

CONTACT INFORMATION

Asaph B. Cousins
Assistant Professor
School of Biological Sciences
Washington State University
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EDUCATION

Ph.D., Plant Biology, 2001, Arizona State University, Tempe AZ Dissertation title: “*Photosynthesis in Sorghum Bicolor under Free-Air Carbon Dioxide Enrichment and Water Stress*”
B.S., Biology, 1996, California State University Chico, Chico CA
Minors in: Natural Resource Management & Chemistry

PROFESSIONAL ACADEMIC EXPERIENCE

Assistant Professor, School of Biological Sciences,
Washington State University 2008-present
Postdoctoral Research Associate, ARC Centre of Excellence in Plant Energy Biology,
Australian National University 2006-2007
NSF Postdoctoral Fellow,
Australian National University, 2004-2006
Postdoctoral Research Associate,
UC Davis, 2002-2004
Research Assistant,
Arizona State University, 2001-2002
NSF Graduate Research Training Fellow,
Arizona State University, 1997-2001

FUNDING

Current Support

Department of Energy, Office of Biological and Environmental Research *A systems-level analysis of drought and density response in the model C4 grass Setaria viridis. (co-PI, submitted through the Danforth Center, Saint Louis, MO) \$12,140,437 total, \$1,270,669 to WSU 2012-2017*
Department of Energy: *Disruption of the CO₂ concentrating mechanism in C₄ plants: Implications for CO₂ fixation and photosynthetic efficiency during C₄ photosynthesis \$510,000 (sole-PI) 2012-2015*
Bill and Melinda Gates Foundation *Supercharging rice photosynthesis- renewal. \$256,374 to WSU (co-PI with Gerry Edwards, SBS) 2012-2015*
National Science Foundation: *Plant Energy Metabolism and Carbon/Nitrogen Assimilation. \$498,308 (sole-PI) 2009-2013 Under no cost extension*
National Science Foundation: *MRI: Acquisition of instrumentation to study stable isotopes of the carbon, nitrogen, and water biogeochemical cycles. \$515,296 (lead-PI, co-PIs: Evans, RD (SBS), Keller K (SEES), Orr C (SEES), Mount G (LAR)), 2009-2012*

Pending

National Science Foundation: IOS pre-proposal *Phylogenetic Insights into Leaf CO₂ and H₂O isotope exchange. Resubmission to NSF January 2013 \$483,868 (sole-PI) Third submission- previous reviews were 3 very good, 1 good and 1 excellent on the 2nd submission.*
Pakistan-US Science and Technology Cooperation Program 2012 Joint Project Proposal Morphological,

physiological and biochemical plasticity of single cell C₄, Kranz type C₄ and C₃ Suaedoideae species in response to environmental variations in light and salinity (co-PI) \$ \$177,142.

Grants completed

Department of Energy: *Disruption of C₄ photosynthesis by changes in light quantity and quality: Implications for CO₂ fixation and photosynthetic efficiency in C₄ crop and biofuel species* \$473,000 (**sole-PI**) 2009-2012

Bill and Melinda Gates Foundation *Creating the Second Green Revolution by Supercharging Photosynthesis: C₄-rice*. \$334,959 (**co-PI** with Gerry Edwards) 2009-2012

U.S. Civilian Research and Development Foundation-*Identifying photosynthetic features of plants, which can reduce the impact of global warming*. \$32,900 (**co-PI** with Gerry Edwards) 2010-2012

U.S. Department of Agriculture *Food Security, WA FY2010* \$256,864 (**co-PI** with PI Cavalieri R. and co-PIs Kirchoff H, Neff M, Edwards GE, Kahn M, Kramer D) 2010-2012

WSU's Research and Graduate Education Equipment Grant *Photosynthetic Phenotyping Array (PPA): a critical step in a new direction for plant sciences at WSU* \$319,777 (co-PI with PI Kramer D and co-PIs Browse J, Burke I, Carter A, Dhingra A, Hulbert S, Knowles NR, Kirchoff H, Lewis NG, Neff M) 2010-2011

Funded grants listed as a collaborator

Natural Sciences and Engineering Research Council, Canada *Interactive effects of temperature and CO₂ levels on C₃ and C₄ plants* PI Rowan S (University of Toronto). Postdoc and PI will spend 3-6 months in my lab

Natural Environment Research Council, UK *Rubisco evolution, photosynthesis and plant adaptation to climate change* PIs Filatov D & Smith A (University of Oxford) £529,028 = \$804,096 USD PIs will spend ~9 months in my lab

Department of Energy *Regulation of chloroplast biogenesis: The immutans mutant of Arabidopsis* PI Steve Rodermel (Iowa State University) Collaborator

National Science Foundation *UI-WSU Program in Undergraduate Mathematics and Biology*. (Senior Personnel) \$425,350 Listed as senior personnel

PUBLICATIONS cited 393 times, [^]from WSU, [#]WSU students or postdocs, ^{*}Undergrads

h-index = 12, Impact factor: high = 29.7, average = 9.7 and low = 2.3 average for plant biology is ~1.2

[#]Walker B., **Cousins A.B.** (2013) Temperature dependent increases in photorespiratory CO₂ release in *Arabidopsis thaliana*: Implications to leaf CO₂ gas exchange. *Journal of Experimental Biology* Accepted

*Research and funding exclusively from my lab, involved in design, implementation and writing

Busch F., Sage, T.L., **Cousins, A.B.**, Sage, R.F. (2013) C₃ plants enhance rates of photosynthesis by reassimilating photorespired and respired CO₂. *Plant, Cell and Environment* 36:200-212

