2008 | Natural Sciences Part IB   | Class I |
| 2007 | Natural Sciences Part IA   | Class I |

## EMPLOYMENT

- 2015 – Now **Assistant Professor, Yale-NUS College**
- 2014 – 2015 Research Fellow in Department of Chemical and Biomolecular Engineering, National University of Singapore
- 2008 Jun–Aug Research Assistant in Tissue Engineering Laboratory, University of Hong Kong
- 2007 Jul–Aug Research Helper in Swire Institute of Marine Science, University of Hong Kong

## RESEARCH GRANTS

- 2016 – 2018 Complex Systems Modelling Research Cluster Seminar Grant
- 2015 – 2019 Yale-NUS College Start-up Grant

## AWARDS AND SCHOLARSHIPS

- 2009-2013 Clarendon Fund, University of Oxford
- 2009-2013 Keble College Sloane-Robinson Award, Keble College, University of Oxford
- 2009 Swann Prize for Biology, Gonville and Caius College, University of Cambridge
- 2008 The James Arthur Ramsay Prize for Chemistry and Biology, Gonville and Caius College, University of Cambridge
- 2007 Corporate Associate Scheme Prize, Department of Chemistry, University of Cambridge

## CONFERENCE PRESENTATIONS

- 2021 March FluxMAPS 2021  
Invited talk on 'Four-phase flux balance model of guard cell metabolism'
- 2018 September International Study Group for Systems Biology  
Conference talk on 'Investigating resource allocation with a dynamic multi-organ plant genome-scale metabolic model'
- 2017 April Plant Genomics & Gene Editing Asia Congress  
Invited talk on 'Genome-scale metabolic modelling: from genomes to metabolic phenotypes'
- 2016 July Plant Biology 2016  
Invited talk on 'Extensions of flux balance analysis for constraint-based modelling of plant metabolism'
- 2015 March Plant Genomics Congress Asia  
Conference talk on 'Systems Biotechnology Platform for Characterizing and Designing Plant Cells'
- 2013 September Metabolic Pathway Analysis 2013  
Poster presentation on 'Accounting for maintenance costs in flux balance analysis improves the prediction of plant cell metabolic phenotypes under stress conditions'
- 2012 June Inter-Doctoral Training Centre Systems Biology Conference  
Seminar talk on 'Energy constraints in plant flux-balance models'
- 2011 June Society of Experimental Biology Annual Main Meeting  
Poster presentation on 'Exploring heterotrophic metabolism in a genome-scale metabolic model of Arabidopsis'

## PUBLICATIONS

- Tay, I. Y. Y., Odang, K. B., **Cheung, C. Y. M.** (2021) Metabolic Modeling of the C<sub>3</sub>-CAM Continuum Revealed the Establishment of a Starch/Sugar-Malate Cycle in CAM Evolution. *Frontiers in Plant Science*, 11, 573197
- Tan, X. L. J., **Cheung, C. Y. M.** (2020) A multiphase flux balance model reveals flexibility of central carbon metabolism in guard cells of C<sub>3</sub> plants. *The Plant Journal*, 104, 1648-1656.
- Shaw, R., **Cheung, C. Y. M.** (2020) Multi-tissue to whole plant metabolic modelling. *Cellular and Molecular Life Sciences*, 77, 489-495.
- Moreira, T. B., Shaw, R., Luo, X., Ganguly, O., Kim, H.-S., Coelho, L. G. F., **Cheung, C. Y. M.**, Williams, T. C. R. (2019) A genome-scale metabolic model of soybean (*Glycine max*) highlights metabolic fluxes in seedlings. *Plant Physiology*, 180, 1912-29.
- Shaw, R., **Cheung, C. Y. M.** (2019) A mass and charge balanced metabolic model of *Setaria viridis* revealed mechanisms of proton balancing in C<sub>4</sub> plants. *BMC Bioinformatics*, 20, 357.
- Shaw, R., **Cheung, C. Y. M.** (2018) A dynamic multi-tissue flux balance model captures carbon and nitrogen metabolism and optimal resource partitioning during Arabidopsis growth. *Frontiers in Plant Science*, 9, 884.
- Shameer, S., Baghalian, K., **Cheung, C. Y. M.**, Ratcliffe, R. G., Sweetlove, L. J. (2018) Computational analysis of the productivity-potential of CAM plants. *Nature Plants*, 4, 165–171.
- Lakshmanan, M., **Cheung, C. Y. M.**, Mohanty, B., and Lee, D.-Y. (2016) Modeling Rice Metabolism: From Elucidating Environmental Effects on Cellular Phenotype to Guiding Crop Improvement. *Frontiers in Plant Science*, 7, 1795.
- Yuan, H., **Cheung, C. Y. M.**, Hilbers, P. and van Riel, N.A.W. (2016) Flux balance analysis of plant metabolism: the effect of biomass composition and model structure on model predictions. *Frontiers in Plant Science*, 7, 537.
- Mohanty, B., Kitazumi, A., **Cheung, C. Y. M.**, Lakshmanan, M., de los Reyes, B. G., Jang, I.-C., Lee, D.-Y. (2016) Identification of candidate network hubs involved in metabolic adjustments of rice under drought stress by integrating transcriptome data and genome-scale metabolic network. *Plant Science*, 242, 224–239.

Yuan, H., **Cheung, C.Y.M.**, Poolman, M.G., Hilbers, P.A.J. and van Riel, N.A.W. (2016) A genome-scale metabolic network reconstruction of tomato (*Solanum lycopersicum* L.) and its application to photorespiratory metabolism. *The Plant Journal*, 85, 289–304.

Liang, C., Zhang, Y., Cheng, S., Osorio, S., Sun, Y., Fernie, A.R., **Cheung, C.Y.M.** and Lim, B.L. (2015) Impacts of high ATP supply from chloroplasts and mitochondria on the leaf metabolism of *Arabidopsis thaliana*. *Frontiers in Plant Science*, 6, 992.

**Cheung, C.Y.M.**, Ratcliffe, R.G. and Sweetlove, L.J. (2015) A method of accounting for enzyme costs in flux balance analysis reveals alternative pathways and metabolite stores in an illuminated *Arabidopsis* leaf. *Plant Physiology*, 169, 1671–1682.

**Cheung, C.Y.M.**, Poolman, M.G., Fell, D.A., Ratcliffe, R.G. and Sweetlove, L.J. (2014) A diel flux-balance model captures interactions between light and dark metabolism during day-night cycles in C<sub>3</sub> and CAM leaves. *Plant Physiology*, 165, 2917-29.

**Cheung, C.Y.M.**, Williams, T.C.R., Poolman, M.G., Fell, D.A., Ratcliffe, R.G. and Sweetlove, L.J. (2013) A method for accounting for maintenance costs in flux balance analysis improves the prediction of plant cell metabolic phenotypes under stress conditions. *The Plant Journal*, 75, 1050-61.

Sweetlove, L.J., Williams, T.C.R., **Cheung, C.Y.M.** and Ratcliffe, R.G. (2013) Modelling metabolic CO<sub>2</sub> evolution – a fresh perspective on respiration. *Plant, Cell & Environment*, 36, 1631-40.