

CURRICULUM VITAE - Dr. Robert L. Last

Departments of Biochemistry and Molecular Biology and Plant Biology, Michigan State University

EDUCATION:

Ohio Wesleyan University, Delaware, OH; BA in Chemistry with minors in Botany and Zoology, 1980
Carnegie-Mellon University, Pittsburgh, PA; PhD in Biological Sciences, 1986

SELECTED PROFESSIONAL AND ADMINISTRATIVE EXPERIENCE:

5/14-present, Director, NIH Training Grant Program 'Plant Biotechnology for Health and Sustainability'.
Michigan State University

9/04-present, Professor and Barnett Rosenberg Professor, *Michigan State University*

3/03- 9/04, Program Director, Plant Genomics Res Program, *National Science Foundation*

6/98-6/02, Director of Discovery Genomics, *Cereon Genomics LLC*, Cambridge, MA

5/89-6/98, Assistant, Associate and Tenured Senior Plant Molecular Geneticist, *Boyce Thompson Institute for Plant Research at Cornell University*

4/86-5/89, Postdoctoral Fellow, *Whitehead Institute for Biomedical Research*

9/80-4/86, Ph.D. student, Department of Biological Sciences, *Carnegie-Mellon University*

SELECTED HONORS AND AWARDS:

Erna and Jakob Michael Visiting Professorship, Department of Plant Sciences, Weizmann Institute of Science, Rehovot, Israel, Fall 2012- Summer 2013

University Distinguished Faculty Award, Michigan State University, February 2012

Fellow, American Association for the Advancement of Science (AAAS), named 2009

Fellow, American Society of Plant Biologists, named 2009

Monsanto Fellow, named 2002

NSF Presidential Young Investigator Award, 10/90-9/95

SELECTED PROFESSIONAL ACTIVITIES:

Plant Biology Plant Genomics Search Committee, Chair (2016-2017)

Michigan State University Provost Search Committee (2013-2014)

Program Committee (for annual meeting), American Society of Plant Biologists, 2015-2019

co-Organizer, Plant Biotechnology for Health and Sustainability Symposium, Michigan State University, Fall semester 2013-. Faculty organizer for the associated Career Symposia, 2013-.

Associate Editor, *Science Advances*, 2014-

Associate Editor, *Plant Physiology*, 10/99-01/08, Monitoring Editor, 10/94-7/97

Lead Organizer, Banbury Conference on Evolution of Plant Specialized Metabolism, 3/13

Co-organizer of NIFA-NSF workshop on Phenomics: Beyond Genomics (with Timothy Close), April 2011, St. Louis. Meeting report document at:

http://www.nsf.gov/bio/pubs/reports/phenomics_workshop_report.pdf

Member of the NAS/NRC Committee on the National Plant Genome Initiative: 2003-2008, Summer 2002. Report at: <http://books.nap.edu/openbook/0309085217/html/index.html>.

Chair, Plant Molecular Biology Gordon Conference, 7/00 (Vice-Chair in 1998)

Board of Directors and BoD Nominations Committee for iPLANT (CyVerse) Cyberinfrastructure

Collaborative (<http://www.cyverse.org/>). **Chair** 2007-2009; **Associate Chair** 2009-2010, member 2010

Chair, Scientific Advisory Board for the Genome Canada-funded PhytoMetaSyn project 2009-2014

Founding organizer of the Plantgenomics@MSU Summer Research Experiences for Undergraduate Internship Program (www.plantgenomics.msu.edu); lead 2006-2012, co-lead 2013-

Co-organizer for the three-week summer course "Frontiers and Techniques in Plant Sciences" at Cold Spring Harbor Laboratory 2010-2013

Co-instructor (with Heather Eisthen) of a 'Grandparents University' (<http://grandparents.msu.edu/about/>) class on the science behind taste and smells 2008, 2009, 2015

COURSES CURRENTLY BEING TAUGHT:

BMB/CSS/PLB 856, Plant Molecular and Omic Biology (lead instructor 2006-present; responsible for 25 hours lecture per year; with Sheng Yang He and Hideki Takahashi)

BMB 960-301, Seminar in Plants for Health and Sustainability, Fall 2014, 2015, 2016

CURRENT GRANT SUPPORT

NSF IOS-1546617 RESEARCH-PGR: How do plants produce so many diverse metabolites: A computational and experimental comparative genomics investigation in the Solanaceae, \$5.3M, PI with four co-PIs. 8/1/2016-7/31/2020