*Research and funding in part from my lab, involved in design, implementation and writing of gas exchange experiments

^{^#}Ubierna N., [#]Sun W., **Cousins A.B.** (2013) The efficiency of C₄ photosynthesis under low light conditions in *Zea mays*, *Miscanthus x giganteus* and *Flaveria bidentis*. *Plant Cell and Environment* 36:365-381

*Research and funding exclusively from my lab, involved in design, implementation and writing

Gandin A., Duffes C., Day D.A., **Cousins A.B.** (2012) The absence of alternative oxidase AOX1A results in altered response of photosynthetic carbon assimilation to increasing CO₂ in *Arabidopsis thaliana*. *Plant, Cell and Physiology* 59:1627-1637

- *Research and funding exclusively from my lab, involved in design, implementation and writing
- [^][#]King J.L., Edwards G.E., **Cousins A.B.** (2012) The efficiency of the CO₂-concentrating mechanism during single-cell C₄ photosynthesis. *Plant Cell and Environment* 35, 513-523
*Research and funding exclusively from my lab, involved in design, implementation and writing, plant material from Dr. Edwards
- [^][#]Sun, W, [#]Ubierna, N, Ma, JY, and **Cousins, A.B.** (2012). The influence of light quality on C₄ photosynthesis under steady-state conditions in *Zea mays* and *Miscanthus × giganteus*: changes in rates of photosynthesis but not the efficiency of the CO₂ concentrating mechanism. *Plant, Cell & Environment* 35, 982-993
*Research and funding exclusively from my lab, involved in design, implementation and writing
- [^][#]Ubierna N., [#]Sun W., **Cousins A.B.** (2011) The efficiency of C₄ photosynthesis under low light conditions: assumptions and calculations with CO₂ isotope discrimination. *Journal of Experimental Botany* 62, 3119-3134
*Research and funding exclusively from my lab, involved in design, implementation and writing
- [^]**Cousins A.B.**, [#]Walker B. Pracharoenwattana I., Smith S.M., Badger M.R. (2011) A non-lethal disruption of photorespiration alters the stoichiometry of Rubisco oxygenation and photorespiratory release of CO₂ *Photosynthesis Research* 108, 91-100
*Half the research and funding exclusively from my laboratory from research started as postdoc
- [^]Bloom A.J., Randall R., Rachmilevitch S., **Cousins A.B.**, Carlisle E. (2011) CO₂ enrichment inhibits shoot nitrate assimilation in C₃ but not C₄ plants and slows growth under nitrate in C₃ plants. *Ecology* 93, 355-367
*Contribution to writing while at WSU, data collected as postdoc
- [^]Kodama N., **Cousins A.B.**, Tu K.P., Barbour M.M. (2011) Spatial variation in photosynthetic carbon and oxygen isotope discrimination along leaves of the monocot Triticale (*Triticum × Secale*) relates to mesophyll conductance and the Péclet effect. *Plant Cell and Environment* 34, 1548-1562
*Contribution to writing and data analysis while at WSU, data collected as postdoc
- [^]Bloom A.J., Asensio J.S.R., Burger M., **Cousins A.B.** (2010) Carbon Dioxide Enrichment Inhibits Nitrate Assimilation in Wheat and Arabidopsis *Science* 328, 899-902
*Contribution to writing while at WSU, data collected as postdoc
- [^]Edwards E.J., et al... **Cousins A.B.** one of 25 authors (2010) The Origins of C₄ Grasslands: Integrating Evolutionary and Ecosystem *Science* 328, 587-591
*One of many co-authors that contributed to the development and writing
- [^]**Cousins A.B.**, Ghannoum, O., Badger M.R., von Caemmerer S. (2010) Measuring Rubisco kinetics with a membrane inlet mass spectrometer. *Plant Cell and Environment* 33: 444-452
*Contribution to writing and data analysis while at WSU, data collected as postdoc
- [^][#]Leisner C.P., **Cousins A.B.**, [#]Offermann S., Okita T.W. & Edwards G.E. (2010) The effects of salinity on photosynthesis and growth of the single-cell C₄ species *Bienertia sinuspersici* (Chenopodiaceae). *Photosynthesis Research* 106, 201-214
*Involved in experimental design and writing while at WSU

