

RECOGNIZING EXCELLENCE

Chancellor's Award for Excellence in STEM Education

FACULTY/STAFF AWARD Proposal Cover Sheet

Applicant Information

Full Name: Demmig-Adams Barbara
Last First M.I.

Proposal Title: Assessing the Impact of Early, Individualized Faculty + TA Interventions for At-Risk Students

Contact Info: Ecology + Evolutionary Biol 334
Home Department Campus Box #

barbara.demmig-adams@colorado.edu
Email Address Phone Number

Fellow Expectations

By submitting this application, I confirm that, if selected to receive a Chancellor's Award for Excellence in STEM Education, I will:

or one of my co-PIs

- Attend and be recognized at the annual Symposium on STEM Education (tentatively 9/23).
- Give a brief introduction (~10-15 min) to my project at DBER.
- Actively engage in the CU-Boulder STEM education community by attending weekly DBER seminars when possible and quarterly Chancellor's Fellow events.
- Present my work to the STEM education community by:
 - Giving at least one DBER seminar
- OR, if that is an impossibility:**
 - I will give a talk that the CU-Boulder STEM education community is invited to attend
- Submit a one to three-page report detailing the outcomes of the project at the end of the funding period

I have read and understand this commitment:

S.B.L.

Signature

Sarah Wise
on behalf of all 3

co-PIs.

Assessing the Impact of Early, Individualized Faculty and TA Interventions for At-Risk Students

Prof. Barbara Demmig-Adams, Prof. William W. Adams III, and Dr. Sarah Wise,
Ecology and Evolutionary Biology

Background:

The “achievement gap” affecting retention and graduation rates of minority and first-generation college students is as well-described, pervasive, and persistent in educational institutions across the United States as it is difficult to ameliorate (Winerman 2011). While many large-scale programs have been designed to attack the achievement gap, and some show promise (e.g. Haak et al. 2011), only a few controlled studies exist that offer evidence of effective techniques, using specific instructional and psychological interventions. For example, at the K-12 level, collaborative and inquiry-oriented approaches to science instruction have been shown to close the achievement gap more effectively than traditional lecturing (Wilson et al., 2011). Short, self-affirming written exercises have recently been shown to significantly narrow the achievement gap for both middle school minority students and college females (Cohen et al. 2009, Miyake et al. 2010).

Some of the recently developed short, early interventions have resulted in impressive long-term student gains (Cohen et al. 2009, Walton et al. 2011). Authors of these studies speculate that early interventions work by “inoculating” students against their own perceptions of inferiority (aka “stereotype threat”) and increase their sense of social belonging during the critical period of adjustment to college. We believe that focusing new research around such short-term interventions, as we propose here, makes sense, given recent pushes in higher education for fiscal conservation coupled with greater accountability for student learning outcomes.

On the CU campus, students who are low-income or first-generation college students, or have a disability, are directed towards a number of campus resources intended to counter the achievement gap from the moment of admission. These resources, that include supportive community events, smaller math and writing classes, access to scholarships, tutoring, supplemental instruction, counseling and career advice, and greater oversight by advisors and professors, are broadly coordinated by Student Academic Success Center through the McNeill Academic Program. Many such “at-risk” students taking introductory science courses such as General Biology I (EBIO 1210) are enrolled in supplemental McNeill co-seminars (ARSC 1420-760 & -761) taught by student-centered, content-knowledgeable graduate instructors.

Problem description:

While freshman retention and graduation rates of McNeill students are only slightly lower than the CU student body (80% vs. 84% for freshmen, 58% vs. 66% for 6-year graduation) (McNeill Academic Program Report, 2005), we observe that many struggle during EBIO 1210 and must repeat the course. Specifically, on average McNeill EEB co-seminar students score one letter grade below their peers on the first two exams of the semester (B. Demmig-Adams [BDA], 2011 and 2012 course data). Furthermore, many students not otherwise identified as “at risk” fail the first EBIO 1210 exam.

Given this pattern, faculty and TAs involved in the EBIO 1210 course have raised the question: Is it possible to assist at-risk students during the first quarter of EBIO 1210, in ways that synergize with the McNeill program efforts and produce performance gains more quickly? Specifically, could a short, early intervention produce some of the “inoculation” effects seen in some of the recent social psychological studies of Cohen and colleagues?

Encouragingly, one faculty member who teaches the first quarter of EBIO 1210 (BDA) has observed rapid improvement of students who engage in one-on-one review of their first exam with her. In the most striking cases, McNeill students improved failing grades to “A” quality work by their second exam. During these impromptu exam review sessions, BDA engages the students in a supportive but expectant way, conveying that she knows they can succeed in the course. Then she asks the student to explain the reasons behind the correct answer for every item the student got wrong. During this time students typically state they didn’t realize how unprepared they had been for the exam, and have an “aha” moment where they realize how they can study more effectively.

BDA’s approach features several elements of effective teaching for at-risk students: simultaneous attention to the affective, metacognitive, and academic needs of the student (Grant et al. 2008), which we hypothesize have the effect of strengthening students’ sense of competency and belonging. These one-on-one exam review sessions take approximately one-half hour, and often occur during established office hours. Therefore, if this approach is replicable, it could be a very time-effective and beneficial early intervention for at-risk students.

The goals of this proposal are to:

- **develop and implement an individualized, early intervention for at-risk students, and**
- **compare the impact of faculty- versus TA-implemented intervention on at-risk student exam performance**

Methodology and Evaluation:

Development and assessment of the proposed intervention will be accomplished over the following phases:

Phase 1: Intervention design, pilot, and TA training. Using as many features of BDA's prior approach to impromptu exam review sessions as possible, BDA, WA and SW will develop a flexible script for the intervention in collaboration with one or two graduate TAs (potentially including the TA assigned to the McNeill EEB co-seminar). CU Psychology faculty with experience implementing such interventions will be invited to review the plan. Additionally, several summer-term biology students will be invited to review an exam using the intervention format; their feedback to be used by the research/implementation team in iterative revision. Using projected fall 2013 co-seminar enrollment, SW will use power analysis to determine sample sizes needed to robustly test the proposed research question.

Phase 2: Obtaining consent. At the beginning of the Fall 2013 semester, all co-seminar students will be invited to participate in the study as outlined by the existing EBIO IRB (protocol #11-0676), and those consenting will sign a consent form. The precise design and objective of the study will not be revealed to students beyond "investigating biology teaching and learning".

Phase 3: Implementing the intervention. Following the EBIO 1210 Exam 1, all co-seminar students as well as any other students who failed the exam will receive an invitation to a "brief exam review session" from BDA, WA, or an EBIO 1210 graduate TA. Invited students will be randomly assigned to intervention and control groups (according to the sample sizes resulting from the Phase 1 power analysis).

During one-on-one meetings with students assigned to the intervention, BDA, WA, and the graduate TA collaborator will follow the flexible script developed in Phase 1 and engage in an individualized review of each student's exam. Meetings will last no longer than 1 hour. During meetings with students assigned to the control group, BDA, WA and the graduate TA collaborator will follow a "placebo" script, in which they ask students for feedback about their general opinion of the course and exam; these meetings will last no longer than 10 minutes. Any student who does not choose to sign up for a meeting will comprise a second control group. Immediately following each meeting, BDA, WA, and the graduate TA collaborator will make research notes, including examples of student statements and other observations about how the script was followed.

Phase 4: Follow-up interviews. Following Exam 2, all students who attended a meeting will be offered \$20 to participate in 30 minute audiotaped interviews to describe their experiences learning in the EBIO 1210 course (and co-seminar, if

applicable) to date. The interviews will contain questions about their experiences in class and their study approaches as well as and about the faculty/TA meeting they attended and its impact. Interviews will be conducted by a trained educational researcher with no connection to the classes in question. Participating students will be asked to consent to audiotaping.

Phase 5: Data analysis. Interview data will be matched to research notes about their intervention or control meeting, demographic data obtained from the Registrar, and course grades. Following dataset matching, data will be de-identified in accordance with IRB guidelines for subsequent analysis and reporting. We will use regression statistics to answer the question of whether the intervention had a significant effect over the placebo, and also determine whether any other factors (initial student characteristics, McNeill enrollment, gender, class year, and whether a faculty or TA carried out the intervention) significantly impacted performance on the second exam. Interview transcripts will be analyzed for themes related to the impact of the intervention.

Project Impact:

This individualized, early-term intervention for at-risk students has the potential to rapidly improve at-risk student performance in EBIO 1210. Unique among the recent studies of this type, this study will describe whether the effect of an intervention differs depending on the authority administering it (faculty or TA). If effective and replicable, this intervention could conceivably be applied by any faculty member or TA in any introductory course. We suspect that the effect of this highly time- and resource-efficient intervention may synergize with existing campus resources for at-risk students. Furthermore, this novel approach to early intervention for at-risk students, if successful, has scale-up potential, which could lead to overall increases in student retention and graduation rates at CU. This work, which will be submitted for peer review and published, will further CU’s reputation as a leader in STEM educational research.

Budget:

<i>Personnel</i>	<i>Amount</i>	<i>Function</i>
BDA	\$2,700	Phase 1, summer salary (2 days)
WA	\$2,700	Phase 1, summer salary (2 days)
TA (TBD)	\$1,600	Phases 1&3, 6% appointment, fall ‘13
TA (TBD)	\$1,600	Phases 1&3, 6% appointment, fall ‘13
Interviewer (TBD)	\$1,000	Phase 4, interviewing and analysis (40h)
Student participants	\$ 400	Phase 4, interview incentives (20)
SW	\$ 0	(Work covered by existing STF position)
<i>Total</i>	<i>\$10,000</i>	

Timeframe:

Phase 1 will be completed by the end of Summer 2013. Phases 2, 3, and 4 will be completed during Fall 2013. Phase 5 will be completed during late Fall 2013 or early spring 2014. Preparation of the data for publication or additional data collection will be underway during spring 2014.

References:

- Cohen GL, Garcia J, Purdie-Vaughns V, Apfel N, Brzustoski P (2009) Recursive processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap. *Science* 324 (5925): 400-403.
- Grant L, Stronge JH, Popp P (2008) Effective Teaching and At-Risk/Highly Mobile Students: What Do Award Winning Teachers Do? National Center for Homeless Education, U.S. Department of Education, Washington, D.C.
- McNeill Academic Program (2005) http://www.colorado.edu/odece/LEADPrgmOverviews/McNeill_Report.pdf
- Miyake A, Kost-Smith LE, Finkelstein ND, Pollock SJ, Cohen GL, Ito TA (2010) Reducing the Gender Achievement Gap in College Science: A Classroom Study of Values Affirmation. *Science* 330 (6008): 1234-1237.
- Walton, GM, and Cohen GL (2011) A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students. *Science* 331 (6023): 1447-1451.
- Winerman, L (2011) Closing the Achievement Gap: Could a 15 minute intervention boost ethnic-minority student achievement? *Monitor on Psychology* 42:8.
- Wilson CD, Taylor JA, Kowalski SM, Carlson J (2010) The Relative Effects and Equity of Inquiry-Based and Commonplace Teaching on Students' Knowledge, Reasoning, and Argumentation. *Journal of Research in Science Teaching* 47(3): 276-301.
- Haak DC, HilleRisLambers J, Pitre E, Freeman S (2011) Increased Structure and Active Learning Reduce the Achievement Gap in Introductory Biology. *Science* 332: 1213-1216.

Current Support

Increasing Teaching Effectiveness in Ecology and Evolutionary Biology (2011-2014). \$480,000 from the Science Education Initiative at the University of Colorado. Andrew Martin, Barbara Demmig-Adams, William W. Adams III, Nichole Barger, John Basey, and Samuel Flaxman.

EAGER: Assessing Functional Diversity of Algal Communities at the Single Cell Level with a Compact Multi-function Microfluidic Cytometer (2011-2013). \$205,000 from the National Science Foundation. Barbara Demmig-Adams, William W. Adams III, Ralph Jimenez, & William M. Lewis

Developing a Roadmap to the Diatoms with Greatest Oil Production (2011-2013). \$44,000 from the Office of the VCR Innovative Seed Program at the University of Colorado. J Pat Kocielek, Ralph Jimenez, Barbara Demmig-Adams, William W. Adams III, and William M. Lewis

Collaborative Research (Arabidopsis 2010): Ecological Genomics of Adaptation to the Environment (2010-2014). \$3,154,225 (\$587,908 to the University of Colorado) from the National Science Foundation. Barbara Demmig-Adams and William W. Adams III (CU), Douglas Schemske and Michael Thomashow (MSU), and John McKay (CSU).

Photosynthesis and Phloem Anatomy (2009-2013). \$486,203 from the National Science Foundation. Barbara Demmig-Adams and William W. Adams III

Novel Dissection of Temperature Tolerance in the Model Plant Arabidopsis (2010-2013). \$43,750 from the Office of the VCR Innovative Seed Grant Program at the University of Colorado. Barbara Demmig-Adams, William W. Adams III, and Douglas Schemske (Michigan State University).

Pending Support

IOS Preliminary Proposal: Carbohydrate Accumulation and Photoinhibition (2014-2016) Approximately \$450,000 from the National Science Foundation. William W. Adams III and Barbara Demmig-Adams

EFRI-PSBR: A Self-Sustaining Two-Compartment Biorefinery with Photosynthetic Polycultures as Feedstock Producers for Sustainable Microbial-Based Fuels & Products (2013-2017) \$2,000,000 from the National Science Foundation. Barbara Demmig-Adams, William W. Adams III, Ralph Jimenez, Brett Melbourne, William Lewis, Richard Noble, Richard Erickson, James McCutchan, and Douglas Gin

SusChEM: Feedstock Secretion by Immobilized *Chlamydomonas* (2013-2016) \$299,599 from the National Science Foundation. Barbara Demmig-Adams and William W. Adams III

Production of Biofuels, Biomaterials, and Nitrogen Fertilizer from Renewable Resources via Photosynthetic Microbes (2013-2014) \$49,842 from the Office of the VCR Innovative Seed Program at the University of Colorado. Barbara Demmig-Adams, William W. Adams III, and James McCutchan

CURRICULUM VITAE

William W. Adams III

Professor, Department of Ecology & Evolutionary Biology <<http://ebio.colorado.edu/>>
 Affiliate, Renewable and Sustainable Energy Institute <<http://rasei.colorado.edu/>>
 Project Investigator, Colorado Center for Biorefining and Biofuels (C2B2; <http://www.c2b2web.org/>)
 Member, IQ Biology Faculty, BioFrontiers Institute <<http://biofrontiers.colorado.edu/education/iq-biology/faculty>>
 University of Colorado at Boulder, Boulder, Colorado 80309-0334, USA
 Phone: (303) 492-2880; Fax: (303) 492-8699; e-mail: william.adams@colorado.edu
 <http://www.colorado.edu/eeb/facultysites/adams_demmig-adams/>

Education

Australian National University , Canberra (and Desert Research Institute, Reno)	1984-87	PhD	Plant Environmental Biology
University of Kansas , Lawrence	1981-84	MA	Botany
University of Kansas , Lawrence	1979-83	BA	Atmospheric Sciences
University of Kansas , Lawrence	1977-81	BA	Biology

Academic Positions

2003-present	Professor, University of Colorado
1996-2003	Associate Professor, University of Colorado
May-Aug 1994	Visiting Fellow, Australian National University
1988-1996	Assistant Professor, University of Colorado
1988-89	Humboldt Fellow, Universität Würzburg
1987-88	NATO Postdoctoral Fellow, Universität Würzburg
1984-87	PhD Scholar, Australian National University
1981-84	Teaching Assistant, University of Kansas

Academic Honors

- Highly Cited Researcher* (<0.5% of publishing researchers) in the Plant & Animal Science category by the Institute for Scientific Information <<http://isihighlycited.com/>>. 7556 citations of 88 (from among 118 total) publications (h-index=43, i.e. 43 papers received 43 citations or more) in the ISI Web of Science on 03/22/2013.
- Boulder Faculty Assembly *Excellence in Teaching* Award, 16 April 2004, University of Colorado
- Two papers among the top five that were honored for being the most highly cited during the previous ten years in the Australian Journal of Plant Physiology (January 2003 issue of Functional Plant Biology).
- One paper among the top twenty that were honored for being the most highly cited during the 30 years that the Australian Journal of Plant Physiology and Functional Plant Biology have been published (March 2003 issue of Functional Plant Biology).
- Certificate of Recognition for *Exceptional Teaching*, Mortar Board, Nov. 2000, University of Colorado
- Visiting Fellow*, Australian National University (Fellowship of A\$18,000), May-August 1994
- Junior Faculty Development Award, Summer 1990, University of Colorado at Boulder
- Fellowship from the Alexander von Humboldt Foundation, August 1988 to May 1989
- NATO Postdoctoral Fellowship, August 1987 to July 1988
- Young Botanist Award from organizers to attend XIV International Botanical Congress, July 1987
- PhD Scholarship, January 1986-June 1987, Australian National University
- Honors Fellowship, The Graduate School, August 1981-May 1984, University of Kansas (KU)
- Summer Fellowship, The Graduate School, June-July 1982, KU
- Election to Phi Beta Kappa and the National Honor Society of Phi Kappa Phi, May 1981, KU
- Graduation with Highest Distinction, and with Honors in Biology, May 1981, KU
- Waddington Family-Taylor Scholarship, 1981, KU
- Anschutz Scholarship, 1980, KU
- Quena Allen Scholarship, 1979-80, KU

Publications

- 126) Adams WW III, Muller O, Cohu CM, Demmig-Adams B (2014) PSII efficiency and NPQ in the context of source-sink balance. *In* Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 125) Demmig-Adams B, Koh SC, Cohu CM, Muller O, Adams WW III (2014) NPQ in contrasting plant species and environments. *In* Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 124) Demmig-Adams B, Cohu CM, Muller O, Adams WW III (2014) NPQ and the trade-off between abiotic and biotic defense. *In* Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 123) Logan BA, Demmig-Adams B, Adams WW III, Bilger W (2014) Context, quantification, and measurement guide for NPQ. *In* Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 122) Demmig-Adams B, Adams WW III (2014) Associating non-photochemical quenching with zeaxanthin. *In* Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 121) Demmig-Adams B, Adams WW III, Garab G, Govindjee (eds) (2014) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- 120) Oh S, Adams WW III, Demmig-Adams B, Koh SC (2013) Seasonal photoprotective responses in needles of Korean fir (*Abies koreana*) over an altitudinal gradient on Mt. Halla, Jeju Island, Korea. *Arctic, Antarctic, and Alpine Research, in press*
- 119) Demmig-Adams B, Amiard V, Cohu CM, Muller O, van Zadelhoff G, Veldink GA, Adams WW III (2013) Emerging trade-offs – impact of photoprotectants (PsbS, xanthophylls, and vitamin E) on oxylipins as regulators of development and defense. *New Phytologist* **197**: 720-729
- 118) Demmig-Adams B, Cohu CM, Muller O, Adams WW III (2012) Modulation of photosynthetic energy conversion efficiency in nature: from seconds to seasons. *Photosynthesis Research* **113**: 75-88
- 117) Dumlao MR, Darehshouri A, Cohu CM, Muller O, Mathias J, Adams WW III, Demmig-Adams B (2012) Low temperature acclimation of photosynthetic capacity and leaf morphology in the context of phloem loading type. *Photosynthesis Research* **113**: 181-189
- 116) Adams WW III, Demmig-Adams B (2012) Photoprotection (Plants). *In* McGraw-Hill Encyclopedia of Science & Technology, 11th Edition, Vol. 13. McGraw-Hill, New York, pp. 490-493
- 115) Demmig-Adams B, Rixham CS, Adams WW III (2012) Carotenoids. *In* McGraw-Hill Encyclopedia of Science & Technology, 11th Edition, Vol. 3. McGraw-Hill, New York, pp. 549-555
- 114) Demmig-Adams B, Cohu CM, Adams WW III (2012) Dealing with the Hazards of Harnessing Sunlight. *Nature Education Knowledge* 4(1):18 <<http://www.nature.com/scitable/knowledge/library/dealing-with-the-hazards-of-harnessing-sunlight-83031977>>
- 113) Aranjuelo I, Ebbets AL, Evans RD, Tissue DT, Nogués S, van Gestel N, Ebbert V, Adams WW III, Nowak RS, Smith SD (2011) Maintenance of C sinks sustains enhanced C assimilation during long-term exposure to elevated [CO₂] in Mojave desert shrubs. *Oecologia* **167**: 339-354
- 112) Cessna S, Adams WW III, Demmig-Adams B (2010) Exploring photosynthesis and plant stress using inexpensive chlorophyll fluorometers. *Journal of Natural Resources and Life Sciences Education* 39: 22-30
- 111) Demmig-Adams B, Adams WW III (2010) Overview of diet-gene interaction and the example of xanthophylls. *In* MT Giardi, G Rea, B Berra (eds) *Bio-Farms for Nutraceuticals: Functional Food and Safety Control by Biosensors*. Landes BioScience/Springer, Texas, *Advances in Experimental Medicine and Biology* **698**: 17-26
- 110) Berthier A, Desclos M, Amiard V, Morvan-Bertrand A, Demmig-Adams B, Adams WW III, Turgeon R, Prud'homme M-P, Noiraud-Romy N (2009) Activation of sucrose transport in defoliated *Lolium perenne* L.: an example of apoplastic phloem loading plasticity. *Plant and Cell Physiology* **50**: 1319-1344 <doi:10.1093/pcp/pcp081>
- 109) Koh SC, Demmig-Adams B, Adams WW III (2009) Novel patterns of seasonal photosynthetic acclimation, including interspecific differences, in conifers over an altitudinal gradient. *Arctic, Antarctic, and Alpine Research* **41**: 317-322 <doi: 10.1657/1938.4246-41.3.317>