NSF CBET-1565232 Collaborative Research: Production of known and novel, safe, and biodegradable pyrethrin-type insecticides in tomato, \$300K, PI, 8/1/2016-7/31/2019

NIH 1T32GM110523-01 Graduate Training Grant: Plant Biotechnology for Health and Sustainability approx. ≈\$950K, Program Director. 7/2014-6/2019

NSF DBI-1358474 Research Experiences for Undergraduates Site: Plant Genomics at Michigan State University \$314K, co-PI with Cornelius Barry as PI 9/15/14-8/31/17

NSF MCB-124400 Identifying and Understanding Connections between Photosynthesis and Amino Acid Biosynthesis. \$1.5M. co-PI with Yan Lu (Western Michigan University) as PI. 2/2013-1/2017

SELECTED RECENT PUBLICATIONS (>100 total)

1. Gu, L., A.D. Jones and **R.L. Last**. 2007. LC-MS/MS assay for protein amino acids and metabolically related compounds for large-scale screening of metabolic phenotypes. *Anal. Chem.* 79, 8067-8075.
2. Milo, R. and **R.L. Last**. 2012. Achieving diversity in the face of constraints - lessons from metabolism. *Science*. 336:1663-1667. [DOI: 10.1126/science.1217665](https://doi.org/10.1126/science.1217665)
3. Schillmiller, A.L., A.L. Charbonneau and **R.L. Last**. 2012. Identification of a BAHD acetyltransferase that produces protective acyl sugars in tomato trichomes. *Proc. Natl. Acad. U.S.A.* 109:16377-16382. [doi: 10.1073/pnas.1207906109](https://doi.org/10.1073/pnas.1207906109).
4. Kim, J., Y. Matsuba, J. Ning, A.L. Schillmiller, D. Hammar, A.D. Jones, E. Pichersky and **R.L. Last**. 2014. Analysis of natural and induced variation in tomato glandular trichome flavonoids identifies a gene not present in the reference genome. *Plant Cell* 26: 3272-3285. doi: <http://dx.doi.org/10.1105/tpc.114.129460>
5. Liu, J. and **R.L. Last**. 2015. A land plant-specific thylakoid membrane protein contributes to photosystem II maintenance in *Arabidopsis thaliana*. *Plant J.* 82: 731-743. [doi: 10.1111/tbj.12845](https://doi.org/10.1111/tbj.12845)
6. Schillmiller, A.L., G.D. Moghe, P. Fan, B. Ghosh, J. Ning, A.D. Jones, **R.L. Last**. 2015. Functionally divergent alleles and duplicated loci encoding an acyltransferase contribute to acylsugar metabolite diversity in *Solanum* trichomes. *Plant Cell* 27:1002-1017. [doi: 10.1105/tpc.15.00087](https://doi.org/10.1105/tpc.15.00087)
7. Peng, C., S. Uygun, S.-H. Shiu and **R.L. Last**. 2015. The impact of the branched-chain ketoacid dehydrogenase complex on amino acid homeostasis in *Arabidopsis*. *Plant Physiol.* 169: 1807-1820. [doi:10.1104/pp.15.00461](https://doi.org/10.1104/pp.15.00461)
8. Ning, J., G.D. Moghe, B. Leong, J. Kim, I. Offner, Z. Wang, C. Adams, A.D. Jones, D. Zamir and **R.L. Last**. 2015. A feedback insensitive isopropylmalate synthase affects acylsugar composition in cultivated and wild tomato. *Plant Physiol.* 169: 1821-1835. [doi:10.1104/pp.15.00474](https://doi.org/10.1104/pp.15.00474)
9. Moghe, G.D. and **R.L. Last**. 2015. Something old, something new: Conserved enzymes and the evolution of novelty in plant specialized metabolism. *Plant Physiol.* 169: 1512-1523. [doi:10.1104/pp.15.00994](https://doi.org/10.1104/pp.15.00994)
10. Fan, P., A.M. Miller, A.L. Schillmiller, X. Liu, I. Ofner, A.D. Jones, D. Zamir and **R.L. Last**. 2016. *In vitro* reconstruction and analysis of evolutionary variation of the tomato acylsucrose metabolic network. *Proc. Natl. Acad. USA*, 113 (2) E239-E248. [doi/10.1073/pnas.1517930113](https://doi.org/10.1073/pnas.1517930113).