Before WSU

- Cousins A.B.**, Pracharoenwattana I., Smith S.M., Badger M.R. (2008) The non-essential role of peroxisomal malate dehydrogenase during photorespiration. *Plant Physiology* 148, 786-795
- Cousins A.B.**, Badger M.R., von Caemmerer S. (2008) C₄ photosynthetic isotope exchange in NAD-ME and NADP-ME type grasses. *Journal of Experimental Botany* 59, 1695-1703
- Cousins A.B.**, Baroli I., Badger M.R., Ivakov A., Lea P.J., Leegood R.C., von Caemmerer S. (2007) The role of PEPc during photosynthetic isotope exchange and stomatal conductance. *Plant Physiology* 145, 1006-1017
- Griffiths H., **Cousins A.B.**, Badger M.R., von Caemmerer S. (2007) Discrimination in the dark: resolving the interplay between metabolic and physical constraints to PEPc activity during the CAM cycle. *Plant Physiology* 143, 1055-1067
- Cousins A.B.**, Badger M.R., von Caemmerer S. (2006) A transgenic approach to understanding the influence of carbonic anhydrase on C¹⁸O₂ discrimination during C₄ photosynthesis. *Plant Physiology* 142, 662-672
- Cousins A.B.**, Badger M.R., von Caemmerer S. (2006) Carbonic anhydrase and its influence on carbon isotope discrimination during C₄ photosynthesis: Insights from antisense RNA in *Flaveria bidentis*. *Plant Physiology* 141, 232-242
- Cousins A.B.** and Bloom A.J. (2004) Oxygen consumption during leaf nitrate assimilation in a C₃ and C₄ plant: the role of mitochondrial respiration. *Plant Cell and Environment*. 27, 1537-1545.
- Rachmilevitch S., **Cousins A.B.** and Bloom A.J. (2004) Nitrate assimilation in plant shoots depends on photorespiration. *Proceedings of the National Academy of Sciences*. 101, 11506- 11510
- Cousins A.B.** (2004). Man bests machine, this time. *The Scientist*. 18: 58.
- Cousins A.B.** and Bloom A.J. (2003) Influence of elevated CO₂ and nitrogen nutrition on photosynthesis and nitrate photoassimilation in maize (*Zea mays* L.). *Plant Cell and Environment* 26, 1525-1530.
- Cousins A.B.**, Adam N.R., Wall G.W., Kimball B.A., Pinter Jr. P.J., Ottman M.J., Webber A.N. (2003) Development of C₄ photosynthesis in Sorghum leaves grown under free-air CO₂ enrichment (FACE) *Journal of Experimental Botany* 54, 1969-1975.
- Cousins A.B.**, Adam N.R., Wall G.W., Kimball B.A., Ottman M.J., Webber A.N. (2002) Photosystem II energy use, non-photochemical quenching and the xanthophyll cycle in *Sorghum bicolor* grown under drought and Free-Air CO₂ Enrichment (FACE) conditions. *Plant Cell and Environment* 25, 1551-1559
- Wall G.W., Brooks T.J., Adam N.R., **Cousins A.B.**, Triggs J., Kimball B.A., Pinter P.J. Jr., LaMorte R.L., Ottman M.J., Leavitt S.W., Matthias A.D., Williams D.G., Webber A.N. (2001) Elevated atmospheric CO₂ improved Sorghum plant water status by ameliorating the adverse effects of drought. *New Phytologist* 152(2), 438-473.
- Conley M.M., Kimball B.A., Brooks T.J., Pinter P.J. Jr., Hunsaker D.J., Wall G.W., Adam N.R., LaMorte R.L., Matthias A.D., Thompson T.L., Leavitt S.W., Ottman M.J., **Cousins A.B.**, Triggs J. (2001) Free-air Carbon Dioxide Enrichment (FACE) effects on sorghum evapotranspiration in well watered and water stressed irrigation treatments. *New Phytologist* 151, 407-412.
- Cousins A.B.**, Adam N. R., Wall G.W., Kimball B.A., Pinter Jr. P.J., Leavitt S.W., LaMorte R.L., Matthias A.D., Ottman M.J., Thompson T.L., Webber A.N. (2001) Reduced photorespiration and increased energy-use efficiency in young CO₂-enriched sorghum leaves. *New Phytologist* 150, 275-284.

Book chapters

- von Caemmerer S., Evans J.R., **Cousins A.B.**, Badger M.R., Furbank R.T. (2006) C₄ photosynthesis and CO₂ diffusion. *In* Supercharging rice with C₄ photosynthesis.

Non-refereed

Cousins A.B., Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2001) Photochemical energy use in Sorghum plants grown under drought and elevated CO₂. *Proceeding of the 12th International Congress on Photosynthesis*.

Cousins A.B., Adam N.R., Webber A.N. (1999) The enhancement of photosynthesis during the 1999 FACE Sorghum experiment. *U. S. Water Conservation Annual Report*.

In review

Giuliani R., Voznesenskaya E., Koteyeva, N., Evans M., **Cousins A.B.** The Structure and Function Relationship of Photosynthesis and Water Use Efficiency in Rice (*Oryza sativa* and *Oryza glaberrima*) and the Wild Relatives within the Genus *Oryza*. *Plant Physiology*

In preparation

Gandin A., Koteeva N., Voznesenskaya E., Edwards G. **Cousins A.B.** Temperature response of the photosynthetic machinery in the C₃-C₄ intermediate *Salsola divaricate*

Ubierna N., Cambaliza M.O.L., Griffith D., Mount G.H., **Cousins A.B.** Comparison of Fourier Transform Infrared Spectroscopy (FTIR) and Tunable Diode Laser Absorption Spectroscopy (TDLAS) methods for determining stable isotope ratios of atmospheric CO₂.

Sun W., Ubierna N., Ma J-Y., **Cousins A.B.** The effect of light quality on C₄ photosynthetic efficiency in *Zea mays* and *Miscanthus giganteus*. *Plant Physiology*

COLLABORATIONS

WSU

Sonja Roje, Washington State University
Gerry Edwards, Washington State University
Helmut Kirchhoff, Washington State University
George Mount, Washington State University
Camille Steber, ARS, Washington State University

National

Dave Kramer, Michigan State University
Tom Brutnell, Danforth Center
Chris Myers, Cornell University
Steve Rodermel, Iowa State University
Marty Spalding, Iowa State University

