Susan M. Wick

Department of Plant Biology

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250 Biological Sciences Center

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**Education**:

Undergraduate study at Waseda University, Tokyo, Japan, 1969‑1970

B.S. Botany, Oregon State University, 1972

 Ph.D. Biological Sciences, Stanford University, 1979.

Postdoctoral Fellow, The Australian National University, 1979‑1980

**Academic Appointments**:

Research Fellow, The Australian National University, 1981‑1985

Assist. Professor, Dept. Botany, University of Minnesota, 1985‑1989

Assoc. Professor, Dept. Plant Biology, University of Minnesota, 1989‑1994

Professor, Dept. Plant Biology, University of Minnesota, 1994‑

Director, General Biology Program, 1991‑1994

 Director, Plant Molecular Genetics Institute, 2001-2003

 Associate Department Head, Dept. Plant Biology, 2003-2006

 Director, Biology Program, 2006-2009

**Academic Honors**:

College of Biological Sciences Stanley Dagley Memorial Teaching Award, 1993

NSF Career Advancement Award, 1994‑1995

 Senior Teaching Fellow, University of Minnesota, 2003-2004

 National Academies Education Fellow in the Life Sciences, 2004-2005

 Lorrie Ryan Memorial Poster Presentation Award, Lilly Conference on College and

 University Teaching, Traverse City, 2009

 National Academies Education Mentor in the Life Sciences, 2011-2015

 College of Biological Sciences John S. Anderson Academic Leadership Award, 2012

##  Horace T. Morse - University of Minnesota Alumni Association Award for Outstanding Contributions to Undergraduate Education, 2013

**Research Area:**

Enhancing student learning, particularly in large classes; team-based learning to improve learning skills and retention of knowledge; examination of whether improved knowledge of genetics and evolution affect whether students are convinced by evidence for evolution.

**National Professional Associations:**

American Society for Cell Biology

American Society of Plant Biologists

**Professional Experience, Activities, and Service Related to Research:**

***Locally***

Member of the Graduate Faculty, Plant Biological Sciences Program

Member of NSF Research Training Grant on Cytoskeleton, 1991‑2001

Member of CBS Dean, Graduate School review committees, 1992

Secretary‑treasurer, U of MN chapter of Sigma Xi, 1992‑1994

Member of University Senate Library Committee, 2004-2007

***At national, international level***

Member of Editorial Board, The Journal of Histochemistry and Cytochemistry, 1986‑1990

Member of Editorial Board, Journal of Plant Research, 1994‑1999

Member of Board of Advisors, Protoplasma, 1998-2012

Guest editor for thematic issue on plant cytoskeleton, Journal of Plant Growth Regulation, 2001

Section editor (Cell and Developmental Biology), Plant Biology, 2002-2014

Member of Advisory Panel for the Cell Biology Program of the National Science Foundation, (NSF) 1987‑1992

Member of Department of Energy/NSF/United States Department of Agriculture Collaborative Research in Plant Biology Advisory Panel, 1994

Member, Committee of Visitors, NSF Division of Molecular and Cellular Biosciences, Cell Biology Cluster Programs, 1997

Member of site visit teams, NSF Plant Genomics Program, 1998, 2000 (chair of one team, 2000)

Grants panel, USDA Plant Growth and Development, 2000

Member, Committee of Visitors, NSF Division of Biological Infrastructure, 2002

Chair, Committee of Visitors, NSF Division of Biological Infrastructure, 2004

External reviewer of Biology Department, University of Massachusetts, Amherst, 2000

Chair of external review team for Biology Department at U. Massachusetts, Amherst, 2007

Chair of external review team for Biology Department at Indiana University-Purdue University Indianapolis (IUPUI), 2013

