

## Douglas Van Hoewyk

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### Education

**Colorado State University.** Fort Collins, CO. Ph.D. Botany. GPA 3.9. 2008  
**Bates College.** Lewiston, ME. B.S. Biology. *Cum laude* and department honors. 1998

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### Teaching Experience

**Coastal Carolina University.** Professor. Conway, SC. August 2008-present.  
Introductory Biology I and II, Cell Biology, Plant Physiology, Plants and Civilization, Plant Adaptations to Stress.

**Front Range Community College.** Fort Collins, CO. August 2005-2008. Biology I.

### Work Experience

**Decode Genetics, Inc.** Reykjavik, Iceland. July 2001- June 2003

Research Associate. Department of New Technology. Supervisor: Dr. Richard Yip

**Whitehead Institute-MIT.** Cambridge, MA. September 1999-June 2001.

Technical Assistant. Supervisor: Dr. Terry Orr-Weaver

**University of Connecticut Medical Center.** Farmington, CT. July 1998-July 1999.

Research Assistant I. Supervisor: Dr. Mansoor Sarfarazi.

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### Grants and Fellowships

**NSF. MCB Division.** 2016-2019. \$184,600. RUI: Reprogramming cellular processes in proteasome inhibited plants. MCB 615318

**Fulbright Scholar Award.** 2015-2016. Ankara, Turkey. Nickel hyper-accumulating plants in Turkey: elucidating their mechanisms of survival.

**Toomey Foundation.** 2015. \$5,500. Nickel hyper-accumulating plants in Turkey.

**NSF. MCB Division.** 2015-2016. \$23,086. Supplement for RUI: Proteasomal removal of selenoproteins in plants.

**Research Enhancement Grant.** 2014,2018. \$5000. Coastal Carolina University.

**NSF. MCB Division** 2013-2015. \$112,762. RUI: Proteasomal removal of selenoproteins in plants. MCB-1244009

**NSF. MCB Division.** 2010-2013. \$158,000. Collaborative Research: Regulation of CpNifS/CpSufE1-mediated iron-sulfur cluster synthesis in plant plastids. Implications for sulfur and iron metabolism and selenium tolerance.

**Research Enhancement Grant.** 2008. \$5000. Coastal Carolina University.

**Bruno Klinger Memorial Scholarship.** 2006-2008. Colorado State University. \$2,000

**NSF East-Asian Summer Program Initiative Scholarship.** 2005. RIKEN Institute. Yokohama, Japan.

**NSF-Research Experience for Undergraduates.** 1997. Institute of Ecosystem Science, Millbrook, NY

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### Publications

#### Non-academic (communicating science to the public)

**Van Hoewyk D.** November 10, 2014. Calling GMOs "unnatural" suggests they are unhealthy. *New York Times*.

**Van Hoewyk D.** January 2015. Science and society benefit from more scientists with physical disabilities. Coastal Carolina University, CeTEAL News.

#### Teaching and Pedagogy

**Van Hoewyk D.** 2012. Using a case study article on earwax to enhance understanding and interest in genetics. *Journal of College Science Teaching* 41-, 60-62

**Van Hoewyk D.** 2007. Using a case-study article to effectively introduce mitosis. *Journal of College Science Teaching* 37, 12-14.

### **Research**

\* *supervised undergraduate students from Coastal Carolina University*

\*Mendoza F, \*Berry C, \*Prestigiacomio L, and **Van Hoewyk, D.** 2020. Proteasome inhibition rapidly exacerbates photoinhibition and impedes recovery during high light stress in *Chlamydomonas reinhardtii*. *BMC Plant Biology*, 20(1), p.22.

Kolbert Z., Molnár Á., Feigl G. and **Van Hoewyk, D.**, 2019. Plant selenium toxicity: Proteome in the crosshairs. *Journal of plant physiology*, 232, pp.291-300.

**Van Hoewyk, D.**, Taskin, M. B., Yaprak, A. E., Turgay, O. C., & Ergul, A. (2018). Profiling of proteasome activity in Alyssum species on serpentine soils in Turkey reveals possible insight into nickel tolerance and accumulation. *Plant Physiology and Biochemistry*, 124: 184-189.

**Van Hoewyk D.** 2016. Use of the non-radioactive SUnSET method to detect decreased protein synthesis in proteasome inhibited Arabidopsis roots. *Plant Methods*. 12: 20

\*Fisher B, Yarmolinsky D, Abdel-Ghany S, Pilon-Smits EA, Sagi M, **Van Hoewyk D.** 2016. Superoxide generated from the glutathione-mediated reduction of selenite damages the iron-sulfur cluster of chloroplastic ferredoxin. *Plant Physiology and Biochemistry*. 106: 228-235.