International

Rowan Sage, University of Toronto
Andrew Smith, University of Oxford
Murray Badger, Australian National University
Steve Smith, The University of Western Australia
James Burnell, James Cook University, Australia
Robert Furbank, CSIRO, Australia
Julian Hibberd, Cambridge University, UK
Jane Langdale, Oxford University, UK
Richard Leegood, University of Sheffield
Erik Murchie, University of Nottingham
Susanne von Caemmerer, Australian National University
Peter Westhoff, University of Duesseldorf
Zinguang Zhu, Shanghai Institutes for Biological Sciences
Paul Quick, International Rice Research Institute

PRESENTATIONS ⁺invited departmental seminars, ^{*}Key Note SpeakerOral

- Cousins A.B.** (2012) The efficiency of photosynthetic carbon metabolism. *Key Note Speaker, 38th Annual Midwest/Southeast Photosynthesis Meeting, Marshall, Indiana*
- Cousins A.B.** (2012) Measuring leaf photosynthesis. *Cougar Undergraduate Research Experience (CURE) program, Washington State University, Pullman, Washington*
- ⁺**Cousins A.B.** (2012) The efficiency of photosynthetic carbon metabolism: Adaptation to changing environmental conditions. *Division of Plant Sciences, University of Missouri-Columbia*
- ⁺**Cousins A.B.** (February, 2012) Adaptation of photosynthetic carbon metabolism to changing environmental conditions: Insights Past, Present and Future. *School of Life Sciences, Arizona State University*
- Sage R.F., Busch F.A., **Cousins A.B.**, Sage T.L. (2012) The trapping and re-fixation of photorespiratory CO₂ in C₃ plants: a novel mechanism to compensate for low atmospheric CO₂. *Photorespiration Meeting, Rostock, Germany*
- Busch F.A., **Cousins A.B.**, Sage T.L., Sage, R.F. (2012) A new method for the measurement of photorespiration *in vivo* and the quantification of re-assimilation of photorespired CO₂ in C₃ plants. *Photorespiration Meeting, Rostock, Germany*
- Gandin A., Ubierna-Lopez N., **Cousins A.B.** (2012) The contribution of respiratory fractionation to leaf CO₂ isotope exchange in the C₃ plant *Nicotiana tabacum*. *20th Western Photosynthesis Conference, Asilomar, CA*
- Li P., Giuliani R., Araujo W.L., Si Y., Zhang C., Slewinski T., Liu P., Sun Q., Edwards G.E., Fernie A., Turgeon R., Barkan A., **Cousins A.B.**, T.P. Brutnell (2012). Defining the maize Pyruvate orthophosphate dikinase regulatory network. *International Plant and Animal Genome XX Conference, San Diego, CA*
- Cousins A.B.** (2011) Efficiency of the CO₂ concentrating mechanism during C₄ photosynthesis: Response to change in light availability and potential of the single-cell C₄ plant. *XVIII International Botany Congress, Melbourne, Australia*
- Ubierna N., Cambaliza M.O.L., Griffith D., Mount G.H., **Cousins, A.B.** (2011). Comparison of Fourier Transform Infrared Spectroscopy (FTIR) and Tunable Diode Laser Absorption Spectroscopy (TDLAS) methods for determining stable isotope ratios of atmospheric CO₂. *American Geophysical Union, Fall Meeting, San Francisco, CA*
- Cousins A.B.** (2011) Limitation of photosynthesis by a slow schizophrenic enzyme: Evolutionary insights into the structure-function relationship of Rubisco. *Palouse Evolution and Ecology Society, Pullman, WA*
- Cousins A.B.** (2011) Efficiency of the CO₂ concentrating mechanism during C₄ photosynthesis: Response to changes in light availability. *DOE contractors meeting, Baltimore MD*
- Cousins A.B.**, Guiliani R., Edwards G.E. (2011) Disruption of C₄ photosynthesis: a gas exchange perspective. *The C₄ Rice Project Meeting International Rice Research Institute, Los Baños, Philippines*
- Cousins A.B.**, Guiliani R., Koteyeva N., Voznesenskaya E., Edwards G.E. (2011) Photosynthesis in wild-relatives of *Oryza sativa*. *The C₄ Rice Project Meeting International Rice Research Institute, Los Baños, Philippines*
- Walker B., **Cousins A.B.** (2011) Increases in photorespiratory CO₂ release under high temperature and oxygen. *19th Western Photosynthesis Conference, Asilomar, CA*
- Cousins A.B.** (2010) The CO₂-Concentrating Mechanism in Single-Cell C₄ Photosynthesis. *C₄ photosynthesis Conference, Shanghai, China*
- Cousins A.B.**, Guiliani R., Koteyeva N., Voznesenskaya E., Edwards G.E. (2009) The CO₂ compensation point in Rice. *The C₄ Rice Project Meeting International Rice Research Institute, Los Baños, Philippines*

