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EDUCATION

Ph.D. Yale University, School of the Environment	May 2024 (Expected) New Haven, CT
Master of Philosophy Yale University, School of the Environment	2022 New Haven, CT
Master of Environmental Science Yale University, School of the Environment	2019 New Haven, CT
B.S. Mechanical Engineering, Minor in Botany University of Hawaii at Manoa, College of Engineering	2017 Honolulu, HI

FELLOWSHIPS, GRANTS, & AWARDS

Fellowships & Scholarships	Total: \$752,600
Plant Science Research Fellow, <i>Oak Spring Garden Foundation</i> , 2021	\$10,000
Lewis B. Cullman Fellow, <i>The New York Botanical Garden</i> , 2019	\$250,000
Gates Cambridge Scholarship, <i>The Bill and Melinda Gates Foundation</i> , 2019 (Declined)	\$260,000
Merit Research Scholarship, <i>Yale School of the Environment</i> , 2017	\$50,000
NSF Graduate Research Fellow, <i>National Science Foundation</i> , 2017	\$138,000
Undergraduate Research Fellow, <i>NASA Hawaii Space Grant Consortium</i> , 2017	\$4,500
Summer Undergraduate Research Fellow, <i>California Institute of Technology</i> , 2015	\$5,000
Research Experience for Undergraduates, <i>Columbia University EFRC</i> , 2015	\$4,500
Presidential Scholar, <i>University of Hawaii</i> , 2013	\$30,600
Grants	Total: \$7,200
Yale Institute for Biospheric Studies Doctoral Pilot Grant, 2020	\$3,000
Yale Institute for Biospheric Studies Small Grant, 2018	\$3,000
Carpenter-Sperry Research Fund, 2018	\$1,200
Awards	
Maynard Moseley Award, <i>Botanical Society of America</i> , 2020	
Best Oral Presentation by a Master's Student, <i>YSE Research Conference</i> , 2019	
Physiological Section Student Poster Award, <i>Botanical Society of America</i> , 2018	

PUBLICATIONS

In Preparation

1. **Borsuk, A.**, Randall, J., Edwards, E., Richberg, J., Montes, K., Brodersen, C. Variation in palisade cell anatomy and leaf optical properties in *Viburnum*. *In prep for submission to New Phytologist*

Refereed Publications

7. Procko, C., Lee, T., **Borsuk, A.**, Bargmann, B., Dabi, T., Nery, J., Estelle, M., Baird, L., Brodersen, C., Ecker, J., Chory, J. Leaf cell-specific and single-cell transcriptional profiling reveals a role for the palisade layer in UV light protection. *The Plant Cell*, 34 (9), pp.3261-3279
6. **Borsuk, A.M.**, Roddy, A.B., Th eroux-Rancourt, G. and Brodersen, C.R., (2022). Structural organization of the spongy mesophyll. *New Phytologist*, 234(3), pp.946-960.

5. Momayyezi, M., **Borsuk, A.**, Brodersen, C., Gilbert, M., Theroux-Rancourt, G., McElrone, A. (2022). Desiccation of the leaf mesophyll and its implications for CO₂ diffusion and light processing. *Plant, Cell & Environment*, 45(5), pp.1362-1381.
4. Mankiewicz, P., **Borsuk, A.**, Ciardullo, C., Hénaff, E. and Dyson, A., (2022). Developing Design Criteria for Active Green Wall Bioremediation Performance: Growth Media Selection Shapes Plant Physiology, Water and Air Flow Patterns. *Energy and Buildings*, p.111913
3. **Borsuk, A.**, and Brodersen, C. (2019). The spatial distribution of chlorophyll in leaves. *Plant Physiology*, 180(3), pp.1406-1417.
2. Saive, R., **Borsuk, A.**, Emmer, H., Bukowsky, C., Lloyd, J., Yalamanchili, S. and Atwater, H. (2016). Effectively transparent front contacts for optoelectronic devices. *Advanced Optical Materials*, 4(10), pp.1470-1474.
1. Abplanalp, M.J., **Borsuk, A.M.**, Jones, B.M. and Kaiser, R.I. (2015). On the formation and isomer specific detection of propenal (C₂H₃CHO) and cyclopropanone (c-C₃H₄O) in interstellar model ices—a combined FTIR and reflectron time-of-flight mass spectroscopic study. *The Astrophysical Journal*, 814(1), p.45.

Conference Proceedings

3. Ureña, E.B., **Borsuk, A.**, Clark, H., Fosbury, R., Godinho, M.H., Hardy, M., Holt, A., Kolle, M., Kuttner, C., Lopez-Garcia, M. and McDougal, A. (2020). The role of composition: natural materials vs. synthetic composites: general discussion. *Faraday Discussions*, 223, pp.295-306.
2. Arwin, H., Barla, P., Blake, A.J., **Borsuk, A.**, Brien, M., Burg, S., Chang, Y., Freyer, P., Hardy, M., Holt, A. and Kallepalli, A. (2020). Optics and photonics in nature: general discussion. *Faraday Discussions*, 223, pp.107-124.
1. Saive, R., Bukowsky, C.R., Yalamanchili, S., Bocard, M., Saenz, T., **Borsuk, A.M.**, Holman, Z. and Atwater, H.A. (2016). Effectively transparent contacts (ETCs) for solar cells. *In Photovoltaic Specialists Conference (PVSC), IEEE 43rd* (pp. 3612-3615). IEEE.