- 108) Seelig H-D, Hoehn A, Stodieck LS, Klaus DM, Adams WW III, Emery WJ (2009) Dynamics of plant water parameters and the remote sensing R1300/R1450 leaf water index during the development of water deficit stress. *Irrigation Science* **27**: 357-365 <doi: 10.1007/s00271-009-0152-5>
- 107) Demmig-Adams B, Adams WW III, Mattoo AK (eds) (2008) Photoprotection, Photoinhibition, Gene Regulation, and Environment. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht. Paperback edition.
- 106) Demmig-Adams B, Dumlao MR, Herzenach MK, Adams WW III (2008) Acclimation. In SE Jørgensen, BD Fath (eds) *Encyclopedia of Ecology*. Elsevier B.V., Oxford, pp. 15-23
- 105) Seelig H-D, Adams WW III, Hoehn A, Stodieck LS, Klaus DM, Emery WJ (2008) Extraneous variables and their influence on reflectance-based measurements of leaf water content. *Irrigation Science* **26**: 407-414 <doi: 10.1007/s00271-008-0105-4>
- 104) Seelig H-D, Hoehn A, Stodieck LS, Klaus DM, Adams WW III, Emery WJ (2008) The assessment of leaf water content using leaf reflectance ratios in the visible, near-, and short-wave-infrared. *International Journal of Remote Sensing* **29**: 3701-3713 <doi: 10.1080/01431160701772500>
- 103) Seelig H-D, Hoehn A, Stodieck LS, Klaus DM, Adams WW III, Emery WJ (2008) Relations of remote sensing leaf water indices to leaf water thickness in cowpea, bean, and sugarbeet plants. *Remote Sensing of the Environment* **112**: 445-455 <doi: 10.1016/j.rse.2007.05002>
- 102) Adams WW III, Watson AM, Mueh KE, Amiard V, Turgeon R, Ebbert V, Logan BA, Combs AF, Demmig-Adams B (2007) Photosynthetic acclimation in the context of structural constraints to carbon export from leaves. *Photosynthesis Research* **94**: 455-466 <doi: 10.1007/s11120-006-9123-3>
- 101) Logan BA, Adams WW III, Demmig-Adams B (2007) Avoiding common pitfalls of chlorophyll fluorescence analysis under field conditions. *Functional Plant Biology* **34**: 853-859 <doi:10.1071/FP07113>
- 100) Amiard V, Demmig-Adams B, Mueh KE, Turgeon R, Combs AF, Adams WW III (2007) Role of light and jasmonic acid signaling in regulating foliar phloem cell wall ingrowth development. *New Phytologist* **173**: 722-731 <doi: 10.1111/j.1469-8137.2006.01954.x>
- 99) Demmig-Adams B, Adams WW III (2006) Photoprotection in an ecological context: the remarkable complexity of thermal energy dissipation. *New Phytologist* **172**: 11-21 <doi: 10.1111/j.1469-8137.2006.01835.x>
- 98) Zarter CR, Adams WW III, Ebbert V, Cuthbertson D, Adamska I, Demmig-Adams B (2006) Winter downregulation of intrinsic photosynthetic capacity coupled with upregulation of Elip-like proteins and persistent energy dissipation in a subalpine forest. *New Phytologist* **172**: 272-282 <doi: 10.1111/j.1469-8137.2006.01815.x>
- 97) Zarter CR, Demmig-Adams B, Ebbert V, Adamska I, Adams WW III (2006) Photosynthetic capacity and light harvesting efficiency during the winter-to-spring transition in subalpine conifers. *New Phytologist* **172**: 283-292 <doi: 10.1111/j.1469-8137.2006.01816.x>
- 96) Adams WW III, Zarter CR, Mueh KE, Amiard V, Demmig-Adams B (2006) Energy dissipation and photoinhibition: a continuum of photoprotection. In B Demmig-Adams, WW Adams III, AK Mattoo (eds) *Photoprotection, Photoinhibition, Gene Regulation, and Environment*. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht, pp. 49-64
- 95) Demmig-Adams B, Ebbert V, Zarter CR, Adams WW III (2006) Characteristics and species-dependent employment of flexible versus sustained thermal dissipation and photoinhibition. In B Demmig-Adams, WW Adams III, AK Mattoo (eds) *Photoprotection, Photoinhibition, Gene Regulation, and Environment*. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht, pp. 39-48
- 94) Demmig-Adams B, Adams WW III, Mattoo AK (eds) (2006) *Photoprotection, Photoinhibition, Gene Regulation, and Environment*. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht. Hardcover edition.
- 93) Demmig-Adams B, Ebbert V, Mellman DL, Mueh KE, Schaffer L, Funk C, Zarter CR, Adamska I, Jansson S, Adams WW III (2006) Modulation of PsbS and flexible versus sustained energy dissipation by light environment in different species. *Physiologia Plantarum* **127**: 670-680 <doi: 10.1111/j.1399-3054.2006.00698.x>
- 92) Zarter CR, Adams WW III, Ebbert V, Adamska I, Jansson S, Demmig-Adams B (2006) Winter acclimation of PsbS and related proteins in the evergreen *Arctostaphylos uva-ursi* as influenced by altitude and light environment. *Plant, Cell and Environment* **29**: 869-878 <doi: 10.1111/j.1365-3040.2005.01466.x>
- 91) Amiard V, Mueh KE, Demmig-Adams B, Ebbert V, Turgeon R, Adams WW III (2005) Anatomical and photosynthetic acclimation to the light environment in species with differing mechanisms of phloem loading. *Proceedings of the National Academy of Sciences USA* **102**: 12968-12973 <www.pnas.org/cgi/doi/10.1073/pnas.0503784102>

- 90) Adams WW III, Amiard VSE, Mueh KE, Turgeon R, Demmig-Adams B (2005) Phloem loading type and photosynthetic acclimation to light. *In* A van der Est, D Bruce (eds) *Photosynthesis: Fundamental Aspects to Global Perspectives*. Allen Press, Lawrence, pp. 814-816
- 89) Demmig-Adams B, Ebbert V, Adams WW III (2005) Photoinhibition in evergreens: Involvement of sustained thermal dissipation and PSII protein phosphorylation. *In* A van der Est, D Bruce (eds) *Photosynthesis: Fundamental Aspects to Global Perspectives*. Allen Press, Lawrence, pp. 634-636
- 88) Adams WW III (2005) Photoprotection in plants. *In* McGraw-Hill Yearbook of Science & Technology 2005. McGraw-Hill, New York, pp. 265-268
- 87) Ebbert V, Adams WW III, Mattoo AK, Sokolenko A, Demmig-Adams B (2005) Upregulation of a PSII core protein phosphatase inhibitor and sustained D1 phosphorylation in zeaxanthin-retaining, photoinhibited needles of overwintering Douglas fir. *Plant, Cell and Environment* **28**: 232-240
- 86) Adams WW III, Zarter CR, Ebbert V, Demmig-Adams B (2004) Photoprotective strategies of overwintering evergreens. *BioScience* **54**: 41-49 <doi: 10.1641/0006-3568(2004)054[0041:PSOEE]2.0.CO;2>
- 85) Adams WW III, Demmig-Adams B (2004) Chlorophyll fluorescence as a tool to monitor plant response to the environment. *In* GC Papageorgiou, Govindjee (eds) *Chlorophyll a Fluorescence: A Signature of Photosynthesis*. Advances in Photosynthesis and Respiration, Volume 19. Springer, Dordrecht, pp. 583-604
- 84) Barker DH, Marszalek J, Zimpfer JF, Adams WW III (2004) Changes in photosynthetic pigment composition and absorbed energy allocation during salt stress and CAM induction in *Mesembryanthemum crystallinum*. *Functional Plant Biology* **31**: 781-787
- 83) Bachmann KM, Ebbert V, Adams WW III, Verhoeven AS, Logan BA, Demmig-Adams B (2004) Effects of lincomycin on PSII efficiency, non-photochemical quenching, D1 protein and xanthophyll cycle during photoinhibition and recovery. *Functional Plant Biology* **31**: 803-813
- 82) Demmig-Adams B, Ebbert V, Adams WW III (2004) Photosynthesis and stress. *In* Goodman RM (ed) *Encyclopedia of Plant & Crop Science*, Marcel Dekker, New York, pp. 901-905
- 81) Demmig-Adams B, Adams WW III (2003) Photoinhibition. *In* Thomas B, Murphy D, Murray B (eds) *Encyclopedia of Applied Plant Science*. Academic Press, London, pp. 707-714
- 80) Demmig-Adams B, Adams WW III (2003) Photoprotection against excess light via zeaxanthin-dependent energy dissipation. *In* W Larcher (ed) *Physiological Plant Ecology*. Ecophysiology and Stress Physiology of Functional Groups. 4th edition. Springer, Berlin, pp. 359-261 & 501-502
- 79) Adams WW III, Demmig-Adams B, Rosenstiel TN, Brightwell AK, Ebbert V (2002) Photosynthesis and photoprotection in overwintering plants. *Plant Biology* **4**: 545-557
- 78) Demmig-Adams B, Adams WW III (2002) Antioxidants in photosynthesis and human nutrition. *Science* **298**: 2149-2153
- 77) Barker DH, Adams WW III, Demmig-Adams B, Logan BA, Verhoeven AS, Smith SD (2002) Nocturnally retained zeaxanthin does not remain engaged in a state primed for energy dissipation during the summer in two *Yucca* species growing in the Mojave Desert. *Plant, Cell and Environment* **25**: 95-103
- 76) Adams WW III, Demmig-Adams B, Rosenstiel TN, Ebbert V (2001) Dependence of photosynthesis and energy dissipation activity upon growth form and light environment during the winter. *Photosynthesis Research* **67**: 51-62
- 75) Ebbert V, Demmig-Adams B, Adams WW III, Mueh KE, Staehelin LA (2001) Association between persistent forms of zeaxanthin-dependent energy dissipation and thylakoid protein phosphorylation. *Photosynthesis Research* **67**: 63-78
- 74) Adams WW III, Demmig-Adams B, Rosenstiel TN, Ebbert V, Brightwell AK, Barker DH, Zarter CR (2001) Photosynthesis, xanthophylls, and D1 phosphorylation under winter stress. *In*: PS2001 Proceedings: 12th International Congress on Photosynthesis. CSIRO Publishing: Melbourne, Australia, 2001. Available at <http://www.publish.csiro.au/ps2001>
- 73) Demmig-Adams B, Adams WW III (2001) Starklichtstreß: Photoprotektion durch Umwandlung der Xanthophylle. *In* W Larcher (ed) *Ökophysiologie der Pflanzen*. 6th edition. Eugen Ulmer, Stuttgart, pp 293-295
- 72) Demmig-Adams B, Adams WW III (2000) Harvesting sunlight safely. *Nature* **403**: 371-374
- 71) Adams WW III, Demmig-Adams B, Logan BA, Barker DH, Osmond CB (1999) Rapid changes in xanthophyll cycle-dependent energy dissipation and photosystem II efficiency in two vines, *Stephania japonica* and *Smilax australis*, growing in the understory of an open *Eucalyptus* forest. *Plant, Cell and Environment* **22**: 125-136
- 70) Verhoeven AS, Adams WW III, Demmig-Adams B (1999) The xanthophyll cycle and acclimation of *Pinus ponderosa* and *Malva neglecta* to winter stress. *Oecologia* **118**: 277-287
- 69) Verhoeven AS, Adams WW III, Demmig-Adams B, Croce R, Bassi R (1999) Xanthophyll cycle pigment localization and dynamics during exposure to low temperatures and light stress in *Vinca major*. *Plant Physiology* **120**: 727-737

- 68) Logan BA, Demmig-Adams B, Rosenstiel TN, Adams WW III (1999) Effect of nitrogen limitation on foliar antioxidants in relationship to other metabolic characteristics. *Planta* **209**: 213-220
- 67) Demmig-Adams B, Adams WW III, Ebbert V, Logan BA (1999) Ecophysiology of the xanthophyll cycle. In HA Frank, AJ Young, G Britton, RJ Cogdell (eds) *The Photochemistry of Carotenoids. Advances in Photosynthesis*, Vol. 8. Kluwer Academic Publishers, Dordrecht, pp. 245-269
- 66) Logan, BA, Demmig-Adams B, Adams WW III (1999) Acclimation of photosynthesis to the environment. In GS Singhal, G Renger, SK Sopory, Irrgang K-D, Govindjee (eds) *Concepts in Photobiology. Photosynthesis and Photomorphogenesis*. Narosa Publishing House, New Dehli, pp. 477-512
- 65) Adams WW III, Barker DH (1998) Seasonal changes in xanthophyll cycle-dependent energy dissipation in *Yucca glauca* Nuttall. *Plant, Cell and Environment* **21**: 501-512
- 64) Verhoeven AS, Adams WW III, Demmig-Adams B (1998) Two forms of sustained xanthophyll cycle-dependent energy dissipation in overwintering *Euonymus kiautschovicus*. *Plant, Cell and Environment* **21**: 893-903
- 63) Grace SC, Logan BA, Adams WW III (1998) Seasonal differences in the foliar content of chlorogenic acid, a phenylpropanoid antioxidant, in *Mahonia repens*. *Plant, Cell and Environment* **21**: 513-521
- 62) Logan BA, Grace SC, Adams WW III, Demmig-Adams B (1998) Seasonal differences in xanthophyll cycle characteristics and antioxidants in *Mahonia repens* growing in different light environments. *Oecologia* **116**: 9-17
- 61) Logan BA, Demmig-Adams B, Adams WW III, Grace SC (1998) Antioxidation and xanthophyll cycle-dependent energy dissipation in *Cucurbita pepo* and *Vinca major* acclimated to four growth irradiances in the field. *Journal of Experimental Botany* **49**: 1869-1879
- 60) Logan BA, Demmig-Adams B, Adams WW III (1998) Antioxidation and xanthophyll cycle-dependent energy dissipation in *Cucurbita pepo* and *Vinca major* during a transfer from low to high irradiance in the field. *Journal of Experimental Botany* **49**: 1881-1888
- 59) Demmig-Adams B, Moeller DL, Logan BA, Adams WW III (1998) Positive correlation between levels of retained zeaxanthin + antheraxanthin and degree of photoinhibition in shade leaves of *Schefflera arboricola*. *Planta* **205**: 367-374
- 58) Barker DH, Logan BA, Adams WW III, Demmig-Adams B (1998) Photochemistry and xanthophyll cycle-dependent energy dissipation in differently oriented cladodes of *Opuntia stricta* during the winter. *Australian Journal of Plant Physiology* **25**: 95-104
- 57) Barker DH, Adams WW III (1997) The xanthophyll cycle and energy dissipation in differently oriented faces of the cactus *Opuntia macrorhiza*. *Oecologia* **109**: 353-361
- 56) Logan BA, Barker DH, Adams WW III, Demmig-Adams B (1997) The response of xanthophyll cycle-dependent energy dissipation in *Alocasia brisbanensis* to sunflecks in a subtropical rainforest. *Australian Journal of Plant Physiology* **24**: 27-33
- 55) Verhoeven AS, Demmig-Adams B, Adams WW III (1997) Enhanced employment of the xanthophyll cycle and thermal energy dissipation in spinach exposed to high light and nitrogen stress. *Plant Physiology* **113**: 817-824
- 54) Demmig-Adams B, Adams WW III, Grace SC (1997) Physiology of light tolerance in plants. *Horticultural Reviews* **18**: 215-246
- 53) Demmig-Adams B, Adams WW III (1996) The role of xanthophyll cycle carotenoids in the protection of photosynthesis. *Trends in Plant Science* **1**: 21-26
- 52) Demmig-Adams B, Gilmore AM, Adams WW III (1996) In vivo functions of carotenoids in higher plants. *The FASEB Journal* **10**: 403-412
- 51) Demmig-Adams B, Adams WW III (1996) Xanthophyll cycle and light stress in nature: uniform response to excess direct sunlight among higher plant species. *Planta* **198**: 460-470
- 50) Verhoeven AS, Adams WW III, Demmig-Adams B (1996) Close relationship between the state of the xanthophyll cycle pigments and photosystem II efficiency during recovery from winter stress. *Physiologia Plantarum* **96**: 567-576
- 49) Logan BA, Barker DH, Demmig-Adams B, Adams WW III (1996) Acclimation of leaf carotenoid composition and ascorbate levels to gradients in the light environment within an Australian rainforest. *Plant, Cell and Environment* **19**: 1083-1090
- 48) Demmig-Adams B, Adams WW III, Barker DH, Logan BA, Verhoeven AS, Bowling DR (1996) Using chlorophyll fluorescence to assess the allocation of absorbed light to thermal dissipation of excess excitation. *Physiologia Plantarum* **98**: 253-264
- 47) Demmig-Adams B, Adams WW III (1996) Chlorophyll and carotenoid composition in leaves of *Euonymus kiautschovicus* acclimated to different degrees of light stress in the field. *Australian Journal of Plant Physiology* **23**: 649-659

- 46) Adams WW III, Demmig-Adams B, Barker DH, Kiley S (1996) Carotenoids and photosystem II characteristics of upper and lower halves of leaves acclimated to high light. *Australian Journal of Plant Physiology* **23**: 669-677
- 45) Adams WW III, Demmig-Adams B (1996) Energy dissipation and the xanthophyll cycle in CAM plants. In K Winter, JAC Smith (eds) *Crassulacean Acid Metabolism. Biochemistry, Ecophysiology, and Evolution. Ecological Studies* vol. 114. Springer, Berlin, pp. 97-114
- 44) Adams WW III, Demmig-Adams B, Verhoeven AS, Barker DH (1995) 'Photoinhibition' during winter stress: Involvement of sustained xanthophyll cycle-dependent energy dissipation. *Australian Journal of Plant Physiology* **22**: 261-276
- 43) Adams WW III, Demmig-Adams B (1995) The xanthophyll cycle and sustained thermal energy dissipation activity in *Vinca minor* and *Euonymus kiautschovicus* in winter. *Plant, Cell and Environment* **18**: 117-127
- 42) Adams WW III, Hoehn A, Demmig-Adams B (1995) Chilling temperatures and the xanthophyll cycle. A comparison of warm-grown and overwintering spinach. *Australian Journal of Plant Physiology* **22**: 75-85
- 41) Demmig-Adams B, Adams WW III, Logan BA, Verhoeven AS (1995) Xanthophyll cycle-dependent energy dissipation and flexible PSII efficiency in plants acclimated to light stress. *Australian Journal of Plant Physiology* **22**: 249-260
- 40) Adams WW III, Demmig-Adams B (1994) Carotenoid composition and down regulation of photosystem II in three conifer species during the winter. *Physiologia Plantarum* **92**: 451-458
- 39) Demmig-Adams B, Adams WW III (1994) Capacity for energy dissipation in the pigment bed in leaves with different xanthophyll cycle pools. *Australian Journal of Plant Physiology* **21**: 575-588
- 38) Falbel TG, Staehelin LA, Adams WW III (1994) Analysis of xanthophyll cycle carotenoids and chlorophyll fluorescence in light intensity-dependent chlorophyll-deficient mutants of wheat and barley. *Photosynthesis Research* **42**: 191-202
- 37) Demmig-Adams B, Adams WW III (1994) Light stress and photoprotection related to the xanthophyll cycle. In C Foyer, P Mullineaux (eds) *Causes of Photooxidative Stress and Amelioration of Defense Systems in Plants*. CRC Press, Boca Raton, pp 105-126
- 36) Adams WW III, Demmig-Adams B, Lange OL (1993) Carotenoid composition and metabolism in green and blue-green algal lichens in the field. *Oecologia* **94**: 576-584
- 35) Demmig-Adams B, Adams WW III (1993) The xanthophyll cycle, protein turnover, and the high-light tolerance of sun-acclimated leaves. *Plant Physiology* **103**: 1413-1420
- 34) Adams WW III, Demmig-Adams B (1993) Energy dissipation and photoprotection in leaves of higher plants. In HY Yamamoto and CM Smith (eds) *Photosynthetic Responses to the Environment. Current Topics in Plant Physiology: An American Society of Plant Physiologists Series*, Rockville, Maryland, pp 27-36
- 33) Demmig-Adams B, Adams WW III (1993) The Xanthophyll Cycle. In A Young, G Britton (eds) *Carotenoids in Photosynthesis*. Chapman and Hall, London, pp 206-251
- 32) Demmig-Adams B, Adams WW III (1993) The Xanthophyll Cycle. In RG Alscher, JL Hess (eds) *Antioxidants in Higher Plants*. CRC Press, Boca Raton, pp 91-110
- 31) Adams WW III, Demmig-Adams B (1992) Operation of the xanthophyll cycle in higher plants in response to diurnal changes in incident sunlight. *Planta* **186**: 390-398
- 30) Adams WW III, Volk M, Hoehn A, Demmig-Adams B (1992) Leaf orientation and the response of the xanthophyll cycle to incident light. *Oecologia* **90**: 404-410
- 29) Demmig-Adams B, Adams WW III (1992) Carotenoid composition in sun and shade leaves of plants with different life forms. *Plant, Cell and Environment* **15**: 411-419
- 28) Monson RK, Jaeger CH, Adams WW III, Driggers EM, Silver GM, Fall R (1992) Relationships among isoprene emission rate, photosynthesis, and isoprene synthase activity as influenced by temperature. *Plant Physiology* **98**: 1175-1180
- 27) Demmig-Adams B, Adams WW III (1992) Photoprotection and other responses of plants to high light stress. *Annual Review of Plant Physiology and Plant Molecular Biology* **43**: 599-626
- 26) Demmig-Adams B, Adams WW III (1991) Light, photosynthesis, and the xanthophyll cycle. In EJ Pell, KL Steffen (eds) *Active Oxygen/Oxidative Stress and Plant Metabolism, Current Topics in Plant Physiology*, v 6, American Society of Plant Physiologists, Rockville, Maryland, pp 171-179
- 25) Adams WW III, Demmig-Adams B, Winter K, Schreiber U (1990) The ratio of variable to maximum chlorophyll fluorescence from photosystem II, measured in leaves at ambient temperature and at 77K, as an indicator of the photon yield of photosynthesis. *Planta* **180**: 166-174
- 24) Adams WW III, Winter K, Schreiber U, Schramel P (1990) Photosynthesis and chlorophyll fluorescence characteristics in relationship to changes in pigment and element composition of leaves of *Platanus occidentalis* L. during autumnal leaf senescence. *Plant Physiology* **92**: 1184-1190

- 23) Demmig-Adams B, Adams WW III, Heber U, Neimanis S, Winter K, Krüger A, Czygan F-C, Bilger W, Björkman O (1990) Inhibition of zeaxanthin formation and of rapid changes in radiationless energy dissipation by dithiothreitol in spinach leaves and chloroplasts. *Plant Physiology* **92**: 293-301
- 22) Adams WW III, Demmig-Adams B, Winter K (1990) Relative contributions of zeaxanthin-related and zeaxanthin-unrelated types of "high-energy-state" quenching of chlorophyll fluorescence in spinach leaves exposed to various environmental conditions. *Plant Physiology* **92**: 302-309
- 21) Demmig-Adams B, Adams WW III (1990) The carotenoid zeaxanthin and "high-energy-state" quenching of chlorophyll fluorescence. *Photosynthesis Research* **25**: 187-197
- 20) Demmig-Adams B, Máguas C, Adams III WW, Meyer A, Kilian E, Lange OL (1990) Effect of high light on the efficiency of photochemical energy conversion in a variety of lichen species with green and blue-green phycobionts. *Planta* **180**: 400-409
- 19) Demmig-Adams B, Adams WW III, Czygan F-C, Schreiber U, Lange OL (1990) Differences in the capacity for radiationless energy dissipation in green and blue-green algal lichens associated with differences in carotenoid composition. *Planta* **180**: 582-589
- 18) Demmig-Adams B, Adams WW III, Green TGA, Czygan F-C, Lange OL (1990) Differences in the susceptibility to light stress in two lichens forming a phycosymbiodeme, one partner possessing and one lacking the xanthophyll cycle. *Oecologia* **84**: 451-456
- 17) Cleland RE, Demmig-Adams B, Adams WW III, Winter K (1990) Phosphorylation state of the light-harvesting chlorophyll-protein complex of photosystem II and fluorescence characteristics in *Monstera deliciosa* Liebm. and *Glycine max* (L.) Merrill in response to light. *Australian Journal of Plant Physiology* **17**: 589-599
- 16) Adams WW III, Winter K, Lanzl A (1989) Light and the maintenance of photosynthetic competence in leaves of *Populus balsamifera* during short-term exposures to high concentrations of sulfur dioxide. *Planta* **177**: 91-97
- 15) Adams WW III, Díaz M, Winter K (1989) Diurnal changes in photochemical efficiency, the reduction state of Q, radiationless energy dissipation, and nonphotochemical fluorescence quenching from cacti exposed to natural sunlight in northern Venezuela. *Oecologia* **80**: 553-561
- 14) Demmig-Adams B, Adams WW III, Winter K, Meyer A, Schreiber U, Pereira JS, Krüger A, Czygan F-C, Lange OL (1989) Photochemical efficiency of photosystem II, photon yield of O₂ evolution, photosynthetic capacity, and carotenoid composition during the "midday depression" of net CO₂ uptake in *Arbutus unedo* growing in Portugal. *Planta* **177**: 377-387
- 13) Osmond CB, Adams WW III, Smith SD (1989) Crassulacean acid metabolism. In RW Pearcy, JR Ehleringer, HA Mooney, P Rundel (eds) *Plant Physiological Ecology - Field Methods and Instrumentation*. Chapman and Hall, London, pp 255-280
- 12) Adams WW III (1988) Photosynthetic acclimation and photoinhibition of terrestrial and epiphytic CAM tissues growing in full sunlight and deep shade. *Australian Journal of Plant Physiology* **15**: 123-134
- 11) Adams WW III, Terashima I, Brugnoli E, Demmig B (1988) Comparisons of photosynthesis and photoinhibition in the CAM vine *Hoya australis* and several C₃ vines growing on the coast of eastern Australia. *Plant, Cell and Environment* **11**: 173-181
- 10) Adams WW III, Osmond CB (1988) Internal CO₂ supply during photosynthesis of sun and shade grown CAM plants in relation to photoinhibition. *Plant Physiology* **86**: 117-123
- 9) Evans JR, von Caemmerer S, Adams WW III (eds) (1988) *Ecology of Photosynthesis in Sun and Shade*. CSIRO Press, Melbourne. 358 pp
- 8) Adams WW III, Smith SD, Osmond CB (1987) Photoinhibition of the CAM succulent *Opuntia basilaris* growing in Death Valley: evidence from 77K fluorescence and quantum yield. *Oecologia* **71**: 221-228
- 7) Adams WW III, Osmond CB, Sharkey TD (1987) Responses of two CAM species to different irradiances during growth and susceptibility to photoinhibition by high light. *Plant Physiology* **83**: 213-218
- 6) Martin CE, Adams WW III (1987) Crassulacean acid metabolism, CO₂-recycling, and tissue desiccation in the Mexican epiphyte *Tillandsia schiedeana* Steud. (Bromeliaceae). *Photosynthesis Research* **11**: 237-244
- 5) Adams WW III, Nishida K, Osmond CB (1986) Quantum yields of CAM plants measured by photosynthetic O₂ exchange. *Plant Physiology* **81**: 297-300
- 4) Adams WW III, Martin CE (1986) Morphological changes accompanying the transition from juvenile (atmospheric) to adult (tank) forms in the Mexican epiphyte *Tillandsia deppeana* (Bromeliaceae). *American Journal of Botany* **73**: 1207-1214
- 3) Adams WW III, Martin CE (1986) Physiological consequences of changes in life form of the Mexican epiphyte *Tillandsia deppeana* (Bromeliaceae). *Oecologia* **70**: 298-304
- 2) Adams WW III, Martin CE (1986) Heterophylly and its relevance to evolution within the Tillandsioideae. *Selbyana* **9**: 121-125
- 1) Haufler CH, Adams WW III (1982) Early gametophyte ontogeny of *Gleichenia bifida* (Willd.) Spreng: phylogenetic and ecological implications. *American Journal of Botany* **69**: 1560-1565