Member of steering committee, NSF-sponsored Multi‑institutional Research Network on plant

 cytoskeleton‑ plasma membrane‑ cell wall continuum (Cytonet), 1992‑1997

Secretary, Society for Developmental Biology, 1994‑1997

Chair of Gordon Conference on Cellular and Molecular Biology of the Plant & Fungal Cytoskeleton, 1995; vice‑chair, 1993

Symposium co‑chair, speaker, American Soc. for Plant Physiology meeting, 1996

Ad hoc reviewer for Plant Cell, Plant Physiology, Developmental Biology, Protoplasma, Cell Motility and the Cytoskeleton, Journal of Cell Biology, Journal of Cell Science, PNAS, Planta, Nature, Nature Cell Biology, Nature Reviews Cell Biology, etc.

Ad hoc reviewer of proposals submitted to the National Science Foundation, USDA Competitive

 Research Grants Office, DOE, NASA, NIH, Human Frontier Science Program, NSERC, the Australian Research Council, HHMI Constellation Studios, etc.

**Professional Activities Related to Teaching, Curriculum Development, or Mentoring:**

***At instructional program, department, graduate program, and college level***

Member of (General) Biology Advisory Program, 1988-present

Director of General Biology Program, 1991-1994; coordinated a major curriculum review and

 development of a new series of introductory courses for biology majors and non-majors.

Leader of Biol 1001 course team for 3-year University of MN Twin Cities Bush Grant Initiative, Promoting Student Learning in Large Classes, 2005-2008

Director of Biology Program, 2006-2009; coordinated curriculum review and development of a

 new series of introductory courses for biology majors and non-majors.

Foundations of Biology (biology majors’) Course Steering Committee member, 2006-present

Director of Undergraduate Studies for the Biology major, 2006-present

Curriculum Committee, Department of Plant Biology, 1998-2003

Committee to design new course in plant diversity, Department of Plant Biology, 1999

Associate Director of Graduate Studies, Plant Biological Sciences, 1992‑1994

Director of Graduate Studies, Plant Biological Sciences, 1995‑1997

Plant Biological Sciences Curriculum Committee, 1997-2001; chair, 1997-1998

Plant Biological Sciences Admissions Committee, 1999-2000

Plant Biological Sciences Steering Committee, 2002-2003

Plant Biological Sciences Colloquium Committee, 2009-2011

Member of Educational Policy Committee, CBS, 1987‑1991, 2003-present, Chair 1990‑1991

Member of CBS Awards (for teaching, advising) Committee, 1990-1994, 1999-2006

Member of CBS Teaching Assistant Awards Committee, 2002, 2003, 2006-2013

Member of CBS Task Force on undergraduate curriculum, 2004-2005

Invited instructor, CBS Nature of Life Program for freshmen, 2005-present

***At campus and state level***

Science in Agriculture Major (COAFES/CFANS) advisory committee, 1990-1991

Committee to plan undergraduate Plant Sciences major (COAFES/CFANS), 2003

University Senate Committee on Educational Policy (SCEP), 1990‑1993, 2012-present.

 Will be chair 2014-2015. In the 1990s I had the major responsibility for developing and

 presenting to the University Senate a standardized procedure for evaluation of under-

 graduate courses for course and instructor improvement.

Member of selection committee for the U of MN Morse-Alumni Award for outstanding contributions

 to undergraduate education, 1990, 1991, 2014

SCEP representative to the Graduate School Learning Outcomes and Assessment Committee, 2012- 2014

Curriculum Transformation and Disabilities Workshop, 2002

University of Minnesota Council on Liberal Education, 2006-2010, 2013-present

Mid-Career Teaching Program, 2001-2002; asked to be faculty leader 2002-2003

Presentations on active learning in the classroom, Center for Teaching and Learning, 2004- 2014

Co-leader of workshop on active learning at Academy of Distinguished Teachers (ADT) conference, Pedagogical Approaches for Engaging Students, 2005

Presentation, Training the next generation of effective teachers in your field, Academy of Distinguished Teachers conference, Teaching and Learning in Changing Times, 2013.