**Van Hoewyk D.** 2016. Defects in endoplasmic reticulum associated degradation (ERAD) increases selenate sensitivity in Arabidopsis. *Plant Signaling and Behavior*. 13: e1171451

\*Dimkovikj A, \*Fisher B, Hutchison K, **Van Hoewyk D.** 2015. Stuck between a ROS and a hard place: Analysis of the ubiquitin proteasome pathway in selenocysteine treated *Brassica napus* reveals different toxicities during selenium assimilation. *J Plant Physiology*, 181, 50-54.

\*Dimkovikj A, **Van Hoewyk D.** 2014 Selenite activates the alternative oxidase pathway and alters primary metabolism in *Brassica napus* roots: evidence of a mitochondrial stress response. *BMC Plant Biology* 14, 259

\*Vallentine P, Hung CH, Xie J, **Van Hoewyk D.** 2014. The ubiquitin-proteasome pathway protects *Chlamydomonas reinhardtii* against selenite toxicity, but is impaired as reactive oxygen species accumulate. *AOB Plants* 6 doi: 10.1093/aobpla/plu062

**Van Hoewyk D.** 2013. A tale of two toxicities: malformed selenoproteins and oxidative stress both contribute to selenium stress in plants. *Annals of Botany* 112: 965-972.

\* Sabbagh M, **Van Hoewyk D.** 2012. Malformed selenoproteins are removed by the ubiquitin-proteasome pathway in *Stanleya pinnata*. *Plant and Cell Physiology* 53, 555-564

\*Grant K, \*Carey NC, \*Mendoza M, Schulze J, Pilon P, E.A.H. Pilon-Smits, **D Van Hoewyk.** 2011. Adenosine 5'-phosphosulfate reductase (APR2) mutation in Arabidopsis implicates glutathione depletion in selenate toxicity *Biochemical Journal* 438, 325-335.

**Van Hoewyk D.** 2011. Commentary on Real-time imaging of leaf apoplastic pH dynamics in

response to NaCl stress. *Frontiers in Plant Science*. 2:52

Freeman JL, Tamaoki M, Stushnoff C, Quinn CF, Cappa JJ, Devonshire J, Fakra S, Marcus MA, McGrath S, **Van Hoewyk D**, Pilon-Smits EAH (2010) Molecular mechanisms of selenium tolerance and hyperaccumulation in *Stanleya pinnata*. *Plant Physiology* 153, 1630-1652

Poliak P, **Van Hoewyk D**, Obornik M, Zíková A, Stuart KD, Tachezy J, Pilon M, Lukeš J. 2010. Functions and cellular localization of cysteine desulfurase and selenocysteine lyase in *Trypanosoma brucei*. *FEBS Journal* 277, 383-393.

Erik Kiviat E, Mihocko G, Stevens G, **Van Hoewyk D**, Groffman P. 2009. Vegetation, soils, and land use in calcareous fens of eastern New York and adjacent Connecticut. *Rhodora* 111, 335-354.

**Van Hoewyk D**, Pilon M, Pilon-Smits AEH. 2008. The function of NifS like proteins in plant sulfur and selenium metabolism. *Plant Science* 174, 117-123.

**Van Hoewyk D**, Takahashi H, Inoue H, Hess A, Tamaoki M, Pilon-Smits EAH. 2008. Transcriptome and biochemical analyses give insight into selenium-stress responses and Se tolerance mechanisms in *Arabidopsis*. *Physiologia Plantarum* 132, 235-253.

**Van Hoewyk D.**, Abdel-Ghany SE, Cohu CM, Herbert SK, Kugrens P, Pilon M, Pilon-Smits AEH. Chloroplast iron-sulfur cluster protein maturation requires the essential cysteine desulfurase CpNifS. 2007. *Proceedings of the National Academy of Sciences, USA* 104, 5686-5691.

Pilon M, Abdel-Ghany S, Ye H, **Van Hoewyk D**, Pilon-Smits EAH. 2006. Biogenesis of Iron-Sulfur Cluster Proteins in Plastids. In: Setlow JK (Ed) "Genetic engineering principles and methods". Wiley, New York. pp 101-117

**Van Hoewyk D.**, Garifulluna G., Abdel-Ghany SE., Marcus MA., Fakra S., Ishiyama K., Inoue, E., Pilon M., Pilon-Smits, EAH. 2005. Overexpression of CpNifS enhances selenium tolerance and accumulation in *Arabidopsis*. *Plant Physiology* 139, 1518-1528.