Publications under review or in preparation

Adams WW III, Muller O, Cohu CM, Demmig-Adams B (under review) May photoinhibition in higher plants be a consequence, rather than a cause, of limited productivity? *Photosynthesis Research*

Cohu CM, Muller O, Demmig-Adams B, Adams WW III (under review) Defining minor loading veins in *Arabidopsis thaliana*. *Plant, Cell & Environment*

Cohu CM, Muller O, Stewart JJ, Demmig-Adams B, Adams WW III (under review) Differences in minor loading vein architecture and photosynthetic capacity among *Arabidopsis thaliana* ecotypes from different latitudes in response to temperature and light. *Plant, Cell & Environment*

Adams WW III, Cohu CM, Muller O, Demmig-Adams B (under review) Foliar phloem infrastructure in support of photosynthesis. In van Bel A, Ton J, Thompson GA, Patrick JW, Ding B, Helariutta Y, Dinant S (eds) *Frontiers in Plant Physiology, Frontiers in Plant Science*

Muller O, Cohu CM, Adams WW III, Demmig-Adams B (in prep) Temperature acclimation of photosynthetic capacity and phloem anatomy in annuals with different seasonal preferences. *Plant, Cell and Environment*

Demmig-Adams B, Cohu CM, Muller O, Adams WW III (in prep) Title to be determined! In Spetea C, Rintamäki E, Schoefs B (eds) High light signaling and adaptive responses in plants: understanding the role of chloroplasts. *Philosophical Transactions of the Royal Society B*

Burch T, Adams WW III, Demmig-Adams B (in prep) Milking algae for energy carriers: Triggering carbohydrate secretion in *Chlamydomonas* species differentially adapted to salinity. (*Journal to be determined*)

Current Support

Increasing Teaching Effectiveness in Ecology and Evolutionary Biology (2011-2014). \$480,000 from the Science Education Initiative at the University of Colorado. Co-PI with Andrew Martin, Nichole Barger, John Basey, Barbara Demmig-Adams, and Samuel Flaxman.

EAGER: Assessing Functional Diversity of Algal Communities at the Single Cell Level with a Compact Multi-function Microfluidic Cytometer (2011-2013). \$205,000 from the National Science Foundation. Co-PI with Barbara Demmig-Adams, Ralph Jimenez, & William M. Lewis

Developing a Roadmap to the Diatoms with Greatest Oil Production (2011-2013). \$44,000 from the Office of the VCR Innovative Seed Program at the University of Colorado. Co-PI with J Pat Kocielek, Ralph Jimenez, Barbara Demmig-Adams, and William M. Lewis

Collaborative Research (Arabidopsis 2010): Ecological Genomics of Adaptation to the Environment (2010-2014). \$3,154,225 (\$587,908 to the University of Colorado) from the National Science Foundation. Co-PI with Barbara Demmig-Adams, Douglas Schemske and Michael Thomashow (MSU), and John McKay (CSU).

Photosynthesis and Phloem Anatomy (2009-2013). \$486,203 from the National Science Foundation. Co-PI with Barbara Demmig-Adams

Novel Dissection of Temperature Tolerance in the Model Plant Arabidopsis (2010-2013). \$43,750 from the Office of the VCR Innovative Seed Grant Program at the University of Colorado. Co-PI with Barbara Demmig-Adams and Douglas Schemske (Michigan State University).

Previous Support

Extractive Photobioreactor (2011-2012). \$524,819 (\$188,048 to Demmig-Adams & Adams) from ConocoPhillips. Co-PI with John Pellegrino, Robert Davis, and Barbara Demmig-Adams

Defining a Mechanistic Link Between Stand Thinning, Drought Stress, and Risk of Mortality from Pine Bark Beetles in Californian Yellow Pine (2007-2011). CU's portion \$157,020 from the United States Department of Agriculture. Co-PI with Barbara Demmig-Adams, PI for California portion Nancy Grulke (Forest Service, Riverside, CA), and Steve Seybold (Forest Service, Davis, CA)

- Optimization of Light Use Efficiency for Algal Production of Glycerol as a Precursor for Transport Fuels (2009-2010). \$219,193 from Conoco-Phillips. Co-PI with Barbara Demmig-Adams
- Identification of Novel Biomolecules for Improved Biological Production of Alternative Fuels from Solar Energy (2007-2009). \$40,000 from the Energy Initiative University of Colorado/NREL Seed Grant Program. Co-PI with Barbara Demmig-Adams, Matthew Posewitz (CSM), and Michael Seibert (NREL)
- Supplementary Research Opportunity Award to Collaborative Research: Photosynthetic Acclimation, Photoprotection, and Phloem Loading (2005-2007). \$24,952 from the National Science Foundation. PI with Barbara Demmig-Adams
- Collaborative Research: Photosynthetic Acclimation, Photoprotection, and Phloem Loading (2003-2007). \$454,007 (\$386,638 to the University of Colorado) from the National Science Foundation. PI with Barbara Demmig-Adams and Robert Turgeon (Cornell University)
- Seasonal Changes in the Productivity of Evergreen Forests: Toward an Understanding of what it Takes to be “Evergreen” and How Seasonal Changes are Orchestrated (2002-2005). \$260,000 from the Andrew W. Mellon Foundation. PI with Barbara Demmig-Adams
- Protein Phosphorylation and Xanthophyll Cycle Dynamics Dependent on Lifeform (2000-2003) \$150,000 from the United States Department of Agriculture. Co-PI with Barbara Demmig-Adams
- Photoprotection during Winter Stress (1999-2001) \$100,000 from the National Science Foundation. PI with Barbara Demmig-Adams
- Photoprotection during Winter Stress (1996-1998) \$200,486 from the National Science Foundation. PI with Barbara Demmig-Adams
- Interaction of Photoprotective Processes in Plants (1994-1997) \$185,000 from the United States Department of Agriculture. Co-PI with Barbara Demmig-Adams
- Biosphere/Atmosphere Interactions: Biochemical Causes to Global Implications (1994-1999) \$1,699,837 from the National Science Foundation. Co-PI with 20 other investigators
- Replacement and Modernization of Greenhouse Facilities (1994-1996) \$202,500 from the National Science Foundation. Co-PI with 4 other investigators
- Improvement of Laboratories in Plant Physiology and Plant Ecophysiology at the University of Colorado in Boulder (1993-1995) \$90,000 from the National Science Foundation and the University of Colorado. PI with Barbara Demmig-Adams and Russell Monson
- Carotenoids and Photoprotection in CAM plants (1992-1995) \$126,000 from the National Science Foundation. PI with Barbara Demmig-Adams
- Grant to support research during three months as a Visiting Fellow in Australia (1994) A\$18,000 from the Research School of Biological Sciences, Australian National University, Canberra, Australia.
- Remote Sensing of Actual Photosynthesis Rates of Vegetation under Changing Environmental Conditions (1991-1992) \$17,971 from the University of Colorado Global Change & Environmental Quality Program. Co-PI with Barbara Demmig-Adams
- Carotenoids and Photoprotection in Various Crop Species (1990-1992) \$100,000 from the United States Department of Agriculture. Co-PI with Barbara Demmig-Adams
- Purchase of Nine Controlled Environment Growth Chambers (1990-1991) \$113,015 from the National Science Foundation. Co-PI with 4 other investigators

Pending Support

IOS Preliminary Proposal: Carbohydrate Accumulation and Photoinhibition (2014-2016) Approximately \$450,000 from the National Science Foundation. PI with Barbara Demmig-Adams

EFRI-PSBR: A Self-Sustaining Two-Compartment Biorefinery with Photosynthetic Polycultures as Feedstock Producers for Sustainable Microbial-Based Fuels & Products (2013-2017) \$2,000,000 from the National Science Foundation. Senior Investigator with PI Barbara Demmig-Adams, Co-PIs Ralph Jimenez, Brett Melbourne, William Lewis, and Richard Noble, and Senior Investigators Richard Erickson, James McCutchan, and Douglas Gin

SusChEM: Feedstock Secretion by Immobilized *Chlamydomonas* (2013-2016) \$299,599 from the National Science Foundation. Co-PI with PI Barbara Demmig-Adams

Production of Biofuels, Biomaterials, and Nitrogen Fertilizer from Renewable Resources via Photosynthetic Microbes (2013-2014) \$49,842 from the Office of the VCR Innovative Seed Program at the University of Colorado. Co-PI with Barbara Demmig-Adams and James McCutchan

Invited Presentations

“Photosynthesis, Photoprotection, and the Environment”, Ecological Genomics of *Arabidopsis* meeting, Fort Collins, CO, 10-11 December 2011, B Demmig-Adams, WW Adams III

“Photosynthetic Capacity and Anatomical Features of *Arabidopsis thaliana* Ecotypes from Italy and Sweden”, Ecological Genomics of *Arabidopsis* meeting, Fort Collins, CO, 10-11 December 2011, C Cohu, O Muller, B Demmig-Adams, WW Adams III

“Phloem Loading, Leaf Architecture, and Photosynthetic Capacity”, Department of Plant Physiology, Umeå Plant Science Centre, Umeå Universitet, 17 November 2011, WW Adams III, B Demmig-Adams

“Photosynthesis, Photoprotection, and the Environment”, Keynote address, Kriton-Hatzios Symposium on Abiotic Stress, Southern Section of the American Society of Plant Biologists’ Annual Meeting, Gulf Coast Research Laboratory University of Southern Mississippi, Ocean Springs, MS, 9-11 April 2011 (presentation on April 11), B Demmig-Adams, WW Adams III

“Contrasting Features of Photoprotective Energy Dissipation in Plants with Different Growth Habits”, International Workshop on “Mechanisms of Non-photochemical Quenching”, EU Marie Curie Network “HARVEST”, Passau, Germany, 6-10 April 2011 (presentation on April 8), B Demmig-Adams, WW Adams III

“Phloem Anatomy and Photosynthetic Capacity”, International Conference on Plant Vascular Biology 2010, Columbus, OH, 23-29 July 2010, WW Adams III, V Amiard, R Turgeon, B Demmig-Adams

“Adjustment of Leaf Structure and Function to Cold Temperature”, International Conference on Plant Vascular Biology 2010, Columbus, OH, 23-29 July 2010, B Demmig-Adams, M Dumlao, R Leyva, WW Adams III

"Regulation and Acclimation of Photoprotection: Dependence on Species and Environmental Conditions", Department of Botany, Oklahoma State University, Stillwater, OK, 20 January 2009

“Maximizing Solar Energy Conversion Efficiency in Photosynthesis”, Joint Air Force Office of Science Research and National Renewable Energy Laboratory Research Meeting: Work-in-Progress, Golden, CO, 8-9 January 2009, B Demmig-Adams, WW Adams III

“Implications for forest management under a changing climate: Linking ozone and drought stress to tree mortality” Air Pollution Workshop, Raleigh, NC, 8 April 2008, NE Grulke, SJ Seybold, B Demmig-Adams, WW Adams III, DM Rizzo, AD Graves

“Forest health and disturbance: Defining a mechanistic link between tree drought stress and risk of mortality from pine bark beetles in Jeffrey pine” USDA Forest Service Region 5, Regional Leadership Team Meeting, Sacramento, CA, 2 April 2008, NE Grulke, SJ Seybold, B Demmig-Adams, WW Adams III, DM Rizzo, AD Graves

“Photosynthetic Capacity and Minor Loading Veins”, 17th Western Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, 3-6 January 2008, WW Adams III, R Turgeon, B Demmig-Adams

“Variations in Acclimation of Photosynthesis & Photoprotection in Overwintering Plants”, 17th Western Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, 3-6 January 2008, B Demmig-Adams, MR Dumlao, WW Adams III

“An Integrative View of Photoprotection”, Japan-US Workshop (jointly sponsored by the Japan Ministry of Science & Education and the US National Science Foundation) on Phenotypic Plasticity in Response to Environmental Changes: Scaling from the Molecular to the Ecosystem Levels, Nikko Botanical Gardens, University of Tokyo, Japan, 23-26 October 2007, WW Adams III & B Demmig-Adams

“Novel genes in photoprotection and stress adaptation?”. Collaborative Plant Biology in the Rocky Mountain / Midwest: Impacts and Future Prospects for Plant Genomics. University of Wyoming, 1-3 June 2006. B Demmig-Adams, V Ebbert, K Danna, WW Adams III

“Novel genes in photoprotection and stress adaptation of evergreen species”. Keystone Conference on “Plant Responses to Abiotic Stress”, Copper Mountain, Colorado, 8-12 April 2006. B Demmig-Adams, V Ebbert, WW Adams III

“Seasonal adjustments in photosynthesis and photoprotection”, Keynote Speaker for symposium entitled: Responses to Winter – from Ecosystem to Gene, XVII International Botanical Congress, Vienna, Austria, 17-23 July 2005, WW Adams III & B Demmig-Adams

“Photoprotective energy dissipation and the bigger picture”, Keynote speaker for symposium entitled: Antioxidants, Gene Regulation, and Environment, XVII International Botanical Congress, Vienna, Austria, 18-23 July 2005. B Demmig-Adams, V Ebbert, KE Mueh, WW Adams III

“Responses of plants to excess light”, Department of Biological Sciences, University of Nevada, Las Vegas, NV, 5 November 2004

“Role of phloem loading type in the plasticity of photosynthetic acclimation to light environment”, 13th International Congress of Photosynthesis, Montréal, Canada, 29 August – 3 September 2004. WW Adams III, VSE Amiard, KEM Bachmann, R Turgeon, & B Demmig-Adams

“Multiple mechanisms of zeaxanthin function in thermal dissipation, photoinhibition, and signal transduction”, 13th International Congress of Photosynthesis, Montréal, Canada, 29 August – 3 September 2004. B Demmig-Adams, V Ebbert, CR Zarter, KEM Bachmann, VSE Amiard, A Sokolenko, AK Mattoo, & WW Adams III

“Role of phloem loading type in the plasticity of photosynthetic acclimation to light environment”, Plasmodesmata 2004, Fifth International Conference, Pacific Grove, CA, 17-21 August 2004. VSE Amiard, KEM Bachmann, R Turgeon, B Demmig-Adams, & WW Adams III

“An integrative view of photoprotection”, Department of Plant Biology, Cornell University, Ithaca, NY, 24 October 2003

“Photosynthesis and photoprotection during winter”, Annual Meeting of the American Society of Plant Biologists, Denver, CO, 3-7 August 2002. B Demmig-Adams & WW Adams III

“Growth form and light environment determinants of photosynthetic acclimation to winter stress”, 12th International Congress on Photosynthesis. Brisbane, Australia, 18-23 August 2001. WW Adams III & B Demmig-Adams

“Regulatory and acclimatory responses of xanthophyll cycle-dependent energy dissipation”, USDA Vegetable Laboratory, Beltsville Agricultural Research Center, MD, 30 March 2001

“Seasonal adjustments in photosynthesis and energy dissipation in overwintering plants”, Gordon Research Conference on Temperature Stress in Plants. Ventura, CA, 28 January to 1 February 2001. WW Adams III & B Demmig-Adams

“Modulation of the xanthophyll cycle by the environment” and “Zeaxanthin retention, sustained energy dissipation, and protein phosphorylation”, European Science Foundation (ESF) Workshop on “Non-Photochemical Quenching and the Xanthophyll Cycle – Mechanisms and Implications”, Weizmann Institute of Science, Rehovot, Israel, 12-15 October 1999. B Demmig-Adams & WW Adams III

“How is continuous energy dissipation maintained under stress? From the whole plant to the chloroplast”, Symposium on “Light and Photosynthesis: From the Molecule to the Globe” sponsored by the Carnegie Institution of Washington, Napa, CA, 28-30 August 1999. B Demmig-Adams & WW Adams III

"Relationships among zeaxanthin, photoinhibition, and carbohydrate status in shade leaves exposed to high light", 7th Western Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, 8-11 January 1998. B Demmig-Adams & WW Adams III

"The xanthophyll cycle and regulation of the efficiency of solar energy conversion", International Conference on 'Molecular to Global Photosynthesis'. Imperial College of Science, London, United Kingdom, 28-29 March 1996. B Demmig-Adams & WW Adams III

"Involvement of the xanthophyll cycle in the phenomenon of photoinhibition", Fifth Western Photosynthesis Conference. Asilomar Conference Center, Pacific Grove, 9-12 January 1996. B Demmig-Adams & WW Adams III

"Xanthophyll cycle and diurnal PSII regulation", Special Mini-Symposium on "The Xanthophyll Cycle and Photoprotective Energy Dissipation". Annual Meeting of the American Society of Plant Physiology. Charlotte, NC, 2 August 1995. B Demmig-Adams & WW Adams III

"Xanthophyll cycle and temporal flexibility in regulation of thermal energy dissipation: seconds to seasons", Annual meeting of the American Society of Plant Physiology. Charlotte, NC, 1 August 1995. WW Adams III and B Demmig-Adams

"The xanthophyll cycle in the understory of different Australian forests", Department of Botany, University of California at Davis, 7 September 1994

"Photoinhibition' during winter stress", Robertson Symposium on "Chlorophyll Fluorescence, Origin, Measurements, Interpretations, and Applications", Australian National University, Canberra, 27-29 May 1994. WW Adams III & B Demmig-Adams

"Using chlorophyll fluorescence to assess the dynamics of xanthophyll-associated energy dissipation", Robertson Symposium on "Chlorophyll Fluorescence", Research School of Biological Sciences, Australian National University, Canberra, Australia, 27-29 May 1994. B Demmig-Adams & WW Adams III

"Photoprotection and the xanthophyll cycle under chilling stress", 4th Western Regional Photosynthesis Conference. Asilomar Conference Center, Pacific Grove, CA, 4-7 January 1994. WW Adams III & B Demmig-Adams

"Photoprotection and the xanthophyll cycle: Capacity for energy dissipation in leaves with different xanthophyll cycle pools sizes", 4th Western Regional Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, 4-7 January 1994. B Demmig-Adams & WW Adams III

"Down regulation of PS II efficiency: Ecophysiological aspects", Gordon Research Conference on Photosynthetic CO₂ Fixation and Metabolism. Irsee, Germany, 10-15 October 1993. WW Adams III & B Demmig-Adams

"High light stress and the xanthophyll cycle", XVth International Botanical Congress, Tokyo (Yokohama), Japan, 28 August – 3 September 1993. B Demmig-Adams & WW Adams III

"Energy dissipation and the xanthophyll cycle in CAM plants", International Workshop on Crassulacean Acid Metabolism. Panama City, 21-26 March 1993

"The xanthophyll cycle and energy dissipation in plants", Department of Botany, University of Wyoming, Laramie, 5 March 1993

"Photoprotection of the photosynthetic apparatus through the carotenoid zeaxanthin", Photosynthetic Responses to the Environment, Satellite meeting for the IX International Congress on Photosynthesis, Kona, Hawaii, 25-27 August 1992. B Demmig-Adams & WW Adams III

"Zeaxanthin function in photosynthetic organisms", Gordon Research Conference on Chemistry and Biology of Carotenoids, Oxnard, CA, 9-13 March 1992. B Demmig-Adams & WW Adams III

"The carotenoid zeaxanthin and photoprotection of the photosynthetic apparatus", Sixth Annual Penn State Symposium in Plant Physiology, 23-25 May 1991. B Demmig-Adams & WW Adams III

"Zeaxanthin formation and photoprotective energy dissipation as affected by temperature", Gordon Research Conference on Temperature Stress in Plants. Oxnard, CA, 18 January 1991. WW Adams III & B Demmig-Adams

"Photoinhibition and photoprotective responses: the xanthophyll cycle", Plant Physiology Seminar, Department of Botany, Duke University, Durham, 30 March 1990. Joint seminar) WW Adams III & B Demmig-Adams

"Zeaxanthin formation and avoidance of PS II damage from combined high light and water stress", Rockefeller Foundation meeting on 'The Potentials of Biotechnology for Improving Grain Yield of Rice under Water Limited Conditions', Bellagio Study and Conference Center, Bellagio, Italy, 18-22 September 1989. B Demmig-Adams & WW Adams III

"Zeaxanthin-associated energy dissipation in leaves and isolated chloroplasts", International Workshop on 'The Use of Chlorophyll Fluorescence and other Non-Invasive Spectroscopic Techniques in Plant Stress Physiology', Wageningen, The Netherlands, 14-16 August 1989. B Demmig-Adams & WW Adams III

"Light stress, photoprotective energy dissipation, and the carotenoid zeaxanthin", VIIIth International Congress on Photosynthesis, Stockholm, Sweden, 6-11 August 1989. B Demmig-Adams & WW Adams III

"Heterophylly in the epiphytic genus *Tillandsia*: ecophysiological and evolutionary implications", XIV International Botanical Congress. West Berlin, July 1987

"Photosynthesis and photoinhibition in CAM plants found in full sunlight and deep shade", First Robertson Symposium on "Ecology of Photosynthesis in Sun and Shade", Australian National University, Canberra, February 1987

"Fluorescence and stress in CAM plants", Joint US and Australian conference on "Structure, function and photoinhibition of Photosystem II and plant responses to stress". Honolulu, Hawaii, September 1985

"Photosynthesis and transpiration in atmospheric and tank forms of the epiphyte *Tillandsia deppeana* (Bromeliaceae)", Annual meeting of the American Society of Plant Physiology. Davis, California, August 1984. WW Adams III & CE Martin

"New aspects of gametophyte development in the tropical fern *Gleichenia bifida*", Botanical Society of America section of the annual AIBS meeting. Bloomington, Indiana, August 1981. WW Adams III & CH Haufler

Contributed Presentations

“Milking of microalgae for biofuel production”, First Annual Energy Showcase symposium, University of Colorado, 1 April 2010. A Reese, C Rixham, B Degrenne, T Burch, WW Adams III, & B Demmig-Adams

“Seasonal adjustments in photosynthesis and photoprotection in a subalpine forest”, Annual meeting of the Guild of the Rocky Mountain Population Biologists, 17-18 September 2004. CR Zarter, V Ebbert, WW Adams III, & B Demmig-Adams

"Does photoinhibition represent downregulation of photosystem II in response to limited sink strength?", Gordon Research Conference on CO₂ Fixation and Metabolism in Green Plants. Tilton, NH, 18-23 August 1996. WW Adams III & B Demmig-Adams

"High PFD reduces SO₂-induced inhibition of photosynthesis", Annual meeting of the American Society of Plant Physiology. Reno, Nevada, July 1988. WW Adams III, K Winter, & A Lanzl

"Adaptability to shade and photoinhibition in plants possessing crassulacean acid metabolism", Annual meeting of the Australian Society of Plant Physiology. Melbourne, Victoria, May 1986. WW Adams III & CB Osmond

"Photosynthetic responses to tissue desiccation in the CAM epiphytes *Tillandsia usneoides* and *T. schiedeana*", Annual meeting of the Ecological Society of America. Syracuse, New York, August 1986. CE Martin, WW Adams III, & FM Smith

"Quantum yield and fluorescence in CAM", Annual meeting of the American Society of Plant Physiology. Providence, Rhode Island, June 1985. WW Adams III & CB Osmond

"Physiological consequences of an extreme change in leaf morphology in a Mexican epiphyte", Fourth Annual Prairie States Ecology Conclave. Big Lake, Missouri, April 1984

"Water stress in *Populus deltoides* along an environmental gradient", Regional meeting of the Association of American Geographers. Lawrence, Kansas, November 1984. GE Marotz & WW Adams III

Symposia Organized/Chaired

“Physiology and Regulation Processes”, Chair, Mechanisms of Nonphotochemical Quenching, Passau, Germany, 6-10 April 2011

“Responses to Winter – from Ecosystem to Gene”, Organizer, Chair, & Keynote Speaker, XVII International Botanical Congress, Vienna, Austria, 18-23 July 2005

“Temperature Stress”, Chair, Plant Biology 2002 (Annual meeting of the American Society of Plant Biologists), Denver, Colorado, 5 August 2002

"The Xanthophyll Cycle and Photoprotective Energy Dissipation", Organizer and Chair. Annual meeting of the American Society of Plant Physiologists. Charlotte, North Carolina, 2 August 1995

Patents

“Phytometric Intelligence Sensors” by Hans-Dieter Seelig, Alexander Hoehn, Richard Stoner, II, and William W. Adams III. Provisional Filing on 25 May 2006; US Filing on 6 March 2007; Assignment in October 2009; Patent granted (#7,660,698) on 9 February 2010; License Agreement with Agrihouse, Inc. <<http://www.agrihouse.com/>> for worldwide rights in February 2010

Teaching**Classes at the University of Colorado, 1989-present**

Classes from Fall 2006 onward on a 6-point scale, with 6 as the highest.