Presentation on active learning in introductory biology coursework, Macalester College, 2013

Presentations and workshops on active learning and maintaining productive student teams, the College of Veterinary Medicine and the College of Food, Agriculture and Natural Resources, 2013, 2014

Presenter in Crash Course in Scientific Teaching for faculty and postdocs in the College of Biological Sciences and the School of Public Health, 2014

Mentor in the Teaching Opportunity Program for Doctoral Students for Christine McCune and Kalli-

 Ann Binkowski, 1993-1995

Co-instructor in Grad 8081, Preparing Future Faculty, for PhD students and postdocs, 2005

Faculty Mentor in Next Generation of the Professoriate (Office of Provost and OIT), 2004-2005

Campus Curriculum Committee, 2013-2014

Mentor in the President’s Distinguished Faculty Mentoring Program, 1991-2000

Co-advisor to UMN Student Campus Life Organization, Biology without Borders, 2006-present

Advisor to UMN undergraduate student Health and Biological Research (HBR) Club, 2014-

China Center Advisory Committee, 1987‑1991

Instructor, Investigative Plant Biology for Elementary Teachers, summer workshop and sessions during school year, Improving Teacher Quality Program, MN Office of Higher Education, 2004-present; PI on grant since 2005

Co-organizer and member of instructional team, St. Paul Public Schools Catalyst Summer Institute for high school teachers, The Architecture of Life, 2006

Instructor in Austin Fellowship Program for improvement of science education in the Austin (MN) Public Schools, administered through CEHD and funded by the Hormel Foundation; five courses and several extra school year meetings in Austin, 2008-2011

***At national and international level***

Member of Women in Cell Biology Committee, American Society for Cell Biology, 1995‑2007. A

 major goal is to mentor students who pursue careers in biology. I chaired the Issues and Opportunities in Cell Biology lunch at the ASCB annual meeting for two years, wrote

 articles for the WICB column in the ASCB newsletter, one of which is the lead chapter in

 the 2002 and 2008 compendia, Career Advice for Life Scientists, and helped revise a

 booklet on obtaining a job in teaching and research.

Member of Education Committee, American Society for Cell Biology (ASCB), 2008-present. Vice-Chair of Education Committee, ASCB, 2011; Chair 2012-present. The committee’s goal is

improvement of science education at K-graduate/professional school levels, with major emphasis on undergraduate education. This committee sponsors several workshops, symposia, and forums at the ASCB annual meeting and also has mentoring programs and activities throughout the year.

Participant in National Academies/Howard Hughes Medical Institute Summer Institute on

 Undergraduate Education in Biology, 2004

Mentor and presenter in National Academies Northstar Summer Institute on Undergraduate Science Education, 2011, 2012, 2013, 2014

Task force leader, Alumni Communications, for National Academies/Howard Hughes Medical

 Institute Madison Summer Institute, 2012-2013

Member of planning committee for the 2015 National Academies Scientific Teaching Alliance conference, 2013-present

Faculty Institutes for Reforming Science Teaching (FIRST II) participant, 2005-2006 (Diane Ebert-May, Michigan State University, PI)

International SoTL Conference presentation, Designing Research: The Scholarship of Teaching and Learning in Large Lecture Courses, London, 2006

Member of working committee of the American Society for Cell Biology, tasked with naming the core concepts in cell biology and developing learning outcomes and sample learning activities linked to them, 2012; this is part of the HHMI-sponsored CourseSource online education journal.

Member of working group of American Society of Plant Biologists and Botanical Society of America, asked to identify core concepts in plant biology and develop learning outcomes to accompany them, 2012; part of the HHMI-sponsored CourseSource online education journal.

