

ELIZABETH M. FRIEDERS

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AREAS OF EXPERTISE

Botany, Mycology, Evolution, Systematics, Microscopy

EDUCATION

Ph.D. July 1997. Plant Biological Sciences Graduate Program, Department of Plant Biology, University of Minnesota, St. Paul.

Research Advisor: Dr. David J. McLaughlin.

Teaching Mentor: Dr. Iris Charvat, Morse Alumni Distinguished Teaching Professor.

Thesis Title: An integrated approach to understanding the moss parasites and their role in basidiomycete evolution.

Research Highlights: Elucidation of moss parasite life histories; Host-parasite interactions; Ultrastructural analyses of septa and meiosis; Species concepts in *Jola* and *Eocronartium* (molecular and morphological basis); Heterobasidiomycete phylogeny.

M.S. June 1994. Plant Biological Sciences Graduate Program, Department of Plant Biology, University of Minnesota, St. Paul.

Research advisor: Dr. David J. McLaughlin.

Thesis Title: Structural studies and evolutionary significance of *Agaricostilbum*.

Research Highlights: Immunofluorescence localization of microtubules; Yeast mitotic cell cycle; Spindle pole body ultrastructure; Basidiomycetous yeast phylogeny.

B.A. *cum laude*. 1989. Department of Biology, St. Olaf College, Northfield, Minnesota.

TEACHING EXPERIENCE

Assistant Professor. 1997-2002; **Associate Professor** 2002-2008; **Full Professor** 2008-present. Department of Biology, UW-Platteville.

- First Year Seminar (CounsEd. 1010) discussion
- BioQuest: Foundations for College Success (Biol. 1020) discussion
- General Botany (Biol. 1350) *for biology majors*. Lecture and lab
- General Botany (Biol. 1350) *NOT for biology majors* (a fundamentally different kind of course and preparation than the previous version). Lecture & lab
- The Unity of Life (Biol. 1650) lecture and lab
- Plants and Society (Biol. 2130), lecture & lab
- Fundamentals of Biological Investigation (Biol. 2420) discussion+lab
- Morphology of the Plant Kingdom (Biol. 2440), lecture & lab
- Fungi, Algae and Bryophytes (Biol. 2450) lecture & lab
- Mycology and Plant Pathology (Biol. 3540), lecture & lab
- Plant Pathology (Biol. 4530) lecture & lab
- General Ecology (Biol. 3430), lecture & lab

- Evolution (Biol. 3730) lecture
- Ecology and Evolution (Biol. 3450) lecture
- Plant Communities of Wisconsin (Biol. 3650) lecture & lab
- Topics in Biology (Biol. 4410):
 - Systematics and Evolutionary Analysis, lecture & lab
 - Tropical Biology, seminar
- Selected Regional Habitats (Biol. 4710):
 - The Neotropics, co-led 10 students on 10-day trip to Costa Rica with Dr. Jay Dykstra, Spring 2000.
 - Desert Ecology, led 12 students on 19-day trip to the five major types of deserts of the US Southwest, Winterim 2002.
 - Tropical Biology, co-led 17 students on 19-day trip to Costa Rica with Dr. Kris Wright, Winterim 2004.
 - Desert Ecology, co-led 16 students on 20-day trip focusing on the Chihuahuan Desert with Dr. Jeff Huebschman, Spring 2006.
 - Arctic, Boreal and Coastal Ecology, assisted Dr. Huebschman in leading 14 students on a 15-day trip to Hudson Bay, Canada, June 2008.
 - Ecology and Conservation of Costa Rica, co-led 18 students on 18-day trip to Costa Rica with Dr. Rich Waugh, Winterim 2018.
- Science Methods for Middle and Secondary Teachers (Biol. 4920) lecture
- Senior Capstone Seminar (Biol 4990) discussion; five different topics (essentially five different courses):
 - Biology in Film
 - BioEthics
 - Biology's Checkered Past
 - Controversies in Biology
 - The History of Evolution and its Interface with Religions

Instructor. Spring 1995. Department of Plant Biology, UMin. *Plants Useful to Humans* (PBio 1012). Designed for non-majors, this course offered a general introduction to plants and their importance to humans, including the diversity of plants and useful plant products. I restructured the course from its traditional all-lecture format and introduced small investigative components into three greenhouse visits.

OTHER PROFESSIONAL EXPERIENCES

Co-Coordinator of Basidiomycota Discussion Group, 2001-2004, selected by members of the Deep Hypha Steering Committee. This group discusses the state of systematic knowledge of taxonomic groups within the phylum, and makes recommendations on the direction of future research. Create a webpage on Urediniomycetes for the Tree of Life website, <http://tolweb.org/tree>.

Collaborator on a 5 yr. NSF-funded project, 2002-2006, "Assembling the Fungal Tree of Life" (exchange my consulting time for DNA sequences).

Reviewed a grant proposal submitted to NSF Systematics Section, Fall 2003.