- Cousins A.B.** (2009) CO₂ exchange in C₃ and C₄ grasses: Mechanisms and Phylogenetic Insights. *National Evolutionary Synthesis Center: C₄ grass meeting*, Durham North Carolina
- Cousins A.B.**, Walker B., Guiliani R., Edwards G.E. (2009) Variation in the efficiency of photosynthetic carbon metabolism: Response to changing environmental conditions. *Molecular Plant Sciences*, WSU
- Cousins A.B.** (2009) Productive Proposal Writing OGRD Grant Writing Workshop, WSU
Connecting Mentoring Work to the Next Steps- applying for graduate/professional school, entering workforce *Team Mentoring Workshop*, WSU
- Cousins A.B.** (2009) Mathematical modeling of leaf isotope exchange: mechanisms and phylogenetic insights into global CO₂ exchange. *Research and Training for Undergraduates in Biological and Mathematical Sciences*, WSU
- Cousins A.B.** (2009) Photosynthetic isotope exchange in C₄ plants: mechanisms and phylogenetic insights in global CO₂ exchange. *18th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Pracharoenwattana I., Smith S.M., Badger M.R. (2007) The non-essential role of peroxisomal malate dehydrogenase during photorespiration. *The 14th International Congress on Photosynthesis*, Glasgow, Scotland
- Cousins A.B.**, Badger M.R., von Caemmerer S. (2007) C₄ photosynthetic isotope exchange in NAD-ME and NADP-ME type grasses. *C₄ and CAM Meeting*, Cambridge, UK
- Cousins A.B.**, Badger M.R., von Caemmerer S. (2006) Molecular mechanisms of leaf isotope exchange: the role of carbonic anhydrase during C₄ photosynthesis. *American Society of Plant Biologists, Plant Biology*, Boston, MA
- Cousins A.B.** and Bloom A.J. (2004) Influence of elevated CO₂ and nitrogen nutrition on photosynthesis and nitrate photoassimilation in maize (*Zea mays* L.). *12th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2001) Effects of Free-Air CO₂ Enrichment (FACE) and water-stress on photosynthesis in Sorghum leaves. *10th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2000) Development of the C₄ photosynthetic apparatus in sorghum grown in elevated CO₂. *9th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2000) C₄ photosynthesis in Sorghum leaves under elevated CO₂ and water stress. *USDA, Agricultural Research Service, U.S. WCL*, Phoenix, AZ

Posters * Undergraduate, + Poster competition winner

- Walker B., * Ariza, L., Kaines S., Badger, M.R., **Cousins A.B.** (2012) Comparing the *in vivo* parameters for temperature response models of photosynthesis of Tobacco and Arabidopsis *American Society of Plant Biologists, Plant Biology*, Austin, Texas
- Boyd, R., **Cousins, A.B.** (2012) Biochemistry of photosynthetic CO₂ assimilation: a phylogenetic insight into Rubisco kinetics *American Society of Plant Biologists, Plant Biology*, Austin, Texas
- Stutz S., Edwards G., **Cousins, A.B.** (2012) Efficiency of the single-cell CO₂ concentrating mechanism under light limited growth conditions *American Society of Plant Biologists, Plant Biology*, Austin, Texas
- *Stack, G., Walker, B., **Cousins, A.B.** (2012) Understanding the balance of energy supply and demand during photosynthesis using biophysical approaches *Showcase for undergraduate research and creative activities*, WSU Pullman, Washington
- * Ariza, L. Walker, B., **Cousins, A.B.** (2012) Modeling and measuring the temperature response of photosynthesis *Showcase for undergraduate research and creative activities*, WSU Pullman, Washington
- Gandin A., *Duffes C., Barthet M., Smith P., Day D.A., **Cousins A.B.** (2011) The role of the mitochondrial alternative oxidase pathway (AOX) and the nonphosphorylating NAD(P)H