	Ratings; Mean/Median	
	Instructor	Course
Fall 2012, EBIO 1210-003, General Biology, 363 students	5.6/6.0	4.9/5.0
Fall 2012, EBIO 1210-004, General Biology, 244 students	5.6/6.0	4.8/5.0
Spring 2012, EBIO 4800/5800, Genetically Engineered Organisms, 27 students	5.6/6.0	5.2/5.0
Fall 2011, EBIO 1210-003, General Biology	5.6/6.0	4.8/5.0
Fall 2011, EBIO 1210-004, General Biology	5.5/6.0	4.8/5.0
Spring 2011, EBIO 4800/5800, Genetically Engineered Organisms	5.8/6.0	5.7/6.0
Fall 2010, EBIO 1210-001, General Biology	5.4/6.0	4.7/5.0
Fall 2010, EBIO 1210-002, General Biology	5.4/6.0	4.7/5.0
Spring 2010, EBIO 4800/5800, Genetically Engineered Organisms	5.9/6.0	5.7/6.0
Fall 2009, EBIO 1210-002, General Biology	5.7/6.0	5.1/5.0
Fall 2009, EBIO 1210-003, General Biology	5.8/6.0	5.3/6.0
Spring 2008, EBIO 4800/5800, Genetically Engineered Plants	5.3/6.0	5.0/5.0
Fall 2008, EBIO 1210-002, General Biology	5.7/6.0	5.0/5.0
Fall 2008, EBIO 1210-003, General Biology	5.5/6.0	4.9/5.0
Spring 2008, EBIO 4800/5800, Genetically Engineered Plants	5.8/6.0	5.5/6.0
Fall 2007, EBIO 1210-002, General Biology	5.3/6.0	4.8/5.0
Fall 2007, EBIO 1210-003, General Biology	5.4/6.0	4.8/5.0
Spring 2007, EBIO 4800/5800, Genetically Engineered Plants	5.7/6.0	5.3/6.0
Fall 2006, EBIO 3530, Functional Plant Biology	5.5/6.0	5.2/5.0

Classes from 1989 through Spring 2006 on a 4-point scale, with 4 (A+) as the highest.

Spring 2006, EBIO 4800/5800, Genetically Engineered Plants	3.89 (A+)	3.78 (A)
Fall 2005, EBIO 3530, Functional Plant Biology	3.33 (B+)	3.17 (B)
Spring 2005, EBIO 4800/5800, Genetically Engineered Plants	3.94 (A+)	3.83 (A)
Spring 2004, EPOB 4800/5800, Genetically Engineered Plants	4.00 (A+)	3.89 (A+)
Fall 2003, EPOB 3530, Plant Physiology	3.80 (A)	3.68 (A)
Spring 2003, EPOB 4800/5800, Genetically Engineered Plants	4.00 (A+)	3.88 (A+)
Fall 2002, EPOB 3530, Plant Physiology	3.95 (A+)	3.82 (A)
Spring 2002, EPOB 4800/5800, Plant Ecophysiology	3.75 (A)	3.83 (A)
Fall 2001, EPOB 3530, Essentials of Plant Physiology	3.77 (A)	3.61 (A-)
Fall 2000, EPOB 4800/5800, Plant Ecophysiology	3.89 (A+)	3.89 (A+)
Fall 2000, EPOB 3530, Plant Physiology	3.79 (A)	3.63 (A)
Spring 2000, EPOB 4800, Plant Ecophysiology	4.00 (A+)	3.89 (A+)
Spring 2000, EPOB 6300, Environmental Signal Transduction	3.33 (B+)	3.33 (B+)
Fall 1999, EPOB 3530, Essentials of Plant Physiology	3.78 (A)	3.63 (A)
Fall 1998, EPOB 3530, Essentials of Plant Physiology	3.67 (A)	3.72 (A)
Fall 1998, EPOB 4800, Plant Ecophysiology	4.00 (A+)	3.78 (A)
Spring 1998, EPOB 4800, Plants, Light, and Stress	3.75 (A)	3.75 (A)
Spring 1998, EPOB 6200, Environmental Control of Gene Expression	3.75 (A)	3.60 (A-)
Fall 1996, EPOB 3530, Plant Physiology	3.69 (A)	3.46 (B+)
Fall 1996, EPOB 4800, Plant Ecophysiology	3.78 (A)	3.78 (A)
Spring 1996, EPOB 3530, Plant Physiology	3.20 (B)	3.27 (B+)
Fall 1995, EPOB 4800, Plant Ecophysiology	3.57 (A-)	3.50 (A-)
Fall 1995, EPOB 6200, Biology of Epiphytes	3.80 (A)	3.60 (A-)
Spring 1995, EPOB 3530, Plant Physiology	2.95 (B)	2.95 (B)
Spring 1995, EPOB 4800, Ecophysiology of Photosynthesis	3.83 (A)	4.00 (A+)
Fall 1994, EPOB 4800, Plant Ecophysiology	3.29 (B+)	3.29 (B+)
Spring 1994, EPOB 3530, Plant Physiology	3.27 (B+)	3.21 (B)
Spring 1994, EPOB 4800, Ecophysiology of Photosynthesis	3.50 (A-)	3.30 (B+)
Spring 1994, EPOB 5800, Ecophysiology of Photosynthesis	4.00 (A+)	4.00 (A+)
Fall 1993, EPOB 4800, Plant Ecophysiology	3.17 (B)	3.25 (B+)
Fall 1993, EPOB 4950, Plant Ecophysiology Laboratory	3.57 (A-)	3.71 (A)
Spring 1993, EPOB 3530, Plant Physiology	3.00 (B)	2.83 (B)
Spring 1993, EPOB 4580, Physiological Plant Adaptation II	4.00 (A+)	3.50 (A-)
Spring 1993, EPOB 5580, Physiological Plant Adaptation II	3.18 (B)	3.45 (B+)

Fall 1992, EPOB 4570, Physiological Plant Adaptation I	3.31 (B+)	3.38 (B+)
Spring 1992, EPOB 3530, Plant Physiology	3.33 (B+)	3.57 (A-)
Spring 1992, EPOB 6100, Plant Responses to Stress	3.44 (B+)	3.44 (B+)
Spring 1991, EPOB 3530, Plant Physiology	3.47 (B+)	3.35 (B+)
Spring 1990, EPOB 3530, Plant Physiology	2.83 (B)	2.78 (B)
Fall 1989, EPOB 4570, Advanced Plant Physiology	3.25 (B+)	3.56 (A-)

Classes at Universität Würzburg, Germany, 1988 (volunteer teaching contributions)

Physiological Ecology of Plants
 Photoinhibition of Photosynthesis in Higher Plants

Classes at the University of Kansas, 1981-1984 (Laboratory Teaching Assistant)

Biology of Organisms
 Plant Physiology
 Principles of Biology
 Unusual Weather

Guest Presentations

“Biofuels – The Hype and the Hope”, Presentation to Colorado Center for Biorefining and Biofuels Research
 Experiences for Undergraduates group of students. 17 June 2009

Extramural and Intramural Funding in Support of Teaching

“Increasing Teaching Effectiveness in Ecology and Evolutionary Biology” (2011-2014). \$480,000 from the Science Education Initiative at the University of Colorado. Co-PI with Andrew Martin, Nichole Barger, John Basey, Barbara Demmig-Adams, and Samuel Flaxman.

“Improvement of Laboratories in Plant Physiology and Plant Ecophysiology at the University of Colorado in Boulder” (1993-1995) \$90,000 from the National Science Foundation and the University of Colorado. PI with Barbara Demmig-Adams and Russell Monson

Howard Hughes Medical Institute Equipment Proposal funded in 1997 for the purchase of one microcentrifuge, two circulating refrigerated water baths, four Hansatech leaf disc oxygen electrode systems, four sets of glass neutral density filters from Schott Glass Technologies, four thin layer chromatography developing chambers, four pH meters, and four glass combination pH electrodes for use in the class Essentials of Plant Physiology.

Teaching Presentations at National Meetings

Invited to share my experiences in obtaining NSF funding in support of the improvement of teaching laboratories in a workshop on "Grant Opportunities in Teaching and Education", Annual meeting of the American Society of Plant Physiologists. Charlotte, NC, 31 July 1995

“The use of the leaf disc electrode to examine photosynthetic characteristics of leaves” Annual meeting of the American Society of Plant Physiologists. Charlotte, NC, 29 July – 2 August 1995

Teaching Awards

-Boulder Faculty Assembly Excellence in Teaching Award, 16 April 2004, University of Colorado

-Certificate of Recognition for Exceptional Teaching, Mortar Board, 16 November 2000, University of Colorado

Undergraduate Students advised in my laboratory

Elizabeth Lombardi (2012-2013), Undergraduate Research Opportunities Program and Honors

Johanna Protheroe (2012-2013), volunteer and paid assistant (and UROP pending)

Emmo Scherbatskoy (2012-2013), paid assistant

Katherine Kronen (2011-2012), volunteer

Tyler Dowd (2011-2012), volunteer and paid assistant

Lynn My Dang (2010-2012), paid assistant

Calvin Englert (2010-2012), volunteer, paid assistant, honors project

Jonathan Kittel (2009-2010), volunteer and paid assistant

Tyson Burch (2009-2010), volunteer, then paid assistant

Charlie Cotton (Oxford University); intern during summer 2009

Deylen S. Aponte Rosario (University of Puerto Rico at Cayey); SMART intern (Summer 2008)

Noelia Ines Aponte Silva (University of Puerto Rico at Mayagüez); SMART intern (Summer 2008)

*Andrew F. Combs (2005-2006), Supported on an NSF Research Opportunity Award

*Daniel Cuthbertson (2004-2005) Undergraduate Research Opportunities Program. Pursuing PhD at Washington State University
 Jeffrey Robinson (summer 2003-2005) paid Research Assistant
 *Angela Brightwell (2000-2001) Undergraduate Research Opportunities Program
 *Lisa Schaffer (2000-2001) Undergraduate Research Opportunities Program (with B. Demmig-Adams)
 Kevin (Casey) Cody (Spring 1997) Independent Research
 Bryn Orwig (Fall 1996 and Spring 1997) paid Research Assistant. Teacher in Colorado.
 *Jeff Marszalek (Fall 1996 and Spring 1997) Independent Research. No longer living.
 *Timothy Minger (Summer 1995 to Spring 1996) Undergraduate Research Opportunities Program and paid Research Assistant. Obtained PhD in Dept. of Chemistry and Biochemistry at CU in 2005
 Stephanie Waugh (Spring and Fall 1995) Independent Research
 Christina Ives (Summer 1995) paid Research Assistant
 *Dan Moeller (Spring 1995 through Fall 1995) Funded proposal through BART training grant. Curator, Hoyt Arboretum, Portland, Oregon
 Brian Albrecht (Spring 1995) Independent Research
 Amy Keller (1994-1996) volunteer and paid Research Assistant
 Jay Maguire (1994) volunteer Research Assistant
 *Susan Kiley (Spring 1993) Independent Research
 Robert Kennedy (1993) volunteer Research Assistant
 Kyle Klimoski (Spring 1992) volunteer Research Assistant
 Mark Compton (1992) volunteer Research Assistant
 Mark Ohan (1992) volunteer Research Assistant
 Martin Schutz (1991) Independent Research
 *Matthias Volk (1989-1990) volunteer Research Assistant. Obtained PhD at Universität Basel.
 Jean Dodge (1989-1990) volunteer Research Assistant and Undergraduate Research Opportunities program
 *indicates co-author on a published paper

Undergraduate Honors Committees

Jenna E. Gallegos, Molecular, Cellular, & Developmental Biology, Fall 2011
 Tyson A. Burch, Economics, Spring 2007
 Sarah McPherson, EBIO, 2006-2007
 Douglas Bevan, Chemistry & Biochemistry, 2006-2007
 Elizabeth H. Frost, Molecular, Cellular, & Developmental Biology, Spring 2005
 Erin A. White, Molecular, Cellular, & Developmental Biology, Spring 2004
 Timothy Minger, Chemistry & Biochemistry, Spring 1999

Graduate Students

Jared Stewart, MA, 2012-present
 Tyson Burch, PhD, 2010-present
 Ricardo (Nick) Leyva, MA in 2009
 Matthew R. Dumlao, MA in 2009; Pursuing PhD at University of California at Davis
 MaryKay Herzenach, MA in 2009
 Amy Watson, 2005-2006; Pursuing PhD with Russell Monson
 Kristine E. Mueh, PhD in 2005
 C. Ryan Zarter, PhD in 2005
 Todd N. Rosenstiel, 1996-1999; Obtained PhD in EBIO with Russell Monson in 2004; Assistant Professor at Portland State University, 2006-present
 David H. Barker, PhD in 1999; Postdoctoral Fellow, Smithsonian Tropical Research Institute, Panama 1999-2000; Postdoctoral Fellow, Australian National University, 2001-2002; Postdoctoral Fellow, University of Nevada at Las Vegas, 2002 – 2005; Position with a company in Las Vegas, 2005-present
 Mark Longo, MAI in 1998; Pursuing PhD at Stanford University
 Amy S. Verhoeven, PhD in 1998; Associate Professor at University of St. Thomas, St. Paul, MN
 Barry A. Logan, PhD in 1997; Professor at Bowdoin College, Brunswick, Maine

Member of Thesis or Dissertation committees (other than those listed above)

Robert Baker (EBIO; 2007-2012; PhD)
 Chi-Chih Wu (EBIO; 2006-2012; PhD)
 Hanna Johansson Jänkänpää (Umeå Plant Science Centre, Sweden; 2011; PhD)

Carly Rixham (EBIO; 2009-2010; MA)
 Eric Madrid (EBIO; 2006-2008; PhD)
 Mark J. Bradburn (EBIO; 2004-2007; MA)
 Timothy E. Tomaszewski (Environmental Studies, UCD; 2004-2006; PhD)
 Michelle Wallar (Journalism; 2004-2005; MA)
 Hans Seelig (Aerospace Engineering; 2003-2005; PhD)
 Timothy Minger (Chemistry & Biochemistry, 2005; PhD)
 Karie Cherwin (EBIO; 2002 – 2003; PhD Candidate)
 David L. Mellman (EPOB; 2001-2003; MAI)
 Christopher Meloche (EPOB; 1995-2001; PhD)
 Graham Cummins (EPOB; 1997-1998; PhD Candidate)
 Kevin Horst (EPOB; 1992-1999; PhD Candidate)
 Kristine Mueh, (EPOB; 1996-1998; MAI)
 Tanya Falbel (Molecular, Cellular, and Development Biology; 1991-1994; PhD)
 Alexander Hoehn (Aerospace Engineering; 1989-1993; PhD)
 Charles Jaeger (EPOB; 1989-1993; PhD)

Graduate Students advised in my laboratory on joint projects (*indicates co-author on a published paper)

*Alexander Hoehn (Aerospace Engineering)
 Jennifer Grinspoon (Chemistry)
 *David Bowling (Engineering)
 Christopher Cowan (Molecular, Cellular, and Developmental Biology)
 *Tanya Falbel (Molecular, Cellular, and Developmental Biology)

Postdoctoral Research Associates

Onno Muller, 2011-present
 Christopher CoHu, 2011-present
 Anza Darehshouri, 2009-2011
 Jennifer Mathias, 2010
 Benoît Degrenne, 2009-2010
 Krishnaveni Kesanapalli, 2008-2010
 Volker Ebbert, 1996-2006, funded in part by a Feodor Lynen Fellowship from 1997-1999
 Véronique Amiard, 2003-2005
 Stephen C. Grace, 1994-1996, NSF postdoctoral fellowship; Associate Professor, University of Arkansas

Faculty hosted on Sabbatical Leave in our Laboratory

Professor William Henley, Oklahoma State University, 2009
 Professor Steven Cessna, Eastern Mennonite University, 2007-2008
 Professor Seok Chan Koh, Jeju National University (Korea), 2006-2007
 Professor Barry Logan, Bowdoin College, 2004

Service

Department of Ecology & Evolutionary Biology (2003-present) and Environmental, Population, and Organismic Biology (1990-2003), University of Colorado at Boulder

Graduate Student Committee, 1990-1992, 1997, 1999-2009, 2010-2013
 Scribe, 1993-2013
 Curriculum Committee, 2007-2013
 General Biology Committee, 2009-2013
 Comprehensive Review Committee, Samuel Flaxman, 2012
 Lead organizer and writer for ARPAC Question 3: *Undergraduate Education* (2011)
 Chair, Reappointment Committee for Stephanie Mayer, 2011
 Chair, Teaching Evaluation Committee, 2005-2010
 Chair, Reappointment Committee for John Basey, 2010
 General Biology Co-Coordinator (EBIO 1210-1220, science majors), 2007-2009
 Special Assignment to compile and analyze publication and citation data for comparative purposes among EBIO and peer departments at other institutions for the PRP, 2005
 Reappointment and Promotion to Senior Instructor Committee for Stephanie Mayer, 2003-2004
 Tenure and Promotion to Associate Professor Committee for Alan Townsend, 2003

Departmental Merit Committee, 2003, 2006, 2008, 2010, 2012
 Special Unit Merit Assignment, to compile and analyze publication, citation, and FCQ data for comparative purposes among departments, 2000
 Greenhouse Committee, 1994-2000
 Search Committee, Writing Instructor, 1999
 Chair, Greenhouse Committee 1998-1999
 Early Advising, 1991, 1993, 1996, 1998
 Colloquium Committee, 1994-1996
 Greenhouse Construction Committee, 1992-1994
 Advising Committee, 1992-1994

University of Colorado at Boulder

Pre-Health Advisory Committee, 2006-2013
 Crisp Fellowship Committee, Alpha of Colorado chapter of Phi Beta Kappa, 2002-2007, 2011-2013
 Learning Management System Strategy Team, 2008-2009
 Introductory Biology Task Force, 2008
 Member, Task Force in the Life Sciences, 2007
 Boulder Faculty Assembly committee for Excellence in Teaching Award, 2005 (attended lectures, 12 nominees)
 Search Committee, Director of Parking and Transportation Services, August – November 2005
 Participant, President's Learning Academy Planning Group, 6 June 2005, Fitzsimons Campus

Member, Editorial Review Board

Plant Biology, 2004-present; Section Editor (Ecophysiology) 2002 – 2003
 Tree Physiology, 1999, 2005

MCAT Science Content Respondent for CU (with assistance from S. Flaxman), Fall 2009

Service on Federal Granting Agency Panels

Plant Responses to the Environment panel meeting, United States Department of Agriculture, Washington, DC, 26-29 March 2001

Invited to serve on the Plant Responses to the Environment Panel (USDA) in March 2002

Invited to serve on the National Science Foundation panels:

Ecological and Evolutionary Physiology; Population Biology and Physiological Ecology

Reviewer of proposals to:

National Science Foundation (**NSF**); Department of Agriculture (**USDA**); Department of Energy (**DOE**)

Reviewer for the journals:

Advances in Horticultural Research	Journal of Experimental Botany
American Journal of Botany	Journal of Plant Research
Arctic and Alpine Research	Oecologia
Arctic, Antarctic, and Alpine Research	Planta
Australian Journal of Plant Physiology	Plant Biology
Biochimica et Biophysica Acta	Plant Physiology
Botanica Acta	Photosynthesis Research
Canadian Journal of Botany	Physiologia Plantarum
Ecology	Plant, Cell and Environment
Functional Ecology	Tree Physiology
Functional Plant Biology	Trends in Plant Science
Global Change Biology	

Community Service

-16 March 2013. Presentation on Genetically Engineering Organisms for Middle and High School teachers. Teaching Controversial Topics workshop, Boulder, CO

-8-9 December 2011. Provided testimony on genetically engineered crops before the Boulder County Commissioners as they considered the adoption of a new Cropland Policy on the planting of crops on Boulder County Open Space

- 7 May 2009. Presentation to AP Biology class on Plant Physiology and Response to the Environment, Boulder High School
- 22 April 2007. Participant in the Volunteer Day "Better Boulder Better World" sponsored by the CU Volunteer Clearing House for the Celebration of Earth Day. 5 hours of creating outdoor habitats for rescued reptiles. Colorado Reptile Humane Society, Longmont, Colorado
- 11 March 2005, 90 minute presentation to a Fort Collins high school biology class on the physiology and ecology of plants with Crassulacean Acid Metabolism.
- 8 September 2004, responded to reporter for the Dailey Camera, who sought my input on autumnal changes in plants.
- 20th and 23rd of September 2002, responded to Ron Bain, a reporter for the Boulder Weekly, who sought my input about various issues with respect to the genetic engineering of plants.
- March 2002, Science Fair Judge, Bixby School
- August 2000, Presentation on the plant and animal life of Australia, Bixby School.
- March 1999, Science Fair Judge, Bixby School
- 1998, Responded to an email request from Beverly Wachtel of *Earth & Sky Radio* for information pertaining to the question of a listener: "What would happen if all the plants disappeared?" Provided a detailed answer that included the role of plants in climatic stability, in atmospheric processes, in geologic processes, in the biosphere, and their importance to humans.
- Autumn 1997, Presentation on the geography and plant & animal life of Australia, Bixby School.