PRESENTATIONS

Invited Talks

The Landscape of the Leaf: Botanical Form & Function at the Microscale. Oak Spring Garden Foundation. 2021

Contributed Talks

Borsuk, A., E. Edwards, and C. Brodersen. Morphological variation in leaf photosynthetic cells and functional implications for leaf-light interaction. Early Career Researcher Living Light Virtual Conference. 2021

Borsuk, A., A. Roddy, G. Thérour-Rancourt, and C. Brodersen. Structural organization of the spongy mesophyll in laminar leaves with reticulate venation. Society of Integrative and Comparative Biology Virtual Conference. 2021

Borsuk, A., A. Roddy, G. Thérour-Rancourt, and C. Brodersen. Structural organization of the spongy mesophyll in laminar leaves with reticulate venation. Botanical Society of America Virtual Conference. 2020 **Maynard Moseley Award*

Borsuk, A. and C. Brodersen. The spatial distribution of chlorophyll in leaves. Yale School of the Environment Research Conference, New Haven CT. 2019 **Award for Best Oral Presentation by a Master's Student*

Saive, R., **Borsuk, A.**, Emmer, H., Bukowsky, C., Lloyd, J., Yalamanchili, S. and Atwater, H. Effectively transparent front contacts for solar cells. C3E Women in Clean Energy Symposium, Cambridge MA. 2015

Posters

Borsuk, A., A. Roddy, G. Th eroux-Rancourt, and C. Brodersen. Structural organization of the spongy mesophyll. Plant Biology Initiative Symposium, Boston MA. 2022

Borsuk, A. and C. Brodersen. The spatial distribution of chlorophyll in leaves. Gordon Research Conference: CO₂ Assimilation in Plants from Genome to Biome, Newry ME. 2019

Borsuk, A. and C. Brodersen. The spatial distribution of chlorophyll in leaves. Botanical Society of America, Rochester MN. 2018 **Physiological Section Student Poster Award*

Borsuk, A. and K. Kobayashi. Effects of LED lighting spatial configuration on spaceflight analog *Amaranthus tricolor*. American Society for Horticultural Science Annual Conference, Atlanta GA. 2016

Borsuk, A. and O. Semonin. Nickel oxide hole transport layer for methylammonium lead triiodide perovskite solar cells. Emory University STEM Research and Career Symposium, Atlanta GA. 2015

Borsuk, A. and O. Semonin. Nickel oxide hole transport layer for methylammonium lead triiodide perovskite solar cells. National Collegiate Research Conference, Cambridge, MA. 2015

Borsuk, A., A. Turner, R. Kaiser. Experimental investigation of the formation routes of carbonyl-bearing molecules in the interstellar medium. KAUST International Undergraduate Poster Competition, Thuwal, Saudi Arabia. 2014

PATENTS

U.S. Provisional Patent
Effectively Transparent Solar Cell Front Contacts.
CIT File No. CIT-7176-P2; Filed 9/25/15

TEACHING

Certifications

Yale Certificate of College Teaching Preparation In progress

Instructor of Record

General Botany (Lab), Southern Connecticut State University Fall 2020

Teaching Assistant

Plant Ecophysiology, Yale University Fall 2020

Trees: Environmental Biology and Global Significance (Lead), Yale University Spring 2019

Trees: Environmental Biology and Global Significance, Yale University Spring 2018, 2021

Algal Diversity and Evolution (Teaching Intern), University of Hawaii Spring 2017

Guest Lecturer

Perspectives on becoming a doctoral student; ENV 550a, Yale University Spring 2019

Plant structure from the inside out with X-ray imaging; PHYS 991, Yale University Spring 2019

SERVICE, MENTORING, & OUTREACH

Service

Co-Treasurer & Information Officer; YSE Doctoral Student Government 2021-2022

Research Mentorship

Kyra Montes, Yale College Undergraduate 2020-2022

Jenn Richburg, Yale College Undergraduate 2022

Professional Mentorship

Mentor to Undergraduate, Women in Science at Yale 2020-2021

Mentor to Master's Student, Women in Science at Yale 2020-2021

Public Outreach

Presenter, Yale Pathways to Science Flipped Science Fair, New Haven, CT 2020

Volunteer Judge, New Haven Science Fair, New Haven, CT 2018

Volunteer Chair, Expanding Your Horizons Hawaii, Honolulu, HI 2014-2017

PROFESSIONAL AFFILIATIONS

Botanical Society of America

Materials Research Society

Society of Integrative and Comparative Biology

TECHNICAL SKILLS

Programming & Markup: R, Java, Git, LaTeX

Modeling, Visualization, & Software Tools: COMSOL Multiphysics, Avizo, ImageJ, SolidWorks, Meshlab, FormLabs

Biological Methods & Microscopy: Micro-computed tomography, light sheet microscopy, scanning electron microscopy, confocal laser scanning microscopy, brightfield microscopy, fluorescence microscopy, gas exchange analysis (LI-COR), plant tissue optics

Materials & Engineering Methods: Two-photon absorption 3-D printing, photolithography, thermal/ebeam evaporation, spin-coating