- dehydrogenase in optimizing rates of photosynthetic CO₂ assimilation. *The Gordon Conference on CO₂ fixation*, Les Diablerets, Switzerland
- Ubierna N., Sun W., **Cousins A.B.** (2011). The efficiency of C₄ photosynthesis under low light conditions. *The Gordon Conference on CO₂ fixation*, Les Diablerets, Switzerland.
- Walker B., **Cousins A.B.** (2011) Temperature-dependent increase in photorespired CO₂ impacts modeling of leaf photosynthesis. *American Society of Plant Biologists, Plant Biology*, Minneapolis, MN
- Walker B., **Cousins A.B.** (2011) Increases in photorespiratory CO₂ release under high temperature and oxygen. *The Gordon Conference on CO₂ fixation*, Les Diablerets, Switzerland
- Giuliani R., Voznesenskaya E., Koteyeva N., **Cousins A.B.**, Edwards G.E. (2011). Structural and functional characterization of photosynthesis in *Oryza* lines. *XVIII International Botany Congress*, Melbourne, Australia
- Ritter J., **Cousins A.B.** (2011) Leaf CO₂ and H₂O isotope exchange in C₄ plants *American Society of Plant Biologists, Plant Biology*, Minneapolis, MN
- Boyd R., **Cousins A.B.** (2011) Identifying a structure-function relationship in Rubisco. *ARCS Fellows Convocation and Luncheon*, Sheraton, Seattle, Washington
- Boyd R., **Cousins A.B.** (2011) Identifying a structure-function relationship in Rubisco. *ARCS Site Visit*, Compton Union Building, Pullman, Washington
- *Bollinger-Smith C., Boyd R., Walker B., **Cousins A.B.** (2011) Modeling Photosynthetic Temperature Response in *Arabidopsis*. *College of Sciences Undergraduate Research Poster Competition*, WSU Pullman, Washington,
- Boyd R., *Bollinger-Smith C., **Cousins A.B.** (2011) Complete Rubisco kinetic parameters in *Arabidopsis thaliana* determined with a membrane inlet mass spectrometer assay technique. *WSU Plant Sciences Retreat*, Ensminger Pavilion, Pullman, Washington
- Stutz S., Edwards G.E., **Cousins A.B.** (2011) Efficiency of the CO₂ concentrating mechanism in the single-cell C₄ plant *Bienertia sinuspersici* under light limited growth conditions. *American Society of Plant Biologists, Plant Biology*, Minneapolis, MN
- Sun W., Ubierna N., Ma J-Y., **Cousins A. B.** (2010) Impacts of light quality on the photosynthesis of *Zea mays* and *Miscanthus × giganteus*. *C₄ photosynthesis Conference*, Shanghai, China
- Sun W., Ubierna N., Ma J-Y., **Cousins A. B.** (2010) Impacts of light quality on the photosynthesis of *Zea mays* and *Miscanthus × giganteus*. *15th International Congress of Photosynthesis*, Beijing, China
- Sun W., Ma J-Y, Ubierna N., **Cousins A. B.** (2010). Impacts of light quality on the photosynthesis of two C₄ crops, *Zea mays* and *Sorghum bicolor* and a C₄ grass *Miscanthus × giganteus*. *Western ASPB Meeting*, Pullman, Washington
- Walker, B.J, Edwards, G.E., **Cousins A.B.** (2010) Increases in photorespiratory carbon dioxide release. *15th International Congress of Photosynthesis*, Beijing, China
- King J., Edwards G.E., **Cousins A.B.** (2010) Efficiency of the CO₂ Concentrating Mechanism in Single-Cell C₄ Metabolism *C₄ photosynthesis Conference*, Shanghai, China
- King J., Edwards G.E., **Cousins A.B.** (2010) Efficiency of the CO₂ Concentrating Mechanism in Single-Cell C₄ Metabolism *Western ASPB Meeting*, Pullman, Washington
- Giuliani, R., Voznesenskaya, E., Koteyeva, N., **Cousins, A.B.**, Edwards, G.E. (2010) Structural and Functional Characterization of Photosynthesis in Rice and wild relatives (genus *Oryza*) *C₄ photosynthesis Conference*, Shanghai, China
- Giuliani, R., Voznesenskaya, E., Koteyeva, N., **Cousins, A.B.**, Edwards, G.E. (2010) Structural and Functional Characterization of Photosynthesis in Rice and wild relatives (genus *Oryza*) *15th International Congress of Photosynthesis*, Beijing, China
- Giuliani, R., Voznesenskaya, E., Koteyeva, N., **Cousins, A.B.**, Edwards, G.E. (2010) Structural and Functional Characterization of Photosynthesis in Rice and wild relatives (genus *Oryza*) *Western ASPB Meeting*, Pullman, Washington
- Florian, B., Sage, T.L., **Cousins, A.B.**, Sage, R.F. (2010) Refixation of photorespiratory CO₂ as a method to minimize carbon loss in C₃ grasses *15th International Congress of Photosynthesis*, Beijing, China

- Florian, B., Sage, T.L., **Cousins, A.B.**, Sage, R.F. (2010) Refixation of photorespiratory CO₂ as a method to minimize carbon loss in C₃ grasses *Canadian Society of Plant Physiologists*, Toronto, Canada
- *+ Cha, P., **Cousins, A.B.** (2010) Modeling Oxygen Isotope Exchange Between Atmospheric CO₂ and Leaf H₂O in C₄ Plants *Western ASPB Meeting*, Pullman, Washington
- *+ Cha, P., **Cousins, A.B.** (2010) Modeling Oxygen Isotope Exchange Between Atmospheric CO₂ and Leaf H₂O in C₄ Plants *WCOS Undergraduate Research Poster Competitions*, Pullman, Washington
- Ritter, J., **Cousins, A.B.** (2010) Deviation of H₂O Oxygen Isotope Composition between the Leaf Site of Water Evaporation and Source Water *Western ASPB Meeting*, Pullman, Washington
- Sun K., Huang T., **Cousins A.B.**, Maliga P. & Roje S (2010) An unusual photorespiratory-like phenotype in plants expressing 5,10-methylenetetrahydrofolate reductase in plastids *Western ASPB Meeting*, Pullman, Washington
- Sun K., Huang T., **Cousins A.B.**, Maliga P. & Roje S (2009) An unusual photorespiratory-like phenotype in plants expressing 5,10-methylenetetrahydrofolate reductase in plastids *Plant Metabolic Engineering Gordon Conference*
- Walker B. & **Cousins A.B.** (2009) Photorespiration and plant carbon use: More of the story to tell *WSU Academic Showcase*
- King J., Edwards G.E., **Cousins A.B.** (2009) Efficiency of the CO₂ Concentrating Mechanism in Single-Cell C₄ Metabolism *American Society of Plant Biology*, Honolulu Hawaii
- Courtney L. *et al.* (2009) Salinity tolerance in the single-cell C₄ species *Bienertia sinuspersici*. *American Society of Plant Biology*, Honolulu Hawaii
- Courtney L. *et al.* (2009) Salinity tolerance in the single-cell C₄ species *Bienertia sinuspersici*. *Molecular Plant Sciences Symposium*, Washington State University.
- Courtney L. *et al.* (2009) Salinity tolerance in the single-cell C₄ species *Bienertia sinuspersici*. *18th Western Photosynthesis Conference*, Asilomar CA
- Cousins A.B.**, Walker, B.J, Pracharoenwattana I., Smith S.M., Badger M.R. (2009) Non-lethal disruption of photorespiration alters the stoichiometry of Rubisco oxygenation and photorespiratory release of CO₂. *18th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Ghannoum O., von Caemmerer S, Badger M. (2008) Complete Rubisco kinetic parameters in C₃ (*Triticum aestivum*) and C₄ (*Zea mays*) grasses determined with a membrane inlet mass spectrometer assay technique. *The Gordon Conference on CO₂ fixation*, Biddeford, USA
- Griffiths H., **Cousins A.B.**, Badger M.R., and von Caemmerer S (2007) Discrimination in the dark: resolving the interplay between metabolic and physical constraints to PEPC activity during the CAM cycle. *C₄ and CAM Meeting*, Cambridge, UK
- Baroli I., **Cousins A.B.**, *Ivakov A., Lea P.J., Leegood R.C., von Caemmerer S. (2007) The influence of phosphoenolpyruvate carboxylase activity on stomatal conductance in C₄ plants. *C₄ and CAM Meeting*, Cambridge, UK
- Baroli I., **Cousins A.B.**, *Ivakov A., Lea P.J., Leegood R.C., von Caemmerer S. (2006) The influence of phosphoenolpyruvate carboxylase activity on stomatal conductance in C₄ plants. *ASPB, The Biology of Transpiration*, Snowbird, UT
- Baroli I., **Cousins A.B.**, *Ivakov A., Lea P.J., Leegood R.C., von Caemmerer S. (2006) The influence of phosphoenolpyruvate carboxylase activity on stomatal conductance in C₄ plants *International Society of Plant Molecular Biology*, Adelaide, Australia
- Cousins A.B.**, Badger M., von Caemmerer S. (2006) Mechanisms of leaf isotope exchange: the role of carbonic anhydrase during C₄ photosynthesis. *American Society of Plant Biologists, Plant Biology*, Boston, MA
- Burger M., **Cousins A.B.**, Bloom A.J. (2006) Nitrate Assimilation in Elevated CO₂ or Low O₂ Atmospheres *15th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Badger M., von Caemmerer S. (2005) C¹⁸O¹⁶O and ¹³CO₂ discrimination during C₄ photosynthesis: The role of carbonic anhydrase. *The Gordon Conference on CO₂ fixation*, Aussois, France