CURRICULUM VITAE

Barbara Demmig-Adams

Professor, Department of Ecology & Evolutionary Biology (<http://ebio.colorado.edu/>)
 Affiliate of the Renewable and Sustainable Energy Institute (RASEI; <http://rasei.colorado.edu/>)
 Project Investigator of the Colorado Center for Biorefining and Biofuels (C2B2;
<http://www.c2b2web.org/>)
 Faculty Mentor for the Interdisciplinary Quantitative Biology (IQ-Biology) Program
 (<http://cimb.colorado.edu/education/iq-biology/iq-biology>)
 Member, College of Arts & Sciences Honors Council
 University of Colorado at Boulder
 Boulder, Colorado 80309-0334
 Phone: (303) 492-5541
 FAX: (303) 492-8699
 e-mail: Barbara.Demmig-Adams@colorado.edu
 Homepage: http://www.colorado.edu/eeb/facultysites/adams_demmig-adams/

Academic Positions

1998 Promotion to Professor, University of Colorado
 1994-98 Associate Professor, University of Colorado
 1994 Visiting Fellow, Research School of Biological Sciences, Australian Natl. University
 1990-94 Assistant Professor, University of Colorado
 1989-90 Research Associate, University of Colorado
 1986-89 Habilitation candidate, Department of Botany, University of Würzburg, Germany

Postgraduate Education

1986-89 Dr. rer. nat. habil. in Plant Biology (degree awarded in German academic system
 after international review of research and teaching); University of Würzburg,
 Germany
 1984-86 Postdoctoral Fellow, Department of Plant Biology, Carnegie Institution of
 Washington, Stanford, CA

Undergraduate and Graduate Education (University of Würzburg, Germany)

1980-84 Dr. rer. nat. (equivalent to PhD) in Botany
 1974-79 Staatsexamen in Biology (similar to BA/MA in US system) and Chemistry (similar
 to BA in US system)

Awards and Recognition

- Election to *Leopoldina*, the National Academy of Sciences of Germany, Austria, & Switzerland,
 May 2011
- The Boulder Faculty Assembly Excellence in Teaching Award 2010-2011
- Honored (10/2010) for one of the 25 “classic” papers (“most influential papers ever published”)
 in Plant Physiology (<http://www.plantphysiol.org/misc/classics.dtl>)
- Certificate of Appreciation 2008 for work with students with disabilities from Disabilities
 Services at CU
- CU-LEAD Scholar 2008 (Award to honor faculty recognized by traditionally underrepresented
 CU-LEAD students for having a significant influence on their success at CU Boulder; CU-
 LEAD Alliance=Alliance for Leadership, Excellence, Achievement, and Diversity)

- The Boulder Faculty Assembly Excellence in Research, Scholarly, and Creative Work Award 2006-2007
- Highly Cited Researcher* (<0.5% of publishing researchers) in the Plant & Animal Science category by the Institute for Scientific Information (<http://isihighlycited.com/>); 10,900 citations of 96 (from among >130 total) papers (h-index 48, i.e. 48 papers received at least 48 citations each) in the ISI Web of Science on 03/05/2013 for Demmig-Adams B OR Demmigadams B OR Demmig B
- Two papers among the top five honored as the most highly cited during the previous ten years in the Australian Journal of Plant Physiology (January 2003 issue of Functional Plant Biology).
- One paper among the top twenty honored as most highly cited during the 30 years Australian Journal of Plant Physiology / Functional Plant Biology have been published (March 2003 issue of Functional Plant Biology)
- Faculty Fellowship, University of Colorado, Jan 1997 to Dec 1997
- Fellowship in Science and Engineering from the *David and Lucile Packard Foundation*, Oct 1992 to Oct 1997
- "*The Academy Award for Biology 1987*" from the Academy of Sciences at Göttingen, Germany, Nov 1987
- Postdoctoral Fellowship from the Carnegie Corporation of New York, Nov 1985 to Apr 1986
- Postdoctoral Fellowship from the McKnight Foundation, Mar 1985 to Nov 1985
- Postdoctoral Fellowship from the *Deutsche Forschungsgemeinschaft* (DFG), Mar 1984 to Mar 1985

Grants Funded

Pending:

- NSF Directorate for Engineering-Emerging Frontiers in Research and Innovation-Photosynthetic Biorefineries (PSBR): Photosynthetic Polycultures as Feedstock Producers for Sustainable Biorefined Microbial Fuels and Products. (\$1,999,667; pre-proposal state) PI with Ralph Jimenez (JILA, Chemistry & Biochemistry), Brett Melbourne, William M. Lewis, Jr., Richard Noble (Chemical and Biological Engineering)

Current:

- Increasing Teaching Effectiveness in Ecology and Evolutionary Biology (2011-2014). \$480,000 from the Science Education Initiative at the University of Colorado. Co-PI with Andrew Martin, William Adams, Nichole Barger, John Basey, and Samuel Flaxman
- Developing a Roadmap to the Diatoms with Greatest Oil Production (2011-2013). \$44,000 from the Office of the VCR Innovative Seed Program at the University of Colorado. Co-PI with Pat Kocielek, Ralph Jimenez, William Adams & William Lewis
- EAGER: Assessing Functional Diversity of Algal Communities at the Single Cell Level with a Compact Multi-function Microfluidic Cytometer (2011-2012). \$205,000 from the National Science Foundation. PI, with William Adams, Ralph Jimenez & William Lewis
- Collaborative Research (*Arabidopsis* 2010): Ecological Genomics of Adaptation to the Environment (2010-2014). \$3,154,225 from the National Science Foundation. PI with William Adams for CU-Boulder portion (\$587,908 to the University of Colorado); PIs for MSU portion Douglas Schemske & Michael Thomashow; PI for CSU portion John McKay
- Novel Genetic Dissection of Temperature Tolerance in the Model Plant *Arabidopsis* (2010-Present). \$43,750 from the Office of the VCR Innovative Seed program at CU-Boulder. PI (collaborators William Adams & Douglas Schemske, MSU)

-Photosynthesis and Phloem Anatomy (2009-2013). \$486,203 from the National Science Foundation, PI, with William Adams

Previous:

-Extractive Photobioreactor (2011-2012). \$524,819 from ConocoPhillips Company. Co-PI with John Pellegrino (Mechanical Engineering, CU-Boulder), Robert Davis (Dean, Engineering & Applied Science, CU-Boulder) & William Adams

-Optimization of Light Use Efficiency for Algal Production of Glycerol as a Precursor for Transport Fuels (2009-2010). \$219,193 from ConocoPhillips Company. PI, with William Adams

-Defining a Mechanistic Link Between Stand Thinning, Drought Stress, and Risk of Mortality from Pine Bark Beetles in Californian Yellow Pine (2007-2010). CU's portion \$157,020 from the United States Department of Agriculture. PI, with William Adams (PIs for CA portion Nancy Grulke & Steve Seybold)

-Identification of Novel Biomolecules for Improved Biological Production of Alternative Fuels from Solar Energy (2007-2008). \$40,000 from the Energy Initiative University of Colorado / NREL Seed Grant Program. PI, with William Adams, Matthew Posewitz (CSM), and Michael Seibert (NREL)

-Towards the Establishment of a Novel Role of the Carotenoid Zeaxanthin in Signaling (2007-2008). \$7,000 as Grant-In-Aid from CRCW at CU-Boulder

-Supplementary Research Opportunity Award to Collaborative Research: Photosynthetic Acclimation, Photoprotection, and Phloem Loading (2005-2007) \$24,952 from the National Science Foundation. Co-PI, with William Adams

-Collaborative Research: Photosynthetic Acclimation, Photoprotection, and Phloem Loading (2003-2007). \$454,007 from the National Science Foundation. Co-PI, with William Adams (PI for Cornell portion, Robert Turgeon)

-Seasonal Changes in the Productivity of Evergreen Forests: Toward an Understanding of what it Takes to be "Evergreen" and How Seasonal Changes are Orchestrated (2002-2005). \$260,000 from the Andrew W. Mellon Foundation. Co-PI, with William Adams

-Protein Phosphorylation and Xanthophyll Cycle Dynamics dependent on Lifeform" (2000-2003) \$150,000 from the United States Department of Agriculture. PI, with W. Adams

-Protein Phosphorylation and Photoprotection during Winter Stress (1999-2001) \$100,000 from the National Science Foundation. Co-PI, with William Adams

-Photoprotection during Winter Stress (1996-1998) \$200,486 from the National Science Foundation. Co-PI, with William Adams

-Biosphere/Atmosphere Interactions: Biochemical Causes to Global Implications (1994-1999) \$1,699,837 from the National Science Foundation. Co-PI, with 21 other investigators

-Faculty Fellowship (1997) \$51,229 (plus \$3,787 in Grants-in-Aid) from the University of Colorado Council on Research and Creative Work.

-Interaction of Photoprotective Processes in Plants (1994-1997) \$185,000 from the United States Department of Agriculture. PI, with William Adams

-Replacement and Modernization of Greenhouse Facilities (1994-1996) \$202,500 from the National Science Foundation. Co-PI, with 4 other investigators

-Fellowship in Science and Engineering from the David and Lucile Packard Foundation (1992-1997) \$500,000.

-Carotenoids and Photoprotection in CAM Plants (1992-1995) \$126,000 from the National Science. Co-PI, with William Adams

- Improvement of Laboratories in Plant Physiology and Plant Ecophysiology at the University of Colorado in Boulder (1993-1994) \$90,000 from the National Science Foundation and the University of Colorado. Co-PI, with 2 other investigators
- The Relative Roles of Photoprotective Energy Dissipation and Repair Processes in Plants under High Light Stress (1992-1993) \$4,500 from the University of Colorado Council on Research and Creative Work.
- Remote Sensing of Actual Photosynthesis Rates of Vegetation under Changing Environmental Conditions (1991-1992) \$17,971 from the University of Colorado Global Change & Environmental Quality Program.
- Carotenoids and Photoprotection in Various Crop Species (1990-1992) \$100,000 from the United States Department of Agriculture. PI, with William Adams
- Purchase of Nine Controlled Environment Growth Chambers (1990-1991) \$113,015 from the National Science Foundation. Co-PI, with 5 other investigators

List of Publications

***undergraduate student; *graduate student; (###) running count of publications*

(For a suite of manuscripts in preparation, see separate section below on "publications in preparation [data collection complete]")

- SUMAN P, MULLER O, SCHUMANN T, DEMMIG-ADAMS B, ADAMS WW III, JAHNS O, HOLWARTH AR 2014 Light-induced reorganization of plant's thylakoids provides photoprotection. *Nature Communications*, under review
- DEMMIG-ADAMS B, KOH SC, COHU CM, MULLER O, ADAMS WW III 2014 NPQ in contrasting plant species and environments. *In* DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, under review
- (140) DEMMIG-ADAMS B, COHU CM, MULLER O, ADAMS WW III 2014 NPQ and the trade-off between abiotic and biotic defense. *In* DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, under review
- ADAMS WW III, MULLER O, COHU CM, DEMMIG-ADAMS B 2014 PSII efficiency and NPQ in the context of source-sink balance. *In* DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, under review
- LOGAN BA, DEMMIG-ADAMS B, ADAMS WW III, BILGER W 2014 Context, quantification, and measurement guide for NPQ. *In* DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, under review
- DEMMIG-ADAMS B, ADAMS WW III 2014 Associating non-photochemical quenching with zeaxanthin. *In* DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, under review

- ADAMS WW III, MULLER O, COHU CM, DEMMIG-ADAMS B 2013 May photoinhibition in plants be a consequence, rather than a cause, of limited productivity? Photosynthesis Research, under review
- OH S, ADAMS III WW, DEMMIG-ADAMS B, AND KOH SC (2013) Seasonal photoprotective responses in needles of Korean fir (*Abies koreana*) over an altitudinal gradient on Mt. Halla, Jeju Island, Korea. Arctic, Antarctic and Alpine Research, in press
- **ADAMS RB, DEMMIG-ADAMS B 2013 Impact of Contrasting Food Sources on Health Versus Environment. Nutrition & Food Science 43 (3), in press
- DEMMIG-ADAMS B, COHU CM, AMIARD V, VAN ZADELHOFF G, VELDINK GA, MULLER O, ADAMS WW III 2013 Emerging Trade-offs – Impact of Photoprotectants (PsbS, Xanthophylls, and Vitamin E) on Oxylipins as Regulators of Development and Defense. New Phytologist **197**, 720-729
- DEMMIG-ADAMS B, COHU CM, ADAMS WW III 2012 Dealing with the Hazards of Harnessing Sunlight. Nature Education Knowledge 4(1):18
<<http://www.nature.com/scitable/knowledge/library/dealing-with-the-hazards-of-harnessing-sunlight-83031977>>
- *DUMLAO MR, DAREHSHOURI A, COHU CM, MULLER O, MATHIAS J, ADAMS WW III, DEMMIG-ADAMS B 2012 Low temperature acclimation of photosynthetic capacity and leaf morphology in the context of phloem loading type. Photosynthesis Research **113**, 181-189 <doi:10.1007/s11120-012-9762-5>
- (130) DEMMIG-ADAMS B, COHU CM, MULLER O, ADAMS WW III 2012 Modulation of photosynthetic energy conversion efficiency in nature: from seconds to seasons. Photosynthesis Research **113**, 75-88 <doi:10.1007/s11120-012-9761-6>
- DEMMIG-ADAMS B, C *RIXHAM CS, ADAMS WW III 2012 Carotenoids. In McGraw-Hill Encyclopedia of Science & Technology, 11th edition, Vol. 3, pp. 549-555, McGraw-Hill, New York
- ADAMS WW III, DEMMIG-ADAMS B 2012 Photoprotection in plants. In McGraw-Hill Encyclopedia of Science & Technology, 11th edition, Vol. 3, pp. 490-493. McGraw-Hill, New York
- DEMMIG-ADAMS B, ADAMS WW III 2010 Overview of diet-gene interaction and the example of xanthophylls. In MT Giardi, G Rea, B Berra (eds) Bio-Farms for Nutraceuticals: Functional Food and Safety Control by Biosensors. Landes BioScience Publisher/Springer, Texas. Advances in Experimental Medicine and Biology **698**, 17-26
- CESSNA S, ADAMS WW III, DEMMIG-ADAMS B 2010 Exploring photosynthesis and plant stress using inexpensive chlorophyll fluorometers. Journal of Natural Resources and Life Sciences Education **39**, 22-30
- BERTHIER A, DESCLOS M, AMIARD V, MORVAN-BERTRAND A, DEMMIG-ADAMS B, ADAMS WW III, TURGEON R, PRUD'HOMME M-P, NOIRAUD-ROMY N 2010 Activation of sucrose transport in defoliated *Lolium perenne* L.: an example of apoplastic phloem loading plasticity. Plant and Cell Physiology **50**, 357-365
- KOH SC, DEMMIG-ADAMS B, ADAMS WW III 2009 Novel patterns of seasonal photosynthetic acclimation, including interspecific differences, in conifers over an altitudinal gradient. Arctic, Antarctic, and Alpine Research **41**(3), 317-322
- DEMMIG-ADAMS B, ADAMS WW III, MATTOO AK (eds) 2008 Photoprotection, Photoinhibition, Gene Regulation, and Environment. Advances in Photosynthesis and Respiration, Volume 21. Springer, Dordrecht. Paperback edition.

- DEMMIG-ADAMS B, *DURLAO MR, *HERZENACH MK, ADAMS WW III 2008 Acclimation. *In* SE Jørgensen and BD Fath (eds) Behavioral Ecology. Encyclopedia of Ecology, pp 15-23. Elsevier, Oxford
- (120) *TAYLOR SR, DEMMIG-ADAMS B 2007 To sip or not to sip: The potential health risks and benefits of coffee drinking. *Nutrition & Food Science*, **37**(6), 406-418
- DEMMIG-ADAMS B, **CARTER J 2007 Interaction among diet, genes, and exercise affects athletic performance and risk for chronic disease. *Nutrition & Food Science* **37**(5), 306-312
- LOGAN BA, ADAMS WW III, DEMMIG-ADAMS B 2007 Avoiding common pitfalls of chlorophyll fluorescence analysis in the field. *Functional Plant Biology* **34**, 853-859 <doi:10.1071/FP07113>
- **WILSON EA, DEMMIG-ADAMS B 2007 Antioxidant, Anti-inflammatory, and Antimicrobial Properties of Garlic and Onions. *Nutrition & Food Science* **37**(3), 178-183 (Recipient of Emerald LiteratiNetwork 2008 Outstanding Paper Award)
- ADAMS WW III, WATSON AM, MUEH KE, AMIARD V, TURGEON R, EBBERT V, LOGAN BA, **COMBS AF, DEMMIG-ADAMS B 2007 Photosynthetic acclimation in the context of structural constraints to carbon export from leaves. *Photosynthesis Research* **94**, 455-466 <doi: 10.1007/s11120-006-9123-3>
- **TRAN E, DEMMIG-ADAMS B 2007 Vitamins and minerals: Powerful medicine or potent toxins? *Nutrition & Food Science* **37**(1), 50-60
- AMIARD V, DEMMIG-ADAMS B, *MUEH KE, TURGEON R, **COMBS AF, ADAMS WW III 2007 Role of light and jasmonic acid signaling in regulating foliar phloem cell wall ingrowth development. *New Phytologist* **173**: 722-731 <doi: 10.1111/j.1469-8137.2006.01954.x>
- DEMMIG-ADAMS B, ADAMS WW III 2006 Photoprotection in an ecological context: the remarkable complexity of thermal dissipation. *New Phytologist* **172**, 11-21 <doi: 10.1111/j.1469-8137.2006.01835.x>
- *ZARTER CR, ADAMS WW III, EBBERT V, **CUTHBERTSON, D ADAMSKA I, DEMMIG-ADAMS B 2006 Winter downregulation of intrinsic photosynthetic capacity coupled with upregulation of Elip-like proteins and persistent energy dissipation in a subalpine forest. *New Phytologist* **172**, 272-282 <doi: 10.1111/j.1469-8137.2006.01815.x>
- *ZARTER CR, DEMMIG-ADAMS B, EBBERT V, ADAMSKA I, ADAMS WW III 2006 Photosynthetic capacity and light harvesting efficiency during the winter-to-spring transition in subalpine conifers. *New Phytologist* **172**, 283-292 <doi: 10.1111/j.1469-8137.2006.01816.x>
- (110) DEMMIG-ADAMS B, EBBERT V, *ZARTER CR, ADAMS WW III 2006 Characteristics and species-dependent employment of flexible versus sustained thermal dissipation and photoinhibition. *In* B Demmig-Adams, WW Adams III, AK Mattoo (eds) Photoprotection, Photoinhibition, Gene Regulation, and Environment. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, pp. 39-48
- ADAMS WW III, *ZARTER CR, *MUEH KE, AMIARD V, DEMMIG-ADAMS B 2006 Energy dissipation and photoinhibition: a continuum of photoprotection. *In* B Demmig-Adams, WW Adams III, AK Mattoo (eds) Photoprotection, Photoinhibition, Gene Regulation, and Environment. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht, pp. 49-64
- DEMMIG-ADAMS B, EBBERT V, *MELLMAN DL, *MUEH KE, **SCHAFFER L, FUNK C, *ZARTER CR, ADAMSKA I, JANSSON S, ADAMS WW III 2006 Modulation of PsbS and flexible versus sustained energy dissipation by light environment in different species. *Physiologia Plantarum* **127**, 670-680 <doi: 10.1111/J.1399-3054.2006.00698.X>

- *ZARTER CR, ADAMS WW III, EBBERT V, ADAMSKA I, JANSSON S, DEMMIG-ADAMS B 2006 Winter acclimation of PsbS and related proteins in the evergreen *Arctostaphylos uva-ursi* as influenced by altitude and light environment. *Plant, Cell and Environment* **29**, 869-878 <doi: 10.1111/j.1365-3040.2005.01466.x>
- DEMMIG-ADAMS B 2005 Linking the xanthophyll cycle with photoprotective energy dissipation. *In* Govindjee, JT Beatty, H Gest, JF Allen (eds) *Discoveries in Photosynthesis*. Springer, Dordrecht, pp. 923-930
- MACCARRONE M, BARI M, GASPERI V, DEMMIG-ADAMS B 2005 The photoreceptor protector zeaxanthin induces cell death in neuroblastoma cells. *Anticancer Research* **25**, 3871-3876
- **DANI J, **BURRILL C, DEMMIG-ADAMS B 2005 The remarkable role of nutrition in learning and behaviour. *Nutrition & Food Science* **35**(4), 258-263
- **MCCAULEY L, DEMMIG-ADAMS B 2005 Breast cancer, Asian diet, and soy genistein – a matter of all or nothing? *Nutrition & Food Science* **35**(1), 28-34
- DEMMIG-ADAMS B, **MCCAULEY L 2005 Breast cancer, estrogen, and other dietary factors – towards an understanding of their mechanistic interactions. *Nutrition & Food Science* **35**(1), 35-42
- AMIARD V, *MUEH KE, DEMMIG-ADAMS B, EBBERT V, TURGEON R, ADAMS WW III 2005 Anatomical and photosynthetic acclimation to the light environment in species with differing mechanisms of phloem loading. *Proceedings of the National Academy of Science USA* **102**, 12968-12973 <www.pnas.org/cgi/doi/10.1073/pnas.0503784102>
- (100) ADAMS WW III, AMIARD VSE, *BACHMANN KEM, TURGEON R, DEMMIG-ADAMS B 2005 Phloem loading type and photosynthetic acclimation to light. *In* A van der Est, D Bruce (eds) *Photosynthesis: Fundamental Aspects to Global Perspectives*. Allen Press, Lawrence, pp. 814-816
- DEMMIG-ADAMS B, EBBERT V, ADAMS WW III 2005 Photoinhibition in evergreens: Involvement of sustained thermal dissipation and PSII protein phosphorylation. *In* A van der Est, D Bruce (eds) *Photosynthesis: Fundamental Aspects to Global Perspectives*. Allen Press, Lawrence, pp. 634-636
- EBBERT V, ADAMS WW III, MATTOO AK, SOKOLENKO A, DEMMIG-ADAMS B 2005 Upregulation of a PSII core protein phosphatase inhibitor and sustained D1 phosphorylation in zeaxanthin-retaining, photoinhibited needles of overwintering Douglas fir. *Plant, Cell & Environment* **28**, 232-240
- **HERDER R, DEMMIG-ADAMS B 2004 The power of a balanced diet and lifestyle in preventing cardiovascular disease. *Nutrition in Clinical Care* **7**(2), 46-55
- *BACHMANN KM, EBBERT V, ADAMS WW III, *VERHOEVEN AS, *LOGAN BA, DEMMIG-ADAMS B 2004 Effects of lincomycin on PSII efficiency, non-photochemical quenching, D1 protein and xanthophyll cycle during photoinhibition and recovery. *Functional Plant Biology* **31**(8), 803-813
- ADAMS WW III, B DEMMIG-ADAMS B 2004 Chlorophyll fluorescence as a tool to monitor plant response to the environment. *In* GC Papageorgiou, Govindjee (eds) *Chlorophyll a Fluorescence: A Signature of Photosynthesis*. Advances in Photosynthesis. Volume 19. Springer, Dordrecht, pp. 583-604
- DEMMIG-ADAMS B, EBBERT V, ADAMS WW III 2004 Stress and Photosynthesis. *In* RM Goodman (ed) *Encyclopedia of Plant & Crop Science*, Marcel Dekker, New York, pp. 901-905
- ADAMS WW III, *ZARTER CR, EBBERT V, DEMMIG-ADAMS B 2004 Photoprotective strategies of overwintering evergreens. *BioScience* **54**, 41-49