Reviewed manuscripts for associate editor of *Mycologia* journal, Spring 2000, Fall 2004, Fall 2008; and for *Studies in Mycology* Spring 2015.

Reviewed one chapter of a new edition of Futuyma's *Evolutionary Biology* text, Fall 2000.

Reviewed two chapters of new botany textbook by Nabors, Fall 2004.

Involved in a UW-System PK-16 Educational Improvement Grant, "How We Change" – 2004-2005 academic year, studying the effects of the use of technology on student learning.

Graduate Research Advisor. Department of Biology, UW-Platteville

- Summer 2020, mentored Jacob Roberts who is working on his MS degree through the University of Massachusetts but lives in Darlington, WI, and needed lab or field experience. Our universities worked out an agreement that he would do the research and take research credits here at UWP and transfer them back to his home institution. Research question: How have populations of clustered poppy-mallow [*Callirhoe triangulata* (Leavenworth) A. Gray] changed since they were first assessed as part of Wisconsin's Natural Heritage Inventory?

Undergraduate Research Advisor. Department of Biology, UW-Platteville.

- Fall 2020, mentored Lucas Turpin; he is working with Kevin Doyle (rare plant co-ordinator at the WI DNR) preparing for a 2021 research study in which Lucas will use a tetrazolium seed viability analysis on two native prairie plants. Lucas' efforts this semester involve identifying appropriate plant species as well as appropriate populations within the state, learning about the TZ test, and writing grants to secure research funding.
- Spring 2017, mentored Scout Harrison on DNA sequence alignment of fungal parasites of mosses (software usage, reading DNA chromatograms, determining contigs, aligning datasets)
- Spring 2017, worked with group of Mechanical Engineering students in Senior Design class; assisted them in growing algae and putting together their apparatus that is supposed to generate H₂ gas (for electricity production) from algae
- Fall 2013-2014, mentored Justin Earley (chemistry major) on isolation and culturing techniques of the green alga *Chlorella* and the fungus *Ascocoryne sarcoides* (part of his research on using algae and fungi as a fuel source)
- Fall 2011, mentored Dan Romelfanger and Garrett Dalton on two different independent study reclamation projects accessing vegetation changes in local prairies.
- Spring 2008, worked with Tim Juedes and Alisha Pleotes on a project for their Environmental Chemistry class, studying yeasts used in the campus brewery (by request of Tom Nickels, brewmaster)
- Fall 2005-Summer 2007. Mentored UWP student Alicia Knudson on independent study project, training her on lab techniques used to study parasitic fungi.
- Worked with UWP student Eric Olson during Fall 2004 and 2005 academic year – independent study involving a combination of my personal research on fungal parasites of mosses, and his interests in the genetics of host-parasite interactions.
- Worked with UWP student Kyle von Rueden during Summer 2003 on my personal research on fungi parasitic on mosses.
- Worked with UWP student David Hartmann during Summer and Fall 2002 on Rountree Branch Opportunity Fund project obtained by Dr. Kris Wright. Surveyed the riparian vegetation along a stretch of the stream, and assisted Kris in preparing 3 signs to be posted along the stream trail.
- 2001-2002 Academic year. Advised David Hartmann, who is performing an independent study on species concepts in *Eocronartium muscicola*, a fungal parasite of mosses. He received a small grant from Sigma Xi for this research.
- Summer and Fall 2000. Mentored Tiffany Hollingsworth and David Hartmann, who have been working with me on two research projects: one involves molecular systematics and light microscopy of basidiomycetous parasites of mosses; the second involved locating a fungal parasite of ferns in Wisconsin.
- Fall 1998. Advised Aaron Wunderlin, who performed a research project entitled, "A Preliminary Study of the Rountree Branch Waterway where it Adjoins the UWP Campus." He was awarded a Pioneer Undergraduate Research Fellowship (through UW-Platteville).
- Summer 1998. Mentored Josh Sloan and Aaron Wunderlin, who worked with me on a small research project to locate a fungal parasite of ferns, previously collected in Wisconsin.

PROFESSIONAL DEVELOPMENT

Workshops and Conferences. 1991-present. Attended numerous seminars, workshops and conferences that focused on improving participants' teaching skills, presented specific examples of instructional methods, or were related to specific fields of biology.

HONORS RECEIVED

College of BILSA Tom and Leann Lindahl Teaching Award. 2017.
UW-System Regents Teaching Award (Biology Department), 2010.
UWP Faculty Award for Teaching Excellence, Fall 2008. UW-Platteville.
Excellence in Teaching Award. Spring 2007. The Honor Society of Phi Kappa Phi.
College of BILSA Academic Advising Award. Spring 2004. UW-Platteville.
Alliant Energy Underkofler Excellence in Teaching Award. Spring 2003. UW-System.
Tau Beta Pi Excellence in Teaching Award. April 2000. UW-Platteville.
Outstanding Performance Award for Teaching Assistants. June 1996. College of Biological Sciences, UMinn.
Graduate Research Poster Award. 1993. Mycological Society of America annual meeting, Athens, Georgia.