Leader at mentoring roundtable on undergraduate education, American Society for Cell Biology annual meeting, 2012, 2013

Editor for area of Plant Biology, CourseSource, 2014-

Presentations and workshops on active learning, teaching in active learning classrooms, and

maintaining productive student teams at 2nd National Forum on Active Learning Classrooms, Minneapolis; Arizona State University; Central Michigan University; St. Norbert College; Washington University, 2014

**Teaching Experience:**

 BIOL 1001, Introductory Biology: Evolutionary and Ecological Perspectives

 BIOL 1009, General Biology

 BIOL 1905 Freshman Seminar, Ebola to SARS and H1N1: Emerging Human Viruses

 BIOL 2002/2002H, Foundations of Biology for CBS majors

 BIOL 3960H, Honors Seminar: Communicating in the Biological Sciences

 GRAD 8081, Preparing Future Faculty

 PBIO 3007, Plant and Fungal Diversity and Adaptation

 PBIO 3012, Plant Biology

 PBIO 5141, Plant Cell Biology

 PBIO 5414, Plant Cell and Molecular Biology

 numerous special topics and seminar courses for undergraduates and graduate students

**Publications:**

***Peer Reviewed***

Wick, S.M. and P.K. Hepler. 1980. Localization of Ca++-containing antimonate precipitates during mitosis. J. Cell Biol. 86: 500-513.

Wick, S.M., R.W. Seagull, M. Osborn, K. Weber and B.E.S. Gunning. 1981. Immunofluorescence microscopy of organized microtubule arrays in structurally stabilized meristematic plant cells. J. Cell Biol. 89: 685-690.

Wick, S.M. and P.K. Hepler. 1982. Selective localization of intracellular Ca2+ with potassium antimonate. J. Histochem. Cytochem. 30: 1190-1204.

Wick, S.M. and J. Duniec. 1983. Immunofluorescence microscopy of tubulin and microtubule arrays in plant cells. I. Pre-prophase band development and concomitant appearance of nuclear envelope-associated tubulin. J. Cell Biol. 97: 235-243.

Wick, S.M. and J. Duniec. 1984. Immunofluorescence microscopy of tubulin and microtubule arrays in plant cells. II. Transition between the pre-prophase band and the mitotic spindle. Protoplasma 122: 45-55.

Tiwari\*, S., S.M. Wick, R.E. Williamson, and B. E. S. Gunning. 1984. Cytoskeleton and integration of cellular function in cells of higher plants. J. Cell Biol. 99: 63s-69s.

Carter, J.V. and S.M. Wick. 1984. Irreversible microtubule depolymerization associated with freezing injury in *Allium* *cepa* root tip cells. Cryoletters 5: 373-382.

Wick, S.M., S. Muto and J. Duniec. 1985. Double immunofluorescence labeling of calmodulin and tubulin in dividing plant cells. Protoplasma 126: 198-206.

Wick, S.M. 1985. Immunofluorescence microscopy of tubulin and microtubule arrays in plant cells. III. Transition between mitotic/cytokinetic and interphase microtubule arrays. Cell Biol. Int. Rep. 9: 357-371.

Gunning, B.E.S. and S.M. Wick. 1985. Preprophase bands, phragmoplasts and spatial control of cytokinesis. J. Cell Sci. Suppl. 2: 157-179.

Mizuno, K., F. Sek, J. Perkin, S. Wick, J. Duniec and B. Gunning. 1985. Monoclonal antibodies specific to plant tubulin. Protoplasma 129: 100-108.

Wick, S.M. 1985. The higher plant mitotic apparatus: redistribution of microtubules, calmodulin and microtubule initiation material during its establishment. Cytobios 43: 285-294.

Wick, S.M. and J. Duniec. 1986. Effects of various fixatives on the reactivity of tubulin and calmodulin in immunofluorescence microscopy. Protoplasma 133: 1-18.

Marc, J., B.E.S. Gunning, A.R. Hardham, J. L. Perkin and S. M. Wick. 1988. Monoclonal antibodies to surface and cytoskeletal components of the spermatozoid of *Pteridium aquilinum*. Protoplasma 142: 5-14.