- DEMMIG-ADAMS B, ADAMS WW III 2003 Photoinhibition. *In* B Thomas, D Murphy, B Murray (eds) Encyclopedia of Applied Plant Science: Environmental Regulation of Growth and Development, Academic Press, London, pp. 707-714
- DEMMIG-ADAMS B, ADAMS WW III 2003 Photoprotection against excess light via zeaxanthin-dependent energy dissipation. *In* W Larcher (ed) Physiological Plant Ecology. Ecophysiology and Stress Physiology of Functional Groups, 4th edition. Springer, Berlin, pp. 359-361 and 501-502
- (90) DEMMIG-ADAMS B 2003 Linking the xanthophyll cycle with photoprotective energy dissipation. *Photosynthesis Research* **76**, 73-80
- *BARKER DH, ADAMS WW III, DEMMIG-ADAMS B, LOGAN BA, *VERHOEVEN AS, SMITH SD 2002 Nocturnally retained zeaxanthin does not remain engaged in a state primed for energy dissipation during the summer in two *Yucca* species growing in the Mojave Desert. *Plant, Cell and Environment* **25**, 95-103
- ADAMS WW III, *ROSENSTIEL TN, DEMMIG-ADAMS B, EBBERT V, **BRIGHTWELL AK 2002 Photosynthesis and photoprotection in overwintering plants. *Plant Biology* **4**, 545-557
- DEMMIG-ADAMS B, ADAMS III WW 2002 Antioxidants in photosynthesis and human nutrition. *Science* **298**, 2149-2153
- DEMMIG-ADAMS B, WW ADAMS III 2001 Starklichtstreß: Photoprotektion durch Umwandlung der Xanthophylle. *In* W Larcher (ed) Ökophysiologie der Pflanzen. 6th edition. Eugen Ulmer, Stuttgart, pp 293-295
- ADAMS WW III, DEMMIG-ADAMS B, *ROSENSTIEL TN, EBBERT V 2001 Dependence of photosynthesis and energy dissipation activity upon growth form and light environment during the winter. *Photosynthesis Research* **67**, 51-62
- EBBERT V, DEMMIG-ADAMS B, ADAMS WW III, *MUEH KE, STAEHELIN LA 2001 Correlation between persistent forms of zeaxanthin-dependent energy dissipation and thylakoid protein phosphorylation. *Photosynthesis Research* **67**, 63-78
- ADAMS WW III, DEMMIG-ADAMS B, *ROSENSTIEL TN, EBBERT V, **BRIGHTWELL AK, *BARKER DH, *ZARTER CR 2001 Photosynthesis, xanthophylls, and D1 phosphorylation under winter stress. *In* PS2001 Proceedings: 12th International Congress on Photosynthesis. CSIRO Publishing: Melbourne, Australia, 2001. Available at <http://www.publish.csiro.au/ps2001>
- DEMMIG-ADAMS B, ADAMS III WW 2000 Photosynthesis – harvesting sunlight safely. *Nature* **403**, 371-374
- ADAMS WW III, DEMMIG-ADAMS B, *LOGAN BA, *BARKER DH, OSMOND CB 1999 Rapid changes in xanthophyll cycle-dependent energy dissipation and photosystem II efficiency in two vines, *Stephania japonica* and *Smilax australis*, growing in the understory of an open *Eucalyptus* forest. *Plant, Cell & Environment* **22**, 125-136
- (80) *VERHOEVEN AS, ADAMS WW III, DEMMIG-ADAMS B 1999 The xanthophyll cycle and acclimation of *Pinus ponderosa* and *Malva neglecta* to winter stress. *Oecologia* **118**, 277-287
- *VERHOEVEN AS, ADAMS WW III, DEMMIG-ADAMS B, CROCE R, BASSI R 1999 Xanthophyll cycle pigment localization and dynamics during exposure to low temperatures and light stress in low and high light-acclimated *Vinca major*. *Plant Physiology* **120**, 727-737
- *LOGAN BA, *ROSENSTIEL TN, DEMMIG-ADAMS B, ADAMS WW III 1999 Effect of nitrogen limitation on foliar antioxidants in relationship to other metabolic characteristics. *Planta* **209**, 213-220
- *LOGAN BA, DEMMIG-ADAMS B, ADAMS WW III 1999 Acclimation of photosynthesis to the environment. *In* GS Singhal, G Renger, SK Sopory, K-D Irrgang, Govindjee (eds)

- Concepts in Plant Photobiology: Photosynthesis and Photomorphogenesis. Narosa Publishing House, New Dehli, India, pp 477-512
- DEMMIG-ADAMS B, ADAMS WW III, EBBERT V, *LOGAN BA 1999 Ecophysiology of the xanthophyll cycle. *In* HA Frank, AJ Young, G Britton, RJ Cogdell (eds) The Photochemistry of Carotenoids. Advances in Photosynthesis vol. 8. Kluwer, Dordrecht, pp 245-269
- *BARKER DH, *LOGAN BA, ADAMS WW III, DEMMIG-ADAMS B 1998 Photochemistry and xanthophyll cycle-dependent energy dissipation in differently oriented cladodes of *Opuntia stricta* during the winter. Australian Journal of Plant Physiology **25**, 95-104
- DEMMIG-ADAMS B, **MOELLER DL, *LOGAN BA, ADAMS WW III 1998 Positive correlation between levels of retained zeaxanthin + antheraxanthin and degree of photoinhibition in shade leaves of *Schefflera arboricola* (Hayata) Merrill. *Planta* **205**, 367-374
- DEMMIG-ADAMS B 1998 Survey of thermal energy dissipation and pigment composition in sun and shade leaves. *Plant and Cell Physiology* **39**, 474-482
- *LOGAN BA, GRACE SC, ADAMS WW III, DEMMIG-ADAMS B 1998 Seasonal acclimation of xanthophyll cycle and antioxidants in *Mahonia repens* growing in different light environments. *Oecologia* **116**, 9-17
- *LOGAN BA, DEMMIG-ADAMS B, ADAMS WW III, GRACE SC 1998 Antioxidants and xanthophyll cycle-dependent energy dissipation in *Cucurbita pepo* and *Vinca major* acclimated to four growth PPFs in the field. *Journal of Experimental Botany* **49**, 1869-1879
- (70) *LOGAN BA, DEMMIG-ADAMS B, ADAMS WW III 1998 Antioxidants and xanthophyll cycle-dependent energy dissipation in *Cucurbita pepo* and *Vinca major* upon a sudden increase in growth PPF in the field. *Journal of Experimental Botany* **49**, 1881-1888
- *VERHOEVEN AS, ADAMS WW III, DEMMIG-ADAMS B 1998 Two forms of sustained xanthophyll cycle-dependent energy dissipation in overwintering *Euonymus kiautschovicus*. *Plant, Cell & Environment* **21**, 893-903
- *LOGAN BA, *BARKER DH, ADAMS WW III, DEMMIG-ADAMS B 1997 The response of xanthophyll cycle-dependent energy dissipation to sunflecks in a subtropical rainforest. *Australian Journal of Plant Physiology* **24**, 27-33
- *VERHOEVEN AS, DEMMIG-ADAMS B, ADAMS WW III 1997 Enhanced employment of the xanthophyll cycle and thermal energy dissipation in spinach exposed to high light and N stress. *Plant Physiology* **113**, 317-324
- DEMMIG-ADAMS B, ADAMS WW III 1996 The role of xanthophyll cycle carotenoids in the protection of photosynthesis. *Trends in Plant Science* **1**, 21-26
- DEMMIG-ADAMS B, GILMORE A, ADAMS WW III 1996 *In vivo* functions of carotenoids in higher plants. *The FASEB Journal* **10**, 403-412
- DEMMIG-ADAMS B, ADAMS WW III 1996 Xanthophyll cycle and light stress in nature: uniform response to excess direct sunlight among higher plant species. *Planta* **198**, 460-470
- *VERHOEVEN AS, ADAMS WW III, DEMMIG-ADAMS B 1996 Close relationship between the state of the xanthophyll cycle and photosystem II efficiency during recovery from winter stress. *Physiologia Plantarum* **95**, 567-576
- *LOGAN BA, *BARKER DH, ADAMS WW III, DEMMIG-ADAMS B 1996 Acclimation of leaf carotenoid composition and ascorbate levels to gradients in the light environment within an Australian rainforest. *Plant, Cell & Environment* **19**, 1083-1090
- (60) DEMMIG-ADAMS B, ADAMS WW III 1996 Chlorophyll and carotenoid composition in leaves of *Euonymus kiautschovicus* acclimated to different degrees of light stress in the field. *Australian Journal of Plant Physiology* **23**, 649-659

- DEMMIG-ADAMS B, ADAMS WW III, *BARKER DH, *LOGAN BA, *BOWLING DL, *VERHOEVEN AS 1996 Using chlorophyll fluorescence to assess the fraction of absorbed light allocated to thermal dissipation of excess excitation. *Physiologia Plantarum* **98**, 253-264
- ADAMS WW III, DEMMIG-ADAMS B, *BARKER DH, **KILEY S 1996 Carotenoids and photosystem II characteristics of upper and lower halves of leaves acclimated to high light. *Australian Journal of Plant Physiology* **23**, 669-677
- ADAMS WW III, DEMMIG-ADAMS B 1996 Energy dissipation and the xanthophyll cycle in CAM plants. *In* K Winter, JAC Smith (eds) *Crassulacean Acid Metabolism. Biochemistry, Ecophysiology and Evolution. Ecological Studies vol. 114.* Springer, Berlin, pp 97-114
- ADAMS WW III, **HOEHN A, DEMMIG-ADAMS B 1995 Chilling temperatures and the xanthophyll cycle. A comparison of warm-grown and overwintering spinach. *Australian Journal of Plant Physiology* **22**, 75-85
- DEMMIG-ADAMS B, ADAMS WW III, *LOGAN BA, *VERHOEVEN AS 1995 Xanthophyll cycle-associated energy dissipation and flexible PSII efficiency in plants acclimated to light stress. *Australian Journal of Plant Physiology* **22**, 249-260
- ADAMS WW III, DEMMIG-ADAMS B, *VERHOEVEN AS, *BARKER DH 1995 'Photoinhibition' during winter stress: Involvement of sustained xanthophyll cycle-associated energy dissipation. *Australian Journal of Plant Physiology* **22**, 261-276
- DEMMIG-ADAMS B, ADAMS WW III 1994 Capacity for photoprotective energy dissipation in leaves with different xanthophyll cycle pools. *Australian Journal of Plant Physiology* **21**, 575-588
- ADAMS WW III, DEMMIG-ADAMS B 1994 Carotenoid composition and down regulation of photosystem II in three conifer species during the winter. *Physiologia Plantarum* **92**, 451-458
- ADAMS WW III, DEMMIG-ADAMS B 1994 The xanthophyll cycle and sustained thermal energy dissipation activity in *Vinca minor* and *Euonymus kiautschovicus* during the winter. *Plant, Cell & Environment* **18**, 117-127
- (50) BJÖRKMAN O, DEMMIG-ADAMS B 1994 Regulation of photosynthetic light energy capture, conversion and dissipation in leaves of higher plants. *In* E-D Schulze, MM Caldwell (eds) *Ecophysiology of Photosynthesis. Ecological Studies 100,* Springer Verlag, Berlin, pp 17-47
- DEMMIG-ADAMS B, ADAMS WW III 1994 Light stress and photoprotection related to the xanthophyll cycle. *In* C Foyer, P Mullineaux (eds) *Photooxidative Stresses in Plants: Causes and Amelioration.* CRC Press, Boca Raton, pp 105-126
- ADAMS WW III, DEMMIG-ADAMS B, LANGE OL 1993 Carotenoid composition and metabolism in green and blue-green algal lichens in the field. *Oecologia* **94**, 576-584
- DEMMIG-ADAMS B, ADAMS WW III 1993 The xanthophyll cycle, protein turnover, and the high-light tolerance of sun-acclimated leaves. *Plant Physiology* **103**, 1413-1420
- DEMMIG-ADAMS, B, ADAMS WW III 1993 The xanthophyll cycle. *In* A Young, G Britton (eds) *Carotenoids in Photosynthesis.* Chapman and Hall, London, pp 206-251
- DEMMIG-ADAMS B, ADAMS WW III 1993 The xanthophyll cycle. *In* RG Alscher, JL Hess (eds) *Antioxidants in Higher Plants.* CRC Press, Boca Raton, pp 91-110
- ADAMS WW III, DEMMIG-ADAMS B 1993 Energy dissipation and photoprotection in leaves of higher plants. *In* HY Yamamoto and CM Smith (eds) *Photosynthetic Responses to the Environment. Current Topics in Plant Physiology: An American Society of Plant Physiologists Series,* Rockville, Maryland, pp 27-36

- DEMMIG-ADAMS B, ADAMS WW III 1992 Photoprotection and other responses of plants to high light stress. *Annual Review of Plant Physiology and Plant Molecular Biology* **43**, 599-626
- ADAMS WW III, DEMMIG-ADAMS B 1992 Operation of the xanthophyll cycle in higher plants in response to diurnal changes in incident sunlight. *Planta* **186**, 390-398
- DEMMIG-ADAMS B, ADAMS WW III 1992 Carotenoid composition in sun and shade leaves of plants with different life forms. *Plant, Cell & Environment* **15**, 411-419
- (40) ADAMS WW III, **VOLK M, **HOEHN A, DEMMIG-ADAMS B 1992 Leaf orientation and the response of the xanthophyll cycle to incident light. *Oecologia* **90**, 404-410
- DEMMIG-ADAMS B, ADAMS WW III 1991 Light, photosynthesis, and the xanthophyll cycle. *In* EJ Pell, KL Steffen (eds) *Active Oxygen/Oxidative Stress and Plant Metabolism. Current Topics in Plant Physiology: An American Society of Plant Physiologists Series, Vol 6*, Rockville, Maryland, pp 171-179
- DEMMIG-ADAMS B 1990 Carotenoids and photoprotection in plants: A role for the xanthophyll zeaxanthin. *Reviews on Bioenergetics, Biochimica & Biophysica Acta* **1020**, 1-24
- ADAMS WW III, DEMMIG-ADAMS B, WINTER K, SCHREIBER U 1990 The ratio of variable to maximum chlorophyll fluorescence from photosystem II, measured in leaves at ambient temperature and at 77K, as an indicator of the photon yield of photosynthesis. *Planta* **180**, 166-174
- DEMMIG-ADAMS B, ADAMS WW III, HEBER U, NEIMANIS S, WINTER K, KRÜGER A, CZYGAN F-C, BILGER W, BJÖRKMAN O 1990 Inhibition of zeaxanthin formation and of rapid changes in radiationless energy dissipation by dithiothreitol in spinach leaves and chloroplasts. *Plant Physiology* **92**, 293-301
- ADAMS, WW III, DEMMIG-ADAMS B, WINTER K 1990 Relative contributions of zeaxanthin-related and zeaxanthin-unrelated types of "high-energy-state" quenching of chlorophyll fluorescence in spinach leaves exposed to various environmental conditions. *Plant Physiology* **92**, 302-309
- DEMMIG-ADAMS B, **MÁGUAS C, ADAMS WW III, MEYER A, KILIAN E, LANGE OL 1990 Effect of high light on the efficiency of photochemical energy conversion in a variety of lichen species with green and blue-green phycobionts. *Planta* **180**, 400-409
- DEMMIG-ADAMS B, ADAMS WW III, CZYGAN F-C, SCHREIBER U, LANGE OL 1990 Differences in the capacity for radiationless energy dissipation in green and blue-green algal lichens associated with differences in carotenoid composition. *Planta* **180**, 582-589
- CLELAND RE, DEMMIG-ADAMS B, ADAMS WW III, WINTER K 1990 Phosphorylation state of the light-harvesting chlorophyll-protein complex of photosystem II and fluorescence characteristics in *Monstera deliciosa* Liebm. and *Glycine max* (L.) Merrill in response to light. *Australian Journal of Plant Physiology* **17**, 589-599
- DEMMIG-ADAMS B, ADAMS WW III 1990 The carotenoid zeaxanthin and "high-energy-state" quenching of chlorophyll fluorescence. *Photosynthesis Research* **25**, 187-197
- (30) DEMMIG-ADAMS B, ADAMS WW III, GREEN TGA, CZYGAN F-C, LANGE OL 1990 Differences in the susceptibility to light stress in two lichens, one possessing and one lacking the xanthophyll cycle. *Oecologia* **84**, 451-456
- NASH TH III, **REINER A, DEMMIG-ADAMS B, KILIAN E, KAISER WM, LANGE OL 1990 The effect of atmospheric desiccation and osmotic water stress on photosynthesis and dark respiration of lichens. *New Phytologist* **116**, 269-276
- DEMMIG-ADAMS B 1990 Zeaxanthin-associated energy dissipation and the susceptibility of various organisms to light stress. *In* Baltscheffsky, M (ed) *Current Research in Photosynthesis, vol. II*, pp 357-364. Kluwer Academic Publishers, The Netherlands

- DEMMIG-ADAMS B, ADAMS WW III, WINTER K, MEYER A, SCHREIBER U, PEREIRA JS, KRÜGER A, CZYGAN F-C, LANGE OL 1989 Photochemical efficiency of photosystem II, photon yield of O₂ evolution, photosynthetic capacity, and carotenoid composition during the "midday depression" of net CO₂ uptake in *Arbutus unedo* growing in Portugal. *Planta* **177**, 377-387
- DEMMIG-ADAMS B, WINTER K, KRÜGER A, CZYGAN F-C 1989 Light response of CO₂ assimilation, dissipation of excess excitation energy, and zeaxanthin content of sun and shade leaves. *Plant Physiology* **90**, 881-886
- DEMMIG-ADAMS B, WINTER K, KRÜGER A, CZYGAN F-C 1989 Zeaxanthin and the induction and relaxation kinetics of the dissipation of excess excitation energy in leaves in 2% O₂, 0% CO₂. *Plant Physiology* **90**, 887-893
- DEMMIG-ADAMS B, WINTER K, KRÜGER A, CZYGAN F-C 1989 Zeaxanthin synthesis, energy dissipation, and photoprotection of photosystem II at chilling temperatures. *Plant Physiology* **90**, 894-898
- DEMMIG-ADAMS B, WINTER K, **WINKELMANN E, KRÜGER A, CZYGAN F-C 1989 Photosynthetic characteristics and the ratios of chlorophyll, β -carotene, and the components of the xanthophyll cycle upon a sudden increase in growth light regime in several plant species. *Botanica Acta* **102**, 319-325
- DEMMIG-ADAMS B, WINTER K, KRÜGER A, CZYGAN F-C 1989 Light stress and photoprotection related to the carotenoid zeaxanthin in higher plants. *In* Briggs, WR (ed) *Photosynthesis*, pp 375-391. Alan R. Liss, New York
- DEMMIG-ADAMS B 1989 Lichtstreß und Lichtschutz bei Pflanzen. *Naturwissenschaften* **76**, 262-267
- (20) DEMMIG B, WINTER K 1988 Light response of CO₂ assimilation, reduction state of Q, and radiationless energy dissipation in intact leaves. *Australian Journal of Plant Physiology* **15**, 151-162
- DEMMIG B, WINTER K 1988 Characterisation of three components of non-photochemical fluorescence quenching and their response to photoinhibition. *Australian Journal of Plant Physiology* **15**, 163-177
- BJÖRKMAN O, DEMMIG B, ANDREWS TJ 1988 Mangrove photosynthesis: Response to high-irradiance stress. *Australian Journal of Plant Physiology* **15**, 43-61
- DEMMIG B, WINTER K, KRÜGER A, CZYGAN F-C 1988 Zeaxanthin and the heat dissipation of excess light energy in *Nerium oleander* exposed to a combination of high light and water stress. *Plant Physiology* **87**, 17-24
- ADAMS WW III, TERASHIMA I, BRUGNOLI E, DEMMIG B 1988 Comparisons of photosynthesis and photoinhibition in the CAM vine *Hoya australis* and several C₃ vines growing on the coast of eastern Australia. *Plant, Cell & Environment* **11**, 173-181
- DEMMIG B 1988 Lichtstreß und Lichtschutz bei Pflanzen. *Jahrbuch der Akademie der Wissenschaften zu Göttingen 1987*, Vandenhoeck & Rupprecht, Göttingen, pp 27-33
- BJÖRKMAN O, DEMMIG B 1987 Photon yield of O₂ evolution and chlorophyll fluorescence characteristics at 77K among vascular plants of diverse origins. *Planta* **170**, 489-504
- DEMMIG B, BJÖRKMAN O 1987 Comparison of the effect of excessive light on chlorophyll fluorescence (77K) and photon yield of O₂ evolution in leaves of higher plants. *Planta* **171**, 171-184
- DEMMIG B, *CLELAND RE, BJÖRKMAN O 1987 Photoinhibition, 77K chlorophyll fluorescence quenching and phosphorylation of the light-harvesting chlorophyll-protein complex of photosystem II in soybean leaves. *Planta* **172**, 378-385

- DEMMIG B, WINTER K, KRÜGER A, CZYGAN F-C 1987 Photoinhibition and zeaxanthin formation in intact leaves. A possible role of the xanthophyll cycle in the dissipation of excess light energy. *Plant Physiology* **84**, 218-224
- (10) WINTER K, DEMMIG B 1987 Reduction state of Q and nonradiative energy dissipation during photosynthesis in leaves of a Crassulacean acid metabolism plant, *Kalanchoë daigremontiana* Hamet et Perr. *Plant Physiology* **85**, 1000-1007
- *DEMMIG B, WINTER K 1986 Sodium, potassium, chloride and proline concentrations of chloroplasts isolated from a halophyte, *Mesembryanthemum crystallinum* L. *Planta* **168**, 421-426
- *DEMMIG B, GIMMLER H 1984 Permeability properties of the chloroplast envelope for monovalent inorganic ions and their distribution between the intact chloroplast and the external medium in the light and dark. In C Sybesma, ed, Proc Int Congr Photosynth 6th, Vol 2. Nijhoff/Junk Publishers, The Hague, pp 317
- *DEMMIG B, GIMMLER H 1983 Properties of the isolated intact chloroplast at cytosolic K⁺ concentrations. Light-induced cation uptake into intact chloroplasts is driven by an electrical potential difference. *Plant Physiology* **73**, 169-174
- *DEMMIG B, WINTER K 1983 Photosynthetic characteristics of chloroplasts isolated from *Mesembryanthemum crystallinum* L., a halophilic plant capable of Crassulacean acid metabolism. *Planta* **159**, 66-76
- *DEMMIG B, WINTER K 1983 Chloroplasts from *Mesembryanthemum crystallinum* L., a halophilic plant capable of Crassulacean acid metabolism. Hoppe-Seyler's Zeitschrift für Physiologische Chemie **364**, 1115-1116
- GIMMLER H, *HEILMANN B, *DEMMIG B, HARTUNG W 1981 The permeability coefficients of the plasmalemma and the chloroplast envelope of spinach mesophyll cells for phytohormones. *Zeitschrift für Naturforschung* **36c**, 672-678
- GIMMLER H, *DEMMIG B, KAISER WM 1980 The role of K⁺ and H⁺ fluxes across the envelope for photosynthetic CO₂ fixation. In G Akoyunoglou, ed, Proc Int Congr Photosynth 5th, Vol 4. Balaban Int Sciences Services, Philadelphia, pp 599-608
- GIMMLER H, *DEMMIG B 1980 The effect of divalent cations on the permeability of the chloroplast envelope and on photosynthesis. In RM Spanswick, WJ Lucas, J Dainty, eds, *Plant Membrane Transport: Current Conceptual Issues*. Elsevier Biomedical Press, Amsterdam, pp 445-446
- **DEMMIG B, GIMMLER H 1979 Effect of divalent cations on cation fluxes across the chloroplast envelope and on photosynthesis of intact chloroplasts. *Zeitschrift für Naturforschung* **34c**, 233-241

