



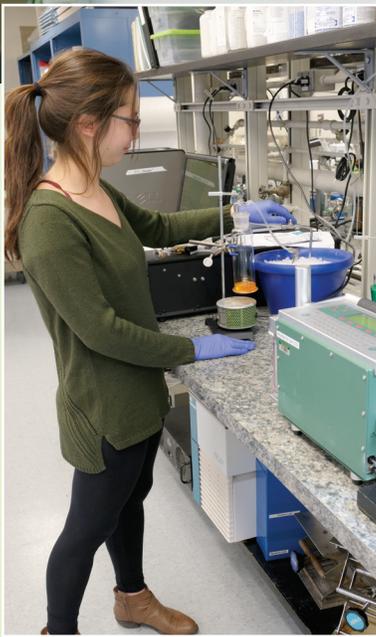
Partnering with Researchers

Michigan State University



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GREAT LAKES BIOMASS RESEARCH CENTER

PARTNERING WITH RESEARCHERS:
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 Beyond Photosynthesis



Beyond Photosynthesis

Professor Thomas Sharkey needs no introduction to plant physiologists, especially those who study photosynthesis. For decades, Professor Sharkey has led our understanding of stomatal conductance and CO₂ assimilation, isoprene emissions, and abiotic stress tolerance. His paper on stomatal conductance and photosynthesis with Professor Graham Farquhar has almost 5,000 citations¹. Professor Sharkey is a faculty member of the Department of Energy Plant Research Laboratory (DOE-PRL) and Biochemistry and Molecular Biology (BMB) at Michigan State University (MSU). Professor Sharkey's lab is also part of the Plant Resilience Institute (PRI) whose mission is to identify the biological mechanisms that stimulate plant resilience.



Professor Sharkey's lab investigates the biophysical and molecular interactions that govern whole plant photosynthesis, growth, development, and abiotic stress tolerance. Currently, Professor Sharkey's lab is focused on how carbon gained through photosynthesis is partitioned into leaf growth and how this affects total plant carbon gain and biomass^{2,3}. In addition, Professor Sharkey is investigating the relationship between gas exchange, photosynthesis, growth, and starch accumulation^{4,5,6}. Together with his lab's work on leaf growth investment, they are elucidating targets to improve crop yields and food security. BioChambers has been part of Professor Sharkey's research for over a decade. Professor Sharkey has utilized our Bigfoot design to grow everything from *Arabidopsis* to trees. Having one of the largest plant growth facilities in academia, BioChambers is honored to serve MSU and Professor Sharkey.

References

- 1 Farquhar GD, Sharkey TD. 1982. Stomatal conductance and photosynthesis. *Annual Review of Plant Physiology* **33**, 317-345.
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- 3 Weraduwage SM, Kim SJ, Renna L, Anozie FC, Sharkey TD, Brandizzi F. 2016. Pectin methylesterification impacts the relationship between photosynthesis and plant growth. *Plant Physiology* **171**, 833-848.*
- 4 Sharkey TD. 2015. Understanding carbon partitioning and its role in determining plant growth. *Plant, Cell and Environment* **38**, 1963-1964.
- 5 Sharkey TD. 2016. What gas exchange data can tell us about photosynthesis. *Plant, Cell and Environment* **39**, 1161-1163.
- 6 Sharkey TD. 2017. A dichotomy resolved: plant growth can control the rate of starch accumulation. *Plant, Cell and Environment* **40**, 2606-2607.

* Research done in BioChambers growth chambers.



Biochambers Case Study - MSU A - version 2023-08A.

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