Mineyuki, Y., S.M. Wick and B.E.S. Gunning. 1988. Preprophase bands of microtubules and the cell cycle: kinetics and experimental uncoupling of their formation from the nuclear cycle. Planta 174: 518-526.

Wick, S.M., S.-O. Cho\* and A.R. Mundelius\*. 1989. Microtubule deployment within plant tissues: fluorescence studies of sheets of intact mesophyll and epidermal cells. Cell Biol. Int. Rep. 13: 95-106.

Cho\*, S.-O. and S.M. Wick. 1989. Microtubule orientation during stomatal differentiation in grasses. J. Cell Sci. 92: 581-594.

Cho\*, S.-O. and S.M. Wick. 1990. Distribution and function of actin in the developing stomatal complex of winter rye (*Secale cereale* cv. Puma). Protoplasma 157: 154-164.

Martinez\*, L.M. and S.M. Wick. 1991. The use of freeze-substitution and L.R. Gold in the study of rye grass (*Lolium* *perenne*) pollen. J. Electron Microsc. Tech. 18:305-314.

Cho, S.-O\*. and S.M. Wick. 1991. Actin in the developing stomatal complex of winter rye: a comparison of actin antibodies and rhodamine-phalloidin labeling of control and cytochalasin B-treated tissues. Cell Motility Cytoskel 19:25-36.

Martinez\*, L.B. and S.M. Wick. 1992. Immunolocalization of the group I allergen in freeze-substituted and chemically fixed rye grass (*Lolium perenne*) pollen. J. Histochen. Cytochem.

McCune\*, C., R.H. Goddard, S.-O. Cho\* and S.M. Wick. 1992. Use of the lipid emulsion system and *Salmonella typhimurium* mitogen adjuvant to stimulate IgG production in chickens. J. Immunol. Methods 155:267-270.

Colasanti, J., S.-O. Cho\*, S. Wick and V. Sundaresan. 1993. Localization of the functional p34cdc2 homologue of maize in dividing cells of the maize root tip and stomatal complex: association with the predicted division sites in premitotic cells. Plant Cell 5:1101-1111.

Goddard, R.H., S.M. Wick, C.D. Silflow and D.P. Snustad. 1994. Microtubule components of the plant cell cytoskeleton. Plant Physiol. 104:1-6.

Woo\*, Y.M. and S.M. Wick. 1995. Effects of Benlate on cucumber seedlings and on the microtubules of their root tip cells. Amer. J. Bot. 82(4):496-503

McLaughlin, D., E. Frieders, M. Berres, J. Doubles and S.M. Wick. 1996. Immunofluorescence analysis of the microtubule cytoskeleton in the yeast phase of the basidiomycetes *Kriegeria eriophori* and *Septobasidium carestianum*. Mycologia 88:339-349.

Goddard, R.H., R. Villemur, C.D. Silflow, and S.M. Wick. 1998. Generation of chicken polyclonal antibodies against distinct maize isotubulins. Protoplasma 204: 226-234.

Eun\*, S.-O. and S.M. Wick. 1998. Tubulin isoform usage in maize microtubules. Protoplasma 204: 235-244.

Szymanski, D.B., M.D. Marks, and S.M. Wick. 1999. Organized F-actin is essential for normal trichome morphogenesis in Arabidopsis. Plant Cell 11:2331-2348.

Cotner, S. H., B.A. Fall, S. M. Wick, J.D. Walker, and P. M. Baepler. 2008. Rapid Feedback Assessment Methods: Can We Improve Engagement and Preparation for Exams in Large-Enrollment Courses? J. Sci. Educ. Technol. 17: 437-443.