Publications in preparation (data collection complete)

- COHU CM, MULLER O, ADAMS WW III, DEMMIG-ADAMS B (in prep) Differences in sugar-loading veins and photosynthetic capacity in *Arabidopsis thaliana* ecotypes from contrasting latitudes. *Plant, Cell & Environment*
- COHU CM, MULLER O, DEMMIG-ADAMS B, ADAMS WW III (in prep) Defining minor sugar-loading veins in *Arabidopsis thaliana*. *Plant, Cell & Environment*
- Adams RB, Egbo KN, Demmig-Adams B. 2013. (in prep) High-dose vitamin C supplements diminish the benefits of exercise in athletic training and disease prevention. *Nutrition & Food Science*
- MULLER O, COHU CM, ADAMS WW III, DEMMIG-ADAMS B (in prep) Temperature acclimation of photosynthetic capacity and phloem anatomy in annuals with different seasonal preferences. *Plant, Cell and Environment*

- Demmig-Adams B, Cohu CM, Muller O, Adams WW III (in prep) Phloem and photosynthesis. *In* AART VAN BEL, JURRIAAN TON, GARY A THOMPSON, JOHN WILLIAM PATRICK, BIAO DING, YKÄ HELARIUTTA, SYLVIE DINANT (eds) Phloem: the integrative avenue for resource distribution, signalling and defence. *Frontiers in Plant Physiology*. *Frontiers in Plant Science*, invited paper
- DEMMIG-ADAMS B, ADAMS WW III Ecophysiology of photosynthesis and photoprotection in a whole-plant context. (eds) CORNELIA SPETEA, EEVI RINTAMÄKI, BENOÎT SCHOEFS *High light signaling and adaptive responses in plants: understanding the role of chloroplasts*. *Philosophical Transactions of the Royal Society B*
- BURCH T, ADAMS WW III, DEMMIG-Adams B (in prep) Milking algae for energy carriers: Triggering carbohydrate secretion in *Chlamydomonas* species differentially adapted to salinity. (Journal to be determined)

Edited Refereed Books

- DEMMIG-ADAMS B, ADAMS WW III, GARAB G, GOVINDJEE (eds) (2014) *Non-Photochemical Quenching and Thermal Energy Dissipation in Plants, Algae and Cyanobacteria*. *Advances in Photosynthesis and Respiration*. Springer, Dordrecht
- DEMMIG-ADAMS B, ADAMS WW III, MATTOO AK (eds) 2008 *Photoprotection, Photoinhibition, Gene Regulation, and Environment*. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht. Paperback edition.
- DEMMIG-ADAMS B, ADAMS WW III, MATTOO AK (eds) 2006 *Photoprotection, Photoinhibition, Gene Regulation, and Environment*. *Advances in Photosynthesis and Respiration*, Volume 21. Springer, Dordrecht. Hardback edition.

Invited Talks (*Presenter)

- “Photosynthesis, Photoprotection, and the Environment”, Ecological Genomics of *Arabidopsis* meeting, Fort Collins, CO, 10-11 December 2011, B Demmig-Adams*, WW Adams III
- “Photosynthetic Capacity and Anatomical Features of *Arabidopsis thaliana* Ecotypes from Italy and Sweden”, Ecological Genomics of *Arabidopsis* meeting, Fort Collins, CO, 10-11 December 2011, C Cohu*, O Muller, B Demmig-Adams, WW Adams III
- “Modulation of Plant Oxidative Signaling Networks by Antioxidants in Photosynthesis”, Umeå Plant Science Centre, Umeå, Sweden, Nov 18, 2011, B Demmig-Adams*, WW Adams III
- “Phloem Loading, Leaf Architecture, and Photosynthetic Capacity”, Department of Plant Physiology, Umeå Plant Science Centre, Umeå Universitet, Sweden, November 17, 2011, WW Adams III*, B Demmig-Adams
- “Updates on Enhancing Energy Carrier Release from Microalgae”, Meeting of the Research Team Members from CU, CSU, and CSM sponsored by ConocoPhillips for the development of algal biofuels, Feb 10 and Sept 10, 2010; June 2, 2011
- “Photosynthesis, Photoprotection, and the Environment”, Keynote speaker, Kriton-Hatzios Symposium on Abiotic Stress (April 11), Southern Section of the American Society of Plant Biologists’ Annual Meeting, Gulf Coast Research Laboratory University of Southern Mississippi, Ocean Springs, MS. April 9-11, 2011, B Demmig-Adams*, WW Adams III
- “Contrasting Features of Photoprotective Energy Dissipation in Plants with Different Growth Habits”, International Workshop on “Mechanisms of Non-photochemical Quenching”,

EU Marie Curie Network “HARVEST”. April 6-10, 2011, Passau, Germany, B Demmig-Adams*, WW Adams III

- “Adjustment of Leaf Structure and Function to Cold Temperature”, International Conference on Plant Vascular Biology 2010, Columbus, OH, 23-29 July 2010, B Demmig-Adams*, M Dumlao, R Leyva, WW Adams III
- “Phloem Anatomy and Photosynthetic Capacity”, International Conference on Plant Vascular Biology 2010, Columbus, OH, 23-29 July 2010, WW Adams III*, V Amiard, R Turgeon, B Demmig-Adams
- “Milking microalgae for biofuel production”, 2010 EBIO Spring Symposium, April 9, 2010. A Reece*, T Burch, CS Rixham, B Degrenne, WW Adams III, B Demmig-Adams
- "Regulation and Acclimation of Photoprotection: Dependence on Species and Environmental Conditions", Department of Botany, Oklahoma State University, Stillwater, OK, January 20, 2009, WW Adams III*, B Demmig-Adams
- “Maximizing solar energy conversion efficiency in photosynthesis”, Joint AFOSR-NREL Biofuels Research Meeting, January 8-9, 2009, Golden, Colorado. B Demmig-Adams*, WW Adams III
- “Forest health and disturbance: Defining a mechanistic link between tree drought stress and risk of mortality from pine bark beetles in Jeffrey pine”, USDA Forest Service Region 5, Regional Leadership Team Meeting, April 2, 2008, Sacramento, California. NE Grulke*, SJ Seybold, B Demmig-Adams, WW Adams III, DM Rizzo, AD Graves
- “Implications for forest management under a changing climate: Linking ozone and drought stress to tree mortality”, Air Pollution Workshop, April 8, 2008, Raleigh, North Carolina. NE Grulke*, SJ Seybold, B Demmig-Adams, WW Adams III, DM Rizzo, AD Graves
- “Variations in acclimation of photosynthesis & photoprotection in overwintering plants” 17th Western Photosynthesis Conference, Pacific Grove (Asilomar), California, 3-6 January 2008. B Demmig-Adams*, MR Dumlao, WW Adams III
- “Photosynthetic capacity and minor loading veins” 17th Western Photosynthesis Conference, Pacific Grove (Asilomar), California, 3-6 January 2008. WW Adams III*, R Turgeon, B Demmig-Adams
- “An Integrative View of Photoprotection”, Japan-US Workshop (jointly sponsored by the Japan Ministry of Science & Education and the US National Science Foundation) on Phenotypic Plasticity in Response to Environmental Changes: Scaling from the Molecular to the Ecosystem Levels, Nikko Botanical Gardens, University of Tokyo, Japan, 23-26 October 2007, WW Adams III*, B Demmig-Adams
- “Novel genes in photoprotection and stress adaptation?” Collaborative Plant Biology in the Rocky Mountain / Midwest: Impacts and Future Prospects for Plant Genomics. University of Wyoming, 1-3 June 2006. B Demmig-Adams*, V Ebbert, K Danna, WW Adams III
- “Novel genes in photoprotection and stress adaptation of evergreen species”. Keystone Conference on “Plant Responses to Abiotic Stress”, Copper Mountain, Colorado, 8-12 April 2006. B Demmig-Adams*, V Ebbert, WW Adams III
- “Photosynthesis / photoprotection and the whole plant: Uncovering new links”, Department of Biology, Colorado State University, 6 September 2005. B Demmig-Adams*
- "Seasonal adjustments in photosynthesis and photoprotection", Keynote Speaker for symposium entitled: Responses to Winter - from Ecosystem to Gene, XVII International Botanical Congress, Vienna, Austria, 18-23 July 2005. WW Adams III*, CR Zarter, V Ebbert, KE Mueh, VSE Amiard, & B Demmig-Adams
- "Photoprotective energy dissipation and the bigger picture", Keynote Speaker for symposium entitled: Antioxidants, gene regulation, and environment, XVII International Botanical Congress, Vienna, Austria, 18-23 July 2005. B Demmig-Adams*, WW Adams III

- “The remarkable role of plant antioxidants in plant survival and human health: Case study of the carotenoid zeaxanthin”, Department of Integrative Physiology, University of Colorado at Boulder, 3 March 2005. B Demmig-Adams*
- “Multiple mechanisms of zeaxanthin function in thermal dissipation, photoinhibition, and signal transduction”, 13th International Congress of Photosynthesis, Symposium on “Photosynthetic acclimation: Ecophysiology, diverse environments”, Montréal, Canada, August 29-September 3, 2004. B Demmig-Adams*, V Ebbert, CR Zarter, A Sokolenko, AK Mattoo, WW Adams III
- "Role of phloem loading type in the plasticity of photosynthetic acclimation to light environment", 13th International Congress of Photosynthesis, Montréal, Canada, 29 August - 3 September 2004. WW Adams III*, VSE Amiard, KEM Bachmann, R Turgeon, & B Demmig-Adams
- "Role of phloem loading type in the plasticity of photosynthetic acclimation to light environment", Plasmodesmata 2004, Asilomar, CA, 17-21 August 2004. VSE Amiard*, KEM Bachmann, R Turgeon, B Demmig-Adams & WW Adams III
- “Seasonal adjustments in photosynthesis and photoprotection in a subalpine forest”, Annual meeting of the Guild of the Rocky Mountain Population Biologists, 17-18 September 2004. CR Zarter*, V Ebbert, WW Adams III & B Demmig-Adams
- “Photosynthesis and photoprotection during winter”, Annual Meeting of the American Society of Plant Biologists, Denver, CO, August 3-7, 2002. B Demmig-Adams*, WW Adams III
- “Growth form and light environment determinants of photosynthetic acclimation to winter stress”, Symposium on "Photoprotection and Acclimation", 12th International Congress on Photosynthesis. Brisbane, Australia, August 18-23, 2001. WW Adams III*, B Demmig-Adams
- “Modulation of the xanthophyll cycle by the environment” and “Zeaxanthin retention, sustained energy dissipation, and protein phosphorylation”, European Science Foundation (ESF) Workshop on “Non-Photochemical Quenching and the Xanthophyll Cycle – Mechanisms and Implications”, Weizmann Institute of Science, Rehovot, Israel, October 12-15, 1999. B Demmig-Adams*, WW Adams III
- “How is continuous energy dissipation maintained under stress? From the whole plant to the chloroplast” Symposium on “Light and Photosynthesis: From the Molecule to the Globe” sponsored by the Carnegie Institution of Washington, Napa, CA, August 28-30, 1999. B Demmig-Adams*, WW Adams III
- "Role of zeaxanthin in photoinhibition during shade to sun transfer", XIth International Congress on Photosynthesis, Budapest, Hungary, August 17-22, 1998. B Demmig-Adams*, WW Adams III
- "Relationships among zeaxanthin, photoinhibition, and carbohydrate status in shade leaves exposed to high light", 7th Western Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, January 8-11, 1998. B Demmig-Adams*, WW Adams III
- "Lichtschutzreaktionen und Streßtoleranz: Vom Molekül zur ganzen Pflanze", Heinrich-Heine-Universität Düsseldorf, Düsseldorf, Germany, December 19th, 1997. B Demmig-Adams
- "Protection by carotenoids: from photosynthesis to the human eye", Annual Meeting of the Packard Fellows, Monterey, CA, September 3-6, 1997. B Demmig-Adams*
- "New insights into antioxidation in plants, and implications for human health and nutrition", Nutrition Seminar Series sponsored by the Center for Human Nutrition, University of Colorado Health Sciences Center in Denver, CO, April 3, 1997. B Demmig-Adams*

- "Protection against intense light and oxidative stress: Lessons from four billion years of experience", Departmental Colloquium, Department of Molecular, Cellular, and Developmental Biology, University of Colorado at Boulder, December 5, 1996. B Demmig-Adams*
- "The xanthophyll cycle and regulation of the efficiency of solar energy conversion", International Conference on 'Molecular to Global Photosynthesis'. Imperial College of Science, London, United Kingdom, March 28-29, 1996. B Demmig-Adams*, WW Adams III
- "Involvement of the xanthophyll cycle in the phenomenon of photoinhibition", Fifth Western Photosynthesis Conference. Asilomar Conference Center, Pacific Grove, January 9-12, 1996. B Demmig-Adams*, WW Adams III
- "Xanthophyll cycle and diurnal PSII regulation", Special Mini-Symposium on "The Xanthophyll Cycle and Photoprotective Energy Dissipation". Annual Meeting of the American Society of Plant Physiology. Charlotte, NC, August 2, 1995. B Demmig-Adams*, WW Adams III
- "Involvement of the xanthophyll cycle in the acclimation of plants to light stress", Integrative Photosynthesis Seminar Series. University of Illinois, Urbana, April 20, 1995. B Demmig-Adams*
- "Using chlorophyll fluorescence to assess the dynamics of xanthophyll-associated energy dissipation", Robertson Symposium on "Chlorophyll Fluorescence". Research School of Biological Sciences, Australian National University, Canberra, Australia, May 27-29, 1994. B Demmig-Adams*, WW Adams III
- "Dynamics of the xanthophyll cycle and its relationship to photoinhibition", Carnegie-Stanford Plant Science Seminar Series. Stanford, California, February 28, 1994. B Demmig-Adams*
- "Carotenoids and photoprotection of photosynthesis", Plant Biology Seminar Series: Current Topics in Plant Ecophysiology. University of California, Davis, February 25, 1994. B Demmig-Adams*
- "Photoprotection and the xanthophyll cycle: Capacity for energy dissipation in leaves with different xanthophyll cycle pools sizes", 4th Western Regional Photosynthesis Conference, Asilomar Conference Center, Pacific Grove, CA, January 4-7, 1994. B Demmig-Adams*, WW Adams III
- "High light stress and the xanthophyll cycle", XVth International Botanical Congress, Tokyo (Yokohama), Japan, August 28-September 3, 1993. B Demmig-Adams*, WW Adams III
- "Photoprotection of the photosynthetic apparatus through the carotenoid zeaxanthin", Photosynthetic Responses to the Environment, Satellite meeting for the IX International Congress on Photosynthesis, Kona, Hawaii, August 25-27, 1992. B Demmig-Adams*, WW Adams III
- "Zeaxanthin function in photosynthetic organisms", Gordon Research Conference on Chemistry and Biology of Carotenoids, Oxnard, CA, March 9-13, 1992. B Demmig-Adams*, WW Adams III
- "The carotenoid zeaxanthin and photoprotection of the photosynthetic apparatus", Sixth Annual Penn State Symposium in Plant Physiology, May 23-25, 1991. B Demmig-Adams*, WW Adams III
- "Carotenoids and photoprotection in plants", Department of Biochemistry, Colorado State University, Fort Collins, April 15, 1991. B Demmig-Adams*
- "Zeaxanthin and photoprotective energy dissipation", Molecular Biophysics Supergroup Program, University of Colorado, Boulder, December 5, 1990. B Demmig-Adams*

- "Photoinhibition and photoprotective responses: the xanthophyll cycle", Plant Physiology Seminar, Department of Botany, Duke University, Durham, March 30, 1990. (Joint seminar) WW Adams III* & B Demmig-Adams*
- "Carotenoids and photoprotection in plants", Center for the Study of Early Events in Photosynthesis, Arizona State University, Tempe, February 8, 1990. B Demmig-Adams
- "The carotenoid zeaxanthin and photoprotection", Seminar series on cancer (melanoma) research, University Hospital, Denver, January 24, 1990. B Demmig-Adams*
- "Zeaxanthin formation and avoidance of PS II damage from combined high light and water stress", Rockefeller Foundation meeting on 'The Potentials of Biotechnology for Improving Grain Yield of Rice under Water Limited Conditions', Bellagio Study and Conference Center, Bellagio, Italy, September 18-22, 1989. B Demmig-Adams*, WW Adams III
- "Zeaxanthin-associated energy dissipation in leaves and isolated chloroplasts", International Workshop on 'The Use of Chlorophyll Fluorescence and other Non-Invasive Spectroscopic Techniques in Plant Stress Physiology', Wageningen, The Netherlands, August 14-16, 1989. B Demmig-Adams*, WW Adams III
- "Light stress, photoprotective energy dissipation, and the carotenoid zeaxanthin", VIIIth International Congress on Photosynthesis, Stockholm, Sweden, August 6-11, 1989. Authors (presenting*): B Demmig-Adams*, WW Adams III
- "Light stress and photoprotection in plants - zeaxanthin as a lightning rod", Department of Organic Chemistry, Würzburg University, Würzburg, Germany, December 19, 1988. B Demmig*
- "Dissipation of excess excitation energy", C. S. French Photosynthesis Symposium "Toward a Broad Understanding of Photosynthesis. Multiple Approaches to a Common Goal" Carnegie Institution of Washington, Stanford, CA, USA, July 17-22, 1988. B Demmig
- "Light stress and photoprotection in plants", Annual meeting of the Göttingen Academy of Science, Göttingen, Germany, November 20, 1987. B Demmig*
- "Photoinhibition and shade-sun acclimation of photosynthesis: damage or protection?" XIV International Botanical Congress, Berlin, Germany, July 24 - August 1, 1987. B Demmig*
- "Light stress in plants", Department of Physical Chemistry, Würzburg University, Würzburg, Germany, July 2, 1987. B Demmig*
- "Photoinhibition of photosynthesis: Two different syndromes", Robertson Symposium "Ecology of Photosynthesis in Sun and Shade", Canberra, Australia, February 1987. B Demmig*
- "Photoinhibition of photosynthesis in sun and shade leaves", Robert-Hill-Symposium, Würzburg, Germany, July 2-6, 1986. B Demmig*
- "Water stress and photoinhibition of photosystem II", US-Australian conference on the "Structure, function and photoinhibition of photosystem II and plant response to stress", Honolulu, Hawaii, September 1985. B Demmig*

Session chair

- Chair, Symposium on “Antioxidants, Gene Regulation, and Environment”, XVII International Botanical Congress, Vienna, Austria, July 2005
- Chair, Symposium on "Photoprotection and Acclimation", 12th International Congress on Photosynthesis. Brisbane, Australia, August 18-23, 2001

Poster presentations (from 2002)

- "Milking of microalgae for biofuel production" First Annual Energy Showcase symposium, Apr 1, 2010, University of Colorado at Boulder. Authors: Reese A, Rixham CS, Burch T, Degrenne B, Adams W, Demmig-Adams B
- “Biofuels Production by Algae. From Cell to Photobioreactor” Third Annual Energy Research Symposium, Oct 21, 2009, University of Colorado. Authors: B. Degrenne, J. Pruvost, M. Titica, B. Demmig-Adams, J. Legrand
- "Acclimation to Light Intensity in Summer and Winter Squash" SMART/NIH-HHMI Summer Poster Session, Aug 7, 2008, University of Colorado. Authors: N. I. Aponte Silva, B. Demmig-Adams, M. R. Dumlao
- "Acclimation to Light Intensity in Summer and Winter Squash" 2008 SACNAS (Society for Advancement of Chicanos and Native Americans in Science) Conference (Oct 9 - 12) in Salt Lake City, Utah. Authors: N. I. Aponte Silva, B. Demmig-Adams
- "Acclimation to Light Intensity in Summer and Winter Squash" 2008 ABRCMS (Annual Biomedical Research Conference for Minority Students) Conference (Nov 5 - 9) in Orlando, Florida. Authors: N. I. Aponte Silva, B. Demmig-Adams
- "Effect of Cold Temperatures on Vein Density and Photosynthetic Capacity in Winter and Summer Squash" SMART/NIH-HHMI Summer Poster Session, Aug 7, 2008, University of Colorado. Authors: D. S. Aponte Rosario, B. Demmig-Adams, M. R. Dumlao
- “Defining a mechanistic link in Jeffrey pine among stand thinning, drought, and risk of mortality from Jeffrey pine beetle, *Dendroctonus jeffreyi* Hopkins” 59th Annual Western Forest Insect Work Conference, April 7-10, 2008, Boulder, Colorado. Authors: AD Graves, NE Grulke, DM Rizzo, B Demmig-Adams, WW Adams, SJ Seybold
- “New Directions in Photoprotection”, CU-NREL Research Symposium associated with Renewable and Sustainable Energy Initiative, Boulder, Oct 3, 2006. Authors: B Demmig-Adams, AM Watson, M Dumlao, WW Adams III
- “Antioxidants in photosynthesis and human nutrition – A review”. Butcher Symposium in Genomics and Biotechnology. The Future of Biomedicine in Colorado – A workshop of the Possible. Broomfield, CO, November 3-4, 2002. Autor: B Demmig-Adams
- "Photosynthesis and Photoprotection during Winter". Annual Meeting of the American Society of Plant Biologist, Denver, CO, August 3-7, 2002. Authors: WW Adams III, B Demmig-Adams, V Ebbert, CR Zarter, AK Brightwell
- "Response of D1, PsbS, and the xanthophyll cycle to light environment in the tropical model plant *Monstera deliciosa*". Annual Meeting of the American Society of Plant Biologists, Denver, CO, August 3-7, 2002. Authors: V Ebbert, B Demmig-Adams, DL Mellman, RL Knobel, CR Zarter, Adams WW III