Lee L, **Van Hoewyk D**, Orr-Weaver, T. 2003. The *Drosophila* cell cycle kinase PAG GU forms an active complex with PLUTONIUM and GNU to regulate embryonic divisions. *Genes and Development* 17: 2979-2991.

**Van Hoewyk D**, Wigand C, Groffman PM. 2001. Endomycorrhizal colonization of *Dasiphora Floribunda*, a native plant species of calcareous wetlands in eastern New York state, USA. *Wetlands*. 21 (3): 431-436.

**Van Hoewyk D**, Groffman PM, Kiviat E, Mihocko G, Steven G. 2000. Soil nitrogen dynamics in organic and mineral soil fens in eastern New York. *Soil Science Society of America Journal* 64:2168-2173.

Desai T., **Van Hoewyk D.**, Stoilov I., Child A, Brice G, Sarfarazi M. 1999. A new genome wide Screening of 281 affected subjects in 84 families with adult-onset Primary Open Angle Glaucoma (POAG). *American Journal of Human Genetics*. 65(4). A224.

## Books

Manipulating Selenium Metabolism in Plants: A simple twist of metabolic fate can alter selenium tolerance and accumulation. 2017. **Doug Van Hoewyk** and Ozgur Cakir. Plant Ecophysiology book series.

Phytoremediation of selenium. Trends in Bioremediation and Phytoremediation. 2010. 355-371. Ed. Grazyna Plaza. Pilon Smits, EAH; Valdez Barillas, JR; **Van Hoewyk, D**; Lin, ZQ. Research Signpost, Kerala, India.

Regulation of Iron-Sulfur Cluster Formation in Plastids. 2011. Ravet K, **Van Hoewyk D**, Pilon M. 2011. Sulfur Metabolism in Plants: Mechanisms and Application to Food Security, and Responses to Climate Change. Ed. De Kok, L.J.

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### Career Development, Outreach, Services

**NSF- Modeling Workshop for Cell Biologists.** 2018

**NSF-IOS panelist.** 2019

**NSF-RCN panelist.** 2017, 2018

**NSF-MCB panelist.** 2017, 2018, 2020

**Developed summer CLIMB program (C**reating **L**eaders and **I**nclusion in **M**olecular **B**iology) to recruit and train students who have physical disabilities. Initiated summer 2017.

**Key Practices of Servant Leadership.** Greenleaf Center. 2016

**Writing in the Sciences.** Stanford University online class. 2016

**College-wide Assessment Committee and Curriculum Committee.** 2014, 2018

**Collaboration with Office of Accessibility and Disability Services** at CCU to recruit and train students with physical disabilities in plant molecular biology. 2013-present

**Associate Editor for BMC Plant Biology.** 2014-present

**Review Editor for Frontiers in Science: Plant Nutrition.** 2011-present

**Ad hoc reviewer for:** New Phytologist, Scientific Reports, Journal of Experimental Botany, Physiologia Plantarum, BMC Plant Biology, Plant and Cell Physiology, Plant Science, Science of the Total Environment, Biochemical Journal, Journal of Inorganic Biological Chemistry.

**Freelance Textbook editor: Nature Publishing Group.** Assisted with the writing of modules covering plant physiology in “Principles of Biology”. December 2012.

**On-site host and Conference organizer** for 2012 Southern Section of the ASPB conference to be held in Myrtle Beach, SC in March 2012

**Panelist, Committee Member, and Instructor** for the First Year Experience for incoming first-year students. I had a key role in selecting the book “The immortal Life of Henrietta Lacks” that all incoming students read in Fall 2011.

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### Selected Invited Research Presentations

**Gordon Conference on Undergraduate Biology Education Research.** July 2017. “Increasing participation of students with physical disabilities in biological science.”

**Bilkent University.** Ankara, Turkey. October 2015. “Stress tolerance in plants is alleviated by proteasomes: implications for rare nickel-hyperaccumulating plants in Turkey.”

**Gordon Conference on Plant Molecular Biology.** Holderness, NH. July 2014. “The ubiquitin-proteasome pathway is impaired upon accumulation of mitochondrial superoxide”.

**BRITE Institute.** Durham, NC. January 2013. “A Tale of Two Toxicities: The 20S and 26S Proteasome may protect plants against two different types of selenium stress.”

**3<sup>rd</sup> International Plant Sulfur Research Group.** Conegliano, Italy. September 2011. “A Tale of Two Toxicities: The 20S and 26S Proteasome may protect plants against two different types of selenium stress.”

**Southern Section of the American Society of Plant Biologist Meeting.** Knoxville, TN. April 2010. “Mutation in APR2 decreases selenium tolerance in Arabidopsis.”