Wick, S., M. Decker, D. Matthes and R. Wright. 2013. Biology Students Propose Genetic Solutions to Societal Problems. Science 341: 1467-1468. (*Science* Inquiry-based Instruction [IBI] prize winner)

***Unreviewed***

Wick, S. M. 1990. Localization of calcium-binding proteins in plant cells. In, Calcium in Plant Growth and Development, ed. R. T. Leonard and P. K. Hepler, Am. Soc. Plant Phys. Symp. Ser. Vol. 4, pp. 137-143.

Wick, S. M. 1991. Spatial aspects of cytokinesis in plant cells. Curr. Opinions Cell Biol. 3: 253-260.

Wick, S. 2000. Plant microtubules meet their MAPs and mimics. Nature Cell Biol. 2: E204-206.

Wick, S. 2001. Cytoskeletal regulation of plant growth. J. Plant Growth Regul. 20: 101-102.

Breviario, D. and S. Wick. 2003. Novel aspects in plant tubulin gene research. NATO monograph on The Plant Cytoskeleton: Functional Diversity and Technological Implications.

Wick, S. 2003. Plant microtubule nucleation sites: moving right along. Nature Cell Biol. 5: 954.

Wick, S. 2005. The networking cytoskeleton. Nature Cell Biol. 7: 113.

Ruhe, V., J. Robinson, and S. Wick. 2008. Designing Research: The Scholarship of Teaching and Learning in Large Lecture Courses. London Scholarship of Teaching and Learning 6th International Conference Proceedings, Vol. 3, pp. 245-249. London, UK.

***Book chapters***

Hepler, P. K., S. M. Wick, and S. M. Wolniak. 1981. The structure and role of membranes in the mitotic apparatus. International Cell Biology 1980-1981, edited by H. G. Schweiger. Springer-Verlag, Berlin. 673-686.

Wick, S. M. 1988. Immunolocalization of tubulin and calmodulin in meristematic plant cells. In: Calcium Binding Proteins, M. P. Thompson, ed., CRC Press, Boca Raton.

Wick, S. M. 1991. The preprophase band. The Cytoskeletal Basis of Plant Growth and Form, C. W. Lloyd, ed., Academic Press, London.

Wick, S.M. 1993. Immunolabelling of antigens in plant cells. Methods in Cell Biology, ed. D.J. Asai, Academic Press, Orlando, pp. 171-200.

Rubenstein, I. and S.M. Wick. 1995. Cell. The World Book Encyclopedia, World Book Publishing, Chicago.

Baird, Wm.V., Y.B. Blume, and S.M. Wick. 2000. Microtubular and cytoskeletal mutants.

 Biotechnological Potential of Plant Microtubules. P. Nick, editor, Springer-Verlag, Berlin Heidelberg , pp.159-191.

Wick, S.M. and H.J. Rogers. 2001. The cytoskeletal interface with cell cycle control. In, Plant Cell Cycle Interfaces. D. Francis, editor, Sheffield Academic Press, Sheffield, pp. 108-136.

Griffin\*, D. P. and S. M. Wick. 2008. Array Technology for Studying Maize Tubulin. In, The Plant Cytoskeleton: A Key Tool for Agro-Biotechnology. Blume, Y.B., W.V. Baird, and A.I. Yemets, eds., Springer-Verlag Berlin Heidelberg. pp. 243-264.

Brooker, R., D. Matthes, R. Wright, D. Wassenberg, S. Wick, and B. Couch. 2013. SCALE-UP

 in a Large Introductory Biology Course. In, Connected Science: Strategies for Integrative Learning in College, T. Ferrett, J. Stewart and W. Schlegel, eds. Indiana University Press (part of the Scholarship of Teaching and Learning series).

**Recent abstracts for posters and oral presentations:**

Ruhe, V., J. Robinson, and S. Wick. 2006. Designing Research: The Scholarship of Teaching and Learning in Large Lecture Courses. Oral presentation at International Meeting of the Scholarship of Teaching and Learning Conference, London, UK.