Teaching
Formal Courses 1998 to Present

Term	Course	Instructor Rating (Mean/Median) 0 {lowest} - 6.0 {highest} Scale
12 F	EBIO 1210-001 General Biology; 316	5.1/5.0
12 F	EBIO 1210-002 General Biology; 333	5.3/6.0
12 Sp	EBIO 3980/4980 EBIO Honors Thesis Seminar; 17	5.8/6.0
11 F	EBIO 1210-001 General Biology; 374	5.3/6.0
11 F	EBIO 1210-002 General Biology; 351	5.2/5.0
11 Su	Guest lecture on "Scientific Writing" for C2B2-REU summer students; 21	
11 Sp	EBIO 4980 EBIO Honors Thesis Seminar; 20	6.0/6.0
10 F	EBIO 1210-003 General Biology;	5.0/5.0
10 F	EBIO 1210-004 General Biology;	4.6/5.0
10 Sp	EBIO 3980/4980 EBIO Honors Thesis Seminar; 21	5.9/6.0
09 F	EBIO 1210-001 General Biology; 373	5.6/6.0
09 F	EBIO 1210-004 General Biology; 325	5.6/6.0
09 Su	Guest lecture on "Scientific Writing" for C2B2-REU summer students; 25	
09 Sp	EBIO 4980-801 EBIO Honors Thesis Seminar; 17	5.9/6.0
09 Sp	EBIO 6840-811; 2	6.0/6.0
08 F	EBIO 1210-001 General Biology; 400	5.4/6.0
08 F	EBIO 1210-004 General Biology; 343	5.6/6.0
08 F	Guest lecture "Exam review" in Gen Bio co-seminars for underrepresented class students	
08 Su	EBIO 4840-570 Independent Study SMART program; 2	
08 Sp	EBIO 3980/4980-801 EBIO Honors Thesis Seminar; 20	5.8/6.0
08 Sp	EBIO 4990-802 EBIO Honors Research; 4	6.0/6.0
07 F	EBIO 1210-001 General Biology; 387	5.2/6.0
07 F	EBIO 1210-004 General Biology; 370	5.2/6.0
07 Sp	Guest lecture on plant antioxidants and human nutrition in General Biology-Honors HONR 1001 on 3/20/07	
07 Sp	EBIO 3980/4980-801 EBIO Honors Thesis Seminar; 15	6.0/6.0
07 Sp	EBIO 3990 Introduction to Honors Research; 4	6.0/6.0
07 F	EBIO 4990 EBIO Honors Research; 2	
06 F	EBIO 4800/4900 Diet, Genes, Health, and Mood; 26	5.8/6.0

Term	Course	Instructor / Course Rating (A {highest} - F {lowest} Scale)
06 Sp	EBIO 3980 EBIO Honors Intro Seminar; 4	A+/A
06 Sp	EBIO 4980 EBIO Honors Thesis Seminar; 9	A+/A+
05 F	EBIO 4800/5800 Diet, Genes, Health, and Mood; 24	A/A
05 Sp	EBIO 3980 EBIO Honors Intro Seminar; 3	A+/A+
05 Sp	EBIO 4980 EBIO Honors Thesis Seminar; 9	A/A-
05 Sp	EBIO 4990 EBIO Honors Research; 2	A-/A+
04 F	(Sabbatical)	
04 Sp	EPOB 4800/5800 Diet, Gene, Health, Mood; 27	A+/A
03 F	EPOB 3530 Essentials in Plant Physiology; 34	A-/A

Continued: Term	Course	Instructor / Course Rating (A-F Scale)
03 Sp	EPOB 4800/5800 Food, Genes, Mood, and Health; 27	A+/A
02 F	EPOB 3530 Essentials of Plant Physiology	A/A
02 Sp	Guest lecture in EPOB 2060	
02 Sp	EPOB 4800/5800 Antioxidants and Health	A/A
01 F	EPOB 3530 Essentials of Plant Physiology	A-/A
01 Sp	EPOB 4800/5800 Antioxidants and Health	A+/A+
01 Sp	Guest lecture in EPOB 2060	
00 F	EPOB 3530 Essentials of Plant Physiology	A/A-
00 Sp	EPOB 6300 Environmental signal transduction	A-/A-
00 Sp	Guest lecture in EPOB 2060	
99 F	EPOB 3530 Essentials of Plant Physiology	A-/A-
99 F	EPOB 5330 Integrative Physiology	B+/B+
99 Sp	EPOB 4800/5800 Plants, Light, and Stress	A+/A
98 F	EPOB 3530 Essentials of Plant Physiology	A-/A
98 Sp	EPOB 4800/5800 Plants, Light, and Stress	A-/A
98 Sp	EPOB 6200 Environmental control of gene expression	A/A-

Extramural and Intramural Funding in Support of Teaching

- Increasing Teaching Effectiveness in Ecology and Evolutionary Biology (2011-2014). \$480,000 from the Science Education Initiative at the University of Colorado. Co-PI with Andrew Martin, William Adams, Nichole Barger, John Basey, and Samuel Flaxman.
- Improvement of Laboratories in Plant Physiology and Plant Ecophysiology at the University of Colorado in Boulder (1993-1995) \$90,000 from the National Science Foundation and the University of Colorado. Co-PI with William Adams and Russell Monson

Non-Classroom Teaching Activities 1998 to Present

Advising of Undergraduate Honors Research Projects

- Johanna Protheroe (Fall 2012 to Spring 2013)
- Courtney Van der Linden (Fall 2012 to Spring 2013)
- Elizabeth Lombardi (Fall 2012 to Spring 2013) – Undergraduate Research Opportunity Program
- Dara Perlow (Spring 2008) – Honors *Summa cum Laude*
- Barbara-Lynn Concienne (Spring 2008) – Honors *Magna cum Laude*
- Ben Carron – (Spring 2008) Honors *Summa cum Laude*
- Blake Angelo – (Spring 2008) Honors *cum Laude*
- Callie Montez (Spring 2007) Honors *Magna cum Laude*
- Christina Zarza (Fall 2005) Honors *Summa cum Laude*
- Jessica Welch (Fall 2005) – Honors *Summa cum Laude*
- Sabrina Schmitz (Fall 2004; UROP) – Honors *Summa cum Laude*

Advising of (Additional) Undergraduate Research Projects

- Jared Stewart (2012)
- Katherine Kronen (2012)
- Kathryn Merritt (2010 and 2011)
- Lynn My Dang (2010-2012)
- Tyler Dowd (Summer, 2011-2012)
- Calvin Englert (2010-2012)

Continued: Undergraduate Research Projects

- Louis Dankovich (Summer, Fall 2010)
- Karen Nkechiyere Egbo (2009 to present) – publication planned
- Rachel Skorenki (Fall 2009)
- Tyson Burch (Fall 2009, Spring 2010)
- Charles Cotton (Cambridge University, UK, Summer 2009)
- Alyssa Reese (Fall 2009, Spring 2010, Summer 2010) – Undergraduate Research Opportunity Program (UROP)
- Deylen S. Aponte Rosario (University of Puerto Rico at Cayey);
SMART (Summer Multicultural Access to Research Training) intern (Summer 2008)
- Noelia Ines Aponte Silva (University of Puerto Rico at Mayagüez);
SMART intern (Summer 2008), Noelia was selected for participation in Harvard Forest Summer Research in Ecology (Research Experiences for Undergraduates) in the summer of 2009 via the Leadership Alliance's Summer Research-Early Identification Program.
- Jared Carter (Spring 2007) – resulted in publication
- Gayla Buitron (Internship on Scientific Writing; Spring 2006)
- Elizabeth Tran (Spring 2006) – resulted in publication
- Emily Wilson (Spring 2006) – resulted in publication
- Andrew F. Combs (2005-2006), Supported on an NSF Research Opportunity Award
– resulted in publication
- Jennifer Gerson (Fall 2005)
- Daniel Cuthbertson (2004-2005) Pursuing PhD at Washington State University
– resulted in publication
- Courtney Moran (Spring 2004) – resulted in publication
- Lindsay McCauley (Spring 2004) – resulted in two publications
- Jennifer Akullian (Fall 2004)
- Steven Cali (Fall 2003)
- Rachel Herder (Spring 2003) – resulted in publication
- Rebecca L. Watson (Spring 2001)
- Rebecca L. Knobel (Fall 2001)
- Angela K. Brightwell – UROP; resulted in two publications
- Lisa E. Schaffer (Fall 1999, Spring 2000, Fall 2001) – UROP; resulted in publication,
BA in 2002, HSC Dentistry in 2007, currently practices dentistry in Colorado
- Mary-Cloud Ammons (Fall 2000)
- Jill Maeda (Spring 1999)
- Brynn E. Orwig (Summer/Fall 1997; Spring 1998)
- Dan Moeller (Spring/Fall 1995) Funded through an Undergraduate Research Grant.
Curator, Hoyt Arboretum, Portland, Oregon – resulted in publication
- Nathan B. Goldstein (1995) – Undergraduate Research Assistantship; BA in 2000; MA in EBIO
in 2004; 2004-2009, lead professional research assistant in the laboratory of David
Norris, in Dermatology; since 2009, research associate at the Dana-Farber Cancer
Institute
- Matthias Volk (1989-1990) Obtained PhD at Universität Basel – resulted in publication
- Jean Dodge (1989-1990)

Advising of Graduate Research (Principal Dissertation/Thesis Advisor)

- Jared Stewart, MAI since 2012
- Tyson Burch, PhD since 2010

Continued: Graduate Research (Principal Dissertation/Thesis Advisor)

- Carly Rixham, MAI 2011
- Ricardo Leyva, MAI 2010
- Anthony Saviola, MAI 2009, currently in PhD program at Northern Colorado University
- Blake Angelo, BA/MA candidate in 2008
- MaryKay Herzenach, MAI 2009
- Matthew Dumlao, MAI 2009
- Amy Watson, PhD candidate 2005-2006
- Dr. Ryan Zarter (co-advised with Prof. W. Adams) PhD in 2005
- Dr. Kristine Mueh (MAI 1998; PhD 2005 co-advised with Prof. W. Adams)
Current position: Middle school science teacher, Boulder Valley
- Dr. David Mellman MAI 2003
Completed PhD 2008 in Molecular Biology at the Univ. of Wisconsin, Madison
- Todd Rosenstiel, PhD candidate 1996-1999; co-advised with Prof. W. Adams; Obtained
PhD with R. Monson in 2004; Current position: Professor at Portland State University
since 2006
- Mark Longo (co-advised with Prof. W. Adams) MAI 1998, currently in PhD program
at Stanford University
- Graham Cummins, PhD candidate 1997-1998
- Dr. Barry Logan (co-advised with Prof. W. Adams) PhD 1997
Current position: Professor at Bowdoin College, Brunswick, Maine
- Dr. Amy Verhoeven (co-advised with Prof. W. Adams) PhD 1998
Current position: Professor at University of St. Thomas, St. Paul, MN

Member of Dissertation committees:

- 17 EBIO Honors defense committees in 2009; 21 in 2010; 21 in 2011; 20 in 2012
- Dr. Hanna Johansson Jänkänpää, University of Umeå, Sweden (service as the PhD defense
Opponent=external examiner); Nov 2011
- Victoria Work, PhD candidate, Colorado School of Mines, since Fall 2010
- Lauren Andrews, PhD, Chemical Engineering, PhD advisory committee, 2009-2012
- Dr. Nicholas Sandoval, Dissertation defense committee; Aug 16, 2011 (PhD advisory
committee member from 2010-2011)
- Dr. Matthew Bealor, Dissertation defense committee; May 5, 2010

Advising of Postdoctoral Research Associates

- Dr. Chris Cohu, since 2011
- Dr. Onno Muller, since 2011
- Dr. Jennifer Mathias, 2010
- Dr. Anza Darehshouri, 2009-2011
- Dr. Benoît Degrenne, 2009-2010
- Dr. Krishnaveni Kesanapalli, 2008-2010
- Dr. Véronique Amiard, 2003-2005
- Dr. Volker Ebbert, 1996-2006
- Dr. Stephen C. Grace, 1994-1996

Visiting Professors

Prof. William Henley (Oklahoma State University)
Prof. Seok-Chan Koh (Korea)
Prof. Steve Cessna (Western Mennonite)
Prof. Barry Logan (Bowdoin College, Maine)

Service
University of Colorado

Department Level

- Executive Committee, Member, 1993, 1995-1996, 2003-2004, 2005-2006, 2008-2009, 2011-2012
- Honors Committee Chair, 1998 to present (includes editing of theses and service on defense committees for up to two dozen Honors candidates a year)
- General Biology Committee, Chair, 2007-present. Responsible for coordinating syllabi, selecting textbook, etc., for the large introductory Biology course EBIO 1210/1220 for science majors taught in multiple sections. Also including new teaching initiatives, such as development of online homework assignments and new interactive recitations.
- General Biology Committee, Chair, 1993-1994. Responsible for coordinating syllabi, selecting textbook, etc., for the large introductory Biology course EBIO1210/1220 for science majors taught in multiple sections.
- Reappointment Committee for Prof. Brett Melbourne, 2012
- Reappointment Committee for Prof. Kendi Davies, 2011
- Reappointment Committee for Prof. Christy McCain, 2010
- Reappointment Committee for Dr. Stephanie Mayer, 2007-2008
- Class Visit and Teaching Evaluation Letter for John Mischler, instructor for General Biology co-seminars for non-traditional students, Fall 2010
- Class Visit and Teaching Evaluation Letter for Prof. Brett Melbourne, Spring 2009
- Class Visit and Teaching Evaluation Letter for Prof. Rebecca Safran, Spring 2008
- Class Visit and Teaching Evaluation Letter for Prof. Kendi Davies, Spring 2008
- Prepared multi-unit proposal for new faculty positions on the topic of “Master Control Genes Tie Physiology and Development to the Environment”; joint proposal with IPHY and MCDB, March 2005
- Merit Evaluation Committee, Spring 2002, 2005, 2011, (and 2013)

- Hundreds letters of recommendation for students for professional programs, such as Medical School, Nursing Programs, and Graduate School
- Space Committee, Member, 2001-2003
- Curriculum Committee, Member, Fall 2000, Spring 2001, 2006-present
- Photocopier Purchase Committee, Faculty Representative, Summer 1999
- Associate Chair, Graduate Studies, 1995 and 1996
- Member of the Self Study Committee for EPOB Program Review, 1996
- Graduate Committee, Chair from 1995-1996
- Graduate Committee, Member in 1992 & 1994
- Greenhouse Committee, EPOB, 1990-1996
- Greenhouse Construction Committee, EPOB, 1992-1994

School or College Level

- Member of the Arts & Sciences Honors Council, 1998 to present
- Chair of the Internal Program Review for the Joint Institute for Laboratory Astrophysics (JILA), 2009-2010
- Member of the Review Committee for the selection of CU's nominee for the annual competition for the award of a David and Lucile Packard Fellowship in Science & Engineering, 1995 and 1996, and from 2006 to present
- Reviewer and Panel member for the Office of the Vice Chancellor for Research Innovative Grant Program at the University of Colorado, Spring 2007 and Spring 2011
- Member of an Honors council subcommittee to select the Dean's Honors Fellow for 2010-2011
- Guest Speaker at the 7th (Nov 18, 2009) and 8th (Oct 20, 2010) Annual Baker Undergraduate Research Symposium, giving presentations on "The Value of Undergraduate Research" and the "EBIO Honors Program"
- Faculty Panel Member on "How do we know?" for Workshop on time management and strategies for success by the McNeill Academic Program, Saturday 10/13/08
- Honors Council Subcommittee Chair for the Sciences, Spring 2006

- Member of the Faculty Advisory Board for the Biological Science Initiative (BSI) sponsored by the Howard Hughes Medical Institute and the University of Colorado, 2006 to present
- Invited Attendee of the Planning Meeting of the four campus President's Learning Academy, June 6, 2005 in Denver
- Member of the Prehealth Advising Committee, Spring 2003 and Spring 2004
- Member of the Internal Review Committee for the Program Review of the Molecular, Cellular, and Developmental Biology Department, Fall 1995 & Spring 1996
- Member of the Committee for the Administration of Keck Foundation Fellowships, CIRES; Representative of EPOB Department 1992-1996.
- Graduate School Committee on Outcome Assessment of Graduate Education, 1995.
- Regular Meetings of Graduate Chairs, 1995-1996

National and International Service

- Editor for the journal Photosynthesis Research (since 2011)
- Editor for the journal Plant Biology (2002-2011)
- Member of 2009 Scientific Review Board of the US Army Corps of Engineers' Engineer Research and Development Center (ERDC), April 2009
- Editor for the journal Nutrition & Food Science (2008-2011)
- External reviewer for the Promotion of Dr. Barry Pogson at the ARC Centre of Excellence in Plant Energy Biology at the Australian National University (ANU), Australia, 2008
- Member of the Advisory Panel for the Doctoral Dissertation Improvement Awards of the National Science Foundation's program in 'Ecological and Evolutionary Physiology' of the 'Division of Integrative Biology and Neuroscience'. February 2003.
- Panel Member of the United States Department of Agriculture's "Plant Response to the Environment" Panel (National Research Initiative Competitive Grants Program, USDA NRICGP) in Washington, DC, from 8-12 April 1996. Invitations received to serve on same Panel in Spring 2001 and Spring 2002, but unable to serve.
- Member of the Editorial Board of the journal Photosynthesis Research (1992-1998)
- Member of the Editorial Board of the journal Plant, Cell and Environment (1993-2002)
- Referee for the Granting Agencies (several proposals per year):
National Science Foundation, United States Department of Energy, United States Department of Agriculture

-Referee for the additional journals (large number of manuscripts):

Science, Nature, Proceedings of the National Academy of Sciences, The Plant Cell, New Phytologist, Planta, Functional Plant Biology, Journal of Experimental Botany, Oecologia, Plant and Cell Physiology, Plant Physiology, Physiologia Plantarum, Tree Physiology, Trends in Plant Science, Trends in Ecology and Evolution

Community Service

March 2008 – Presentation on “Food and Health” to “ProStart” course (for aspiring Chefs) at Boulder High School

March 2007 – 8-Hour workshop for 25 Middle and High School teachers from Boulder Valley School District (BVSD) on “Nutrition and Health: The Power of Diet in Disease Prevention”, Saturday Mar 17, 2007; sponsored by the Biological Science Initiative (BSI) at CU and supported by the Howard Hughes Medical Institute

February 13, 2007 – Public Lecture on “Role of Diet in Learning and Mood” sponsored by Parent Advisory Board; Bixby Elementary School, Boulder

October 2006 – 8-Hour workshop for 25 Middle and High School teachers from BVSD on “Nutrition and Health: The Power of Diet in Disease Prevention”, Saturday Oct 21, 2006; sponsored by the Biological Science Initiative (BSI) at CU and supported by the Howard Hughes Medical Institute

Spring 2005 – Presentation on Nutrition in CU Boulder student housing complexes

March 2005 – Two classes taught to Seventh Graders at Summit Middle School, Boulder, on “Nutrition and Disease Prevention” as part of the required unit on “Health”

March 2004 – Three classes taught to Seventh Graders at Summit Middle School, Boulder, on “Diet-Gene Interaction” as part of the required unit on “Health”

September 2003 – Presentation to the School Board at Summit Middle School on “Healthy Eating Habits”

September 2002 – Public Lecture on “The Role of Nutrition in Health, Mood, and Learning at Bixby Elementary School, Boulder

April 2001 – Class taught to Third Graders at Bixby Elementary School on “Food and Health”.

May 2001 – Five separate classes taught to Fifth Graders at Bixby Elementary School, Boulder, on “Nutrients in the Food Chain”.

May 1997 – Class taught to First Graders at Bixby Elementary School, Boulder, on Photosynthesis. Presentation on "The things that plants do for us", and experimental exercise on “Observation of oxygen bubbles formed by the aquatic plant *Elodea* when exposed to light”.

Biographical Sketch

Sarah B. Wise, Ph.D.

Professional Preparation

<u>Institution</u>	<u>Major Areas</u>	<u>Degree & Year</u>
University of Colorado	Evolution and Development	Ph.D. 2007
San Francisco State University	Secondary Education	M.A. 2002
Swarthmore College	Biology, Education	B.A. 1996

Appointments

University of Colorado, EEB	Science Teaching Fellow	2011-2013
University of Colorado, MCDB	Science Teaching Fellow	2010-2011
Front Range Community College	Adjunct Instructor	2009
Biological Sciences Curriculum Study	Science Educator	2007-2009
University of Colorado, CIRES	Visiting Education Fellow	2007-2009
NSF GK-12 Fellow (Middle School)	Fellow	2005-2006
NSF Predoctoral Fellow	Fellow	2002-2005
University of Colorado, EEB	Graduate Teaching Assistant	2001-2002
Lick-Wilmerding High School	Science Teacher	1998-2001
Sacred Heart High School	Science Teacher	1997-1998

Selected Publications

Wise, S.B. 2010. Climate Change in the Classroom: Patterns, Motivations, and Barriers to Instruction Among Colorado Science Teachers. *Journal of Geoscience Education* 58(4): 213-225.

Wise, S.B. and D.W. Stock. 2010. *bmp2b* and *bmp4* are dispensable for zebrafish tooth development. *Developmental Dynamics*, 239(10): 2534-2546.

Beardsley, P.M., Bloom, M.V, and S.B Wise. In press. Challenges and Opportunities for Teaching and Designing Effective K-12 Evolution Curricula. In: *Evolution Challenges: Integrating research and practice in teaching and learning about evolution*. Rosengren, Brem, Evans, and Sinatra, Eds. Oxford University Press, Oxford, UK.

Wise, S.B. and D.W. Stock. 2008. Regulation and function of Bone morphogenetic proteins in the development of zebrafish pharyngeal teeth (in preparation).

Wise, S.B. and D.W. Stock. 2006. Conservation and divergence of Bmp2a, Bmp2b, and Bmp4 expression patterns within and between dentitions of teleost fishes. *Evolution and Development*. 8: 511-523.

Wise, S.B., Lyons, D.B., and D.W. Stock. 2006, June. Regionally restricted islet1 expression in developing teleost teeth. Poster presented at the *Integrating Evolution, Development, and Genomics Conference*, Berkeley, CA.

Wise, S.B. 2006, June. The role of academia in evolution education. Paper presented at the *Integrating Evolution, Development, and Genomics Conference*, Berkeley, CA.

Wise, S.B. 2006, January and February. Presenting a summer symposium on teaching evolution. Poster presented at the *Society for Integrative and Comparative Biology Conference*, San Diego, CA, and the meeting of the National Science Foundation Board, Boulder, CO.

Wise, S., N.T. Davis, E. Tyndale, J. Noveral, M.G. Folwell, V. Bedian, I.F. Emery, and K.K. Siwicki. 2002. Neuroanatomical studies of period gene expression in the hawkmoth, *Manduca sexta*. *Journal of Comparative Neurology*. 447: 366-380.

Selected Grants

2012. Co-PI on an Transforming Undergraduate Education in the Sciences grant, “Investigating instructional influences on the productivity of clicker discussions”. PI Jenny Knight, co PI Erin Furtak, NSF TUES #1140789, \$150,000

2008. Visiting Fellowship research funding for “Factors Influencing the Teaching of Publicly Controversial Science”. CIRES, University of Colorado. \$4,000

2006. Funding for undergraduate research with Mark Blaskovich. University of Colorado, BURST Program, \$2,500

2006. Event funding for “Teaching Evolution: Meeting the Challenge Workshops”. University of Colorado, United Government of Graduate Students, \$750

2005. Funding for undergraduate research with David Lyons. University of Colorado, URAP Program, \$2,500

2004-2006. Dissertation Improvement Grant, “Bone morphogenetic protein (Bmp) function in teleost dental evolution and development”. National Science Foundation, \$10,000

2002-2005. National Science Foundation, Graduate Research Fellowship. “Investigating genetic changes in the evolution of the teleost dentition,” \$90,000.

2000. Americorps Education Award. \$4,700

Synergistic Activities

I am on the committee of a graduate student at the University of Colorado researching climate change communication. I also advise the graduate student Evolution Outreach Committee at the University of Colorado, which coordinates a yearly Darwin Day event and a yearly workshop on evolution education.

Collaborators and Other Affiliations

David Stock, graduate advisor

Ecology and Evolutionary Biology
University of Colorado, Boulder, CO

Susan Buhr, postdoctoral advisor
Cooperative Institute for Research in Environmental Sciences (CIRES)
Education and Outreach Group
University of Colorado, Boulder, CO

Paul Beardsley
Biological Sciences Curriculum Study (BSCS)
Colorado Springs, CO

Louise Mead
BEACON
Michigan State University