- Cousins A.B.** and Bloom A.J. (2004) Oxygen consumption during leaf nitrate assimilation in a C₃ and C₄ plant: the role of mitochondrial respiration in the light. *The 13th International Congress on Photosynthesis*, Montreal, Canada
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2001) Photochemical energy use in Sorghum plants grown under drought and elevated CO₂. *The 12th International Congress on Photosynthesis*, Brisbane, Australia
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (2000) Elevated CO₂ effects on photosynthesis in the C₄ crop, Sorghum. *American Society of Plant Biologists, Plant Biology*, San Diego, CA
- Cousins A.B.**, Adam N.A., Wall G.W., Kimball B.A., Webber A.N. (1999) The effects of water stress and elevated CO₂ on C₄ photosynthesis of *Sorghum bicolor*. *8th Western Photosynthesis Conference*, Asilomar, CA
- Cousins A.B.**, Webber A.N. (1998) Examining C₄ photosynthesis in *Sorghum*. *7th Western Photosynthesis Conference*, Asilomar, CA

TEACHING

At WSU

- Lecturer, Biology 513 Plant Metabolism
Washington State University, Fall 2012
- Co-Lecturer, Biology 106 Introduction to Biology,
Washington State University, Spring 2008, 2009, 2010, 2011 and 2012
- Guest lecturer, Biology 540 Stable Isotope Theory and Methods,
Washington State University, Spring 2012
- Guest lecturer and lab, CE 543 Nitrogen measurements
Washington State University, Spring 2012
- Lecturer, Biology 504 Methods in Plant Physiology
Washington State University, Fall 2009 and 2011
- Co-Lecturer, Crops 405 Plant Biotechnology
Washington State University, Spring 2010

As Postdoc or graduate student

- Co-Lecturer, Functional Ecology,
Australian National University, 2006
- Guest lecturer, Plant Ecophysiology,
UC Davis, Winter 2004
- Teaching and course development workshops,
UC Davis, Spring 2003
- Substitute lecturer, Plant Biology,
UC Davis, Fall 2002
- Teaching Assistant, Computers applications in biology,
Arizona State University, F 2001
- Co-Lecturer, Cell and Molecular Biology,
Arizona State University, Spring 2001
- Substitute lecturer, Cell Biology,
Arizona State University, Fall 2000
- Substitute lecturer, Plant Anatomy,
Arizona State University, Fall 1999
- Teaching Assistant, Plant Anatomy laboratory,
Arizona State University, Fall 1999
- Teaching Assistant, Plant Physiology laboratory,
Arizona State University, Spring 1999

ADVISEES

Undergraduate coursework advisees active during Spring 2012

Joseph Choi
Sean Hauck
Kellon Hunt
Kelly Sutherland
Brittany Comstock
Corson Cunningham
Alex Gallacher
Sarah Pike
Chenghung Shih
Chris Smolkowski
Kevin Tran

Undergraduate Research Projects

Paul Cha (08-10)
Courtney Cacabelos (2009)
Connor Bollinger-Smith (09-2011)
Patrick Kramer (09-2011)
Clarie Duffee (10-2011)
Loren Ariza (11-2012)
Gordon Stack (11-current)
Tom Sexton (12-current)
Mykhaylo Denysyuk (12-current)
Kevin Tran (12-current)
Lwanga Nsubuga (12-current)
Jenna Degreef (12-current) co-supervised with Dr. Gittes, Department of Physics, WSU

Graduate Students

Jenny King, MS (08-2010)
Berkley Walker, PhD (08-current)
Jeff Ritter, PhD (09-current)
Samantha Stuz, MS (10-current)
Ryan Byod, PhD (10-current)
Conor Bollinger-Smith, MS (11-current)
Erika Serrano, PhD Fulbright Fellow (12-current)