Fall, B., S. Cotner, M. Decker, P. Baepler, J.D. Walker, S. Wick.  2007. Do Instant Feedback Techniques Improve the Student and Instructor Experience in Introductory Biology Courses? (poster at the 47th annual meeting of American Society for Cell Biology.)

Wick, S. 2008. Use of Clickers and Immediate Feedback Scratch-off Forms to Reveal Misconceptions, Stimulate Student Interest, and Prompt Peer Instruction in Introductory Biology. (oral presentation at the annual conference Enriching the Academic Experience of College Science Students, University of Michigan, Ann Arbor.)

Wright, R., V. Pompei, M. Decker, D. Wassenberg, S. Wick. 2008. How to Lose the Lectures without Losing the Learning: Team-based Learning in Introductory Biology. (poster at the 48th annual meeting of American Society for Cell Biology.)

Brooker, R., B. Couch, M. Decker, D. Matthes, V. Pompei, D. Wassenberg, S. Wick, R. Wright. 2009. Not Just Reading or Hearing about Biology, but Doing It. (presentation by me at the 2009 conference on Team-Based Learning, University of Texas, Austin.)

Decker, M., A. Whiteside, R. Brooker, S. Fitzgerald, D. Matthes, V. Pompei, J. Todd, D.

Wassenberg, S. Wick, R. Wright. 2009. Active Learning Classrooms Support Student

 Interaction and Learning. NSF Conference on Vision and Change in Undergraduate

 Education, Washington, D.C.

Wright, R., M. Decker, D. Matthes, V. Pompei, D. Wassenberg, S. Wick. 2009. Lose the

Lectures, not the Learning: Team-based Learning in Introductory Biology. NSF

Conference on Vision and Change in Undergraduate Education, Washington, D.C.

Wick, S., Matthes, D., Wright, R., Decker, M., Wassenberg, D., Brooker, R., and Couch, B. 2009. Engaging students for enhanced learning in introductory biology. (Poster at the 2009 Lilly-Traverse City Conference on College and University Teaching and Learning.)

Matthes, D.J., Wick, S., Brooker, R., Couch, B., Decker, M.D., Wassenberg, D., and Wright, R. 2009. Implementing Best Practices: The Transformation a Large Introductory Biology Course. (Poster at the 2009 Association of College and University Biology Educators meeting, Kansas City, MO.)

Matthes, D.J., Brooker, R., Couch, B., Decker, M.D., Wassenberg, D., Wick, S. and Wright, R. 2009. Stepping Away from the Podium: Transforming Biology Majors’ Introduction to the Foundations of Biology by Engaging Them as Colleagues. (Oral presentation (by DM) and poster at the 49th annual meeting of American Society for Cell Biology.)

Wick, S. and D. Matthes. 2010. Incorporating Student Learning Objectives and Student Development Objectives into Foundational Undergraduate Courses: Written, Visual and Oral Communication within the Discipline. (Poster at 2010 Lilly-Traverse City Conference on College and University Teaching and Learning.)

Wick, S. 2010. How will they learn if you don’t use all class time for lecture? Turning classrooms into places to learn how to do biology. Oral presentation at the 2010 meeting of the National Association of Biology Teachers.

Wick, S., Wright, R., Wassenberg, D. and Couch, B. 2010. Tour a SCALE-UP biology interactive classroom at the University of Minnesota. (Tour and oral presentation at the 2010 meeting of the National Association of Biology Teachers.

Wick, S. 2011. Assembling Student Teams for Successful Learning and Maximal Participation

 by All Members. (Oral presentation at Lilly-Traverse City Conference on College and

 University Teaching and Learning.)

Wick, S. and D. Matthes. 2011. Helping Students Learn to Learn by not Over-Teaching a Topic. (Poster at Academy of Distinguished Teachers conference, Minneapolis, MN)

Wick, S. and D. Matthes. 2011. Achieving True Teamwork in Student Course Teams. (Poster at the 51st annual meeting of American Society for Cell Biology.)

Wick, S. and D. Matthes. 2012. Achieving True Teamwork in Student Course Teams. (Poster at Cultivating Ensembles in STEM Education and Research, Farmington, CT.)

Wick, S. 2012. Getting Students to Instruct Each Other. (Oral presentation at Cultivating

 Ensembles in STEM Education and Research, Farmington, CT.)

Matthes, D.J., S. Wick and D. Chatterjea. 2012. Scaffolded research proposal/projects bring intro biology students into the community of science. Facilitated discussion (DM) at the November meeting of the AAC&U’s Network for Academic Renewal Next Generation STEM Learning: Innovate, Investigate, Inspire, Kansas City, MO.

Wick, S.M., R. Wright and D. Matthes. 2012. Rising to the Challenge of “Vision and Change in Undergraduate Biology Education”. Oral minisymposium presentation and poster at 52nd annual meeting of American Society for Cell Biology.

Wick, S.M. and R. Wright. 2013. Guiding biology graduate students and postdocs into effective teaching methods. Oral presentation at Lilly-Bethesda Conference on College and University Teaching and Learning.

Wick, S. 2013. Training the next generation of faculty to embrace active learning strategies and classrooms. Oral presentation at the 2nd National Forum on Active Learning Classrooms, Minneapolis, MN

Wick, S.  2013.  Making groups productive in ALCs.  Leader of roundtable discussion at 2nd National Forum on Active Learning Classrooms, Minneapolis, MN.

Wick, S., D. Matthes, M. Decker, R. Wright, R. Brooker, D. Wassenberg, V. Pompei, B. Gibbens, C. Scott, J. Phillips, C. Kirkpatrick, S. Cotner, S. Hebert, A. Strain, A. Mosser.

 2013. Let students DO biology, open the doors of your classroom to visitors, provide

 authentic research opportunities, train future faculty: the UMN approach. Poster presentation at Vision and Change in Undergraduate Education: Chronicling Change, Inspiring the Future.

Wick, S. 2013.  Training the next generation of effective teachers in your field.  Oral presentation at Academy of Distinguished Teachers conference, Teaching and Learning in Changing Times, Minneapolis, MN

Matthes, D.J., S.M. Wick and A.K. Strain. 2013. Devising a proposal using biology to fix a societal problem requires student creativity and higher-order cognitive skills. Poster

 presented at 53rd annual meeting of American Society for Cell Biology.

**Current and other recent support:**

Undergraduate Science Education 2010. 2010-2015, Howard Hughes Medical Institute, R.

 Wright PI, co-PI w/ R. Brooker, M. Sadowsky, $1,500,000

Plant Science Investigation-Minnesota (PSI-MN): Investigative Plant Biology for Elementary Teachers. 2/1/2014-6/30/2015, Federal Improving Teacher Quality Program, No Child Left Behind Act (Administered by Minnesota Office of Higher Education) $51,923

Plant Science Investigation-Minnesota (PSI-MN): Investigative Plant Biology for Elementary Teachers. 2/1/2013-6/30/2014, Federal Improving Teacher Quality Program, No Child Left Behind Act (Administered by Minnesota Office of Higher Education) $50,974

Plant Science Investigation-Minnesota (PSI-MN): Investigative Plant Biology for Elementary Teachers. 2/1/2012-6/30/2013, Federal Improving Teacher Quality Program, No Child Left Behind Act (Administered by Minnesota Office of Higher Education) $50,973

Plant Science Investigation-Minnesota (PSI-MN): Investigative Plant Biology for Elementary Teachers. 2/1/2011-6/30/2012, Federal Improving Teacher Quality Program, No Child Left Behind Act (Administered by Minnesota Office of Higher Education) $59,951

Investigative Plant Biology for Elementary Teachers: Learning Communities

 2/1/2010-6/30/2011, Federal Improving Teacher Quality Program, No Child Left Behind Act (Administered by Minnesota Office of Higher Education) $55,288