Postdoctoral Scientist

Anthony Gandin: (10-current)
Rita Guilianni (09-current) co-supervised with Dr. Gerry Edwards, School of Biology, WSU
Nerea Lopez (09-2011)
Wei Sun (09-2011)

Visiting Scientist

Maxim Karpalov (5/12-7/12)
Jian-Ying Ma (10-2011)
Florian Busch (1/10-4/10)
Murray Badger (4/10-7/10)
Rowan Sage (1/10)

Graduate student committee service

Travis Almquist, PhD (2009-current)
Kirt Onthank, PhD (2009-current)
Dan Mullendor, PhD (2009-current)
Brenton Poirier, PhD (2011-current)

Sierra Beecher, PhD (2011-current)
 Kristen Woffinden, PhD (2012-current)
 Sarah Anderson, PhD (2011-current)
 James Santiago, PhD (2012-current)
 Dipika Jadav, PhD (2012-current)
 Courtney Leisner, MS (2008-2010)
 Byran Carlson, MS (2008-2010)
 Josh Rosnow, MS (2008-2010)

AWARDS

SOLS Outstanding Young Alumni Award, ASU	2011
College of Sciences Early Career Faculty Award, WSU	2011
Nominated for College of Sciences Faculty Advising Excellence	2009
Grantwriters' Mentored Proposal Writing Workshop: Tuition waver	2009
Gordon Conference Financial Award	2008
American Society of Plant Biologists Travel Grant	2006
Gordon Conference Financial Award	2005
National Science Foundation International Postdoctoral Fellowship	2004-2007
American Society of Plant Biologists Travel Grant	2000
National Science Foundation Graduate Research Training Fellowship	1997-01
Arizona State University Graduate Academic Scholarship	1997-01
Arizona State University Graduate Assistant Tuition Scholarship	1997-01

PROFESSIONAL AFFILIATIONS

National Postdoctoral Association (NPA)	2001-2003
Council on Undergraduate Research (CUR)	2000-2004
American Society of Plant Biologists (ASPB)	1998-current
Plant Biology Graduate Student Association (PBGSA)	1997-02
International Society of Photosynthesis Research (ISPR)	2001-current
Molecular Plant Sciences Graduate Program	2008-current

PROFESSIONAL SERVICE

Washington State University

Showcase for undergraduate research and creative activities, WSU (2012)
 Poster judge
 Cougar Undergraduate Research Experience (CURE) (2012)
 Presenter and interviewer
 Crops and Soil faculty search committee, WSU, 2012-present
 Fluorescence phenotyping facility steering committee, 2011-present
 Mass spectrometer steering committee, 2008-present
 Office of Multicultural Student Services Team Mentoring Program, 2009-present
 Student mentor
 Honors College new student orientation (2011)
 Discussion common reading selection with students
 Honors College Thesis evaluator (2011)
 For Heather Enlow
 Grant writers' Mentored Proposal Writing Workshop 2009
 Presentation on grant writing
 Faculty Committee to assist WSU evaluation by Art & Science Group 2009
 Group to discuss WSU culture for Provost Office

Co-Organizer Molecular Plant Physiology Graduate Recruitment weekend, 2011
Co-Organizer Western American Society of Plant Biologist meeting Pullman, WA, 2010

College of Science

Research and Training for Undergraduates in Biological & Mathematical Sciences, 2008-2011
Student research mentor (two students: Paul Cha & Conor Bolinger-Smith)
College of Sciences Undergraduate Research Competition 2008,2009, 2010 & 2011
Poster Judge

School of Biological Sciences

SBS seminar organizer, Spring 2012
SBS Graduate Student Association Committee, 2011-present
Hiring Committee for SBS Finance Officer, 2011
SBS undergraduate recruitment at "Preview Days", 2010
Vincent Franceschi Research Fellowships in Plant Biology Committee, 2008-present

Outside the University

Associate Editor, Journal of Photosynthesis Research, 2011-present
Australian CSIRO Researching With Scientists Program, 2004-06
Guest lectured at local high schools to encourage student participation in science and facilitated teacher training workshops.
Postdoctoral teaching initiative committee, Postdoc Scholars Association, UCD, 2004.
Organized teaching workshops and lecturing opportunities for Post Docs.

Ad hoc journal reviewer:

Global Change Biology
Journal of Experimental Botany
Photochemistry and Photobiology
Photosynthesis Research
Plant Physiology
Plant Cell and Environment

Ad hoc grant reviewer:

National Science Foundation
USDA

VOLUNTEER AND OUTREACH

Community Lead Learning with Palouse Prairie School, Moscow Idaho 2012-current
Science Alliance program with Moscow High School 2010-current
Graduate students teaching in high school sciences courses
Lena Whitmore Elementary School, Moscow Idaho 2009
Class demonstration on DNA extraction and PCR
Moscow High School, Moscow Idaho 2009-current
Mentor for Extended Learning Program (to date three high school students)
The O'Conner Cooperative and Inner north parks, 8/05-07
Native plant re-vegetation and development of an environment centre
Friends of Putah Creek, 9/03
Cleanup and restoration
Ramsey Canyon Preserve, Arizona. 18/00
Riparian restoration
Bilsa Biological Reserve, Ecuador, 03/97 – 05/97
Tropical flora sampling and permanent plot construction
National Herbarium of Ecuador, Quito Ecuador, 01/97–05/97