GRANTS AWARDED

Pioneer Engagement Scholars Grant. October 2017.
BILSA International Launch Grant. November 2017.
International Education Engagement Grant. December 2016.
High Impact Practices grant. December 2016.
BILSA Professional Development Grant. December 2016.
BILSA Professional Development Grant. July 2014.
Pioneers Engagement Scholars Grant. Oct 2008. UW-Platteville.
Faculty Professional Development Grant. June 2008. UW-Platteville.
Curriculum Improvement Fund. Spring 2007. UW-Platteville.
Faculty Professional Development Grant. Summer 2006. UW-Platteville.
Martin-Baker Award. Spring 2006. Mycological Society of America.
Faculty Professional Development Grant. Summer 2004. UW-Platteville
Curriculum Improvement Fund. 2001. UW-Platteville.
Scholarly Activity Improvement Fund. 2001-2002. UW-Platteville.
Scholarly Activity Improvement Fund. 1998-1999. UW-Platteville.
Hamm Memorial Graduate Student Scholarship. May 1997. College of Agriculture, Food, and Environmental Science, UMinn.
Graduate Fellowship. 1996. Mycological Society of America (MSA).
Grant for Research Abroad. 1995. UMinn Graduate School, Lucetta Bissell Memorial Fund.
Approximately 10 other small grants for travel to meetings, or for research, from the University of Minnesota or from MSA, 1990-1997.

PUBLICATIONS

Refereed

McLaughlin, DM, TK Arun Kumar, M Padamsee, M Toome-Heller, **EM Frieders** & MC Aime. 2017. Structural character evolution in Pucciniomycotina: mitosis, septa and hyphal branch initiation in two *Helicogloea* species. *Mycologia*. 109(1):162-181.

- Aime, MC, PB Methany, DA Henk, **EM Frieders**, RH Nilsson, M Piepenbring, DJ McLaughlin, LJ Szabo, D Begerow, JP Sampaio, R Bauer, M Weiss, F Oberwinkler, and D Hibbett. 2006. An overview of the higher level classification of Pucciniomycotina based on combined analyses of nuclear large and small subunit rDNA sequences. *Mycologia* 98(6): 896-905.
- McLaughlin, DJ, RW Hanson, Jr., **EM Frieders**, EC Swann, and LJ Szabo. 2004. Mitosis in the yeast phase of the basidiomycetes *Bensingtonia yuccicola* and *Stilbum vulgare* and its phylogenetic implications. *American Journal of Botany* 91(6): 808-815.
- Frieders, E. M.**, and D. J. McLaughlin. 2001. The heterobasidiomycete moss parasites *Jola* and *Eocronartium* in culture: cytology, ultrastructure, and anamorph. *Mycological Research* 105: 734-744.
- Swann, E. C., **E. M. Frieders**, and D. J. McLaughlin. 1999. *Microbotryum*, *Kriegeria* and the changing paradigm in basidiomycete classification. *Mycologia* 91(1): 51-66.
- Frieders, E. M.**, and D. J. McLaughlin. 1996. Mitosis in the yeast phase of *Agaricostilbum pulcherrimum* and its evolutionary significance. *Canadian Journal of Botany* 74: 1392-1406.
- McLaughlin, D. J., **E. M. Frieders**, M. E. Berres, J. C. Doublés, 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.
- McLaughlin, D. J., **E. M. Frieders**, and H. S. Lü. 1995. A microscopist's view of heterobasidiomycete phylogeny. *Studies in Mycology* 38: 91-109.

Book Chapter

- Swann, E. C., **E. M. Frieders**, and D. J. McLaughlin. 2001. Urediniomycetes, in *The Mycota VII. Part B. Systematics and Evolution*. D. J. McLaughlin, E. G. McLaughlin, and P. A. Lemke (eds). Springer-Verlag, Berlin.

Non-Refereed

- Swann, E. C., D. J. McLaughlin, **E. M. Frieders**, and L. J. Szabo. 1998. The origin of the rust fungi: The Uredinales are not primitive! Published Abstract: *Inoculum* 49(2): 51 (MSA newsletter).
- Frieders, E. M.** Spring 1996. Minnesota's native mayapple: the plant alkaloid answer to cancer. *Minnesota Plant Press* (The Minnesota Native Plant Society newsletter). 15(3): 1, 6, 9.

PRESENTATIONS

- EM Frieders & R Waugh. Stifled by STFLs? Making sense of Short-Term Faculty Led Programs. Oral presentation to UWP university members interested in leading short-term off-campus courses. March, 2017.
- EM Frieders & R Waugh. Winterim in Costa Rica. Oral presentation as part of the Biology Brown Bag Series, describing the proposed Winterim course in Costa Rica.
- EM Frieders. Designing Instructional Activities for Accelerated Courses. Oral presentation as part of a UW-Platteville campus workshop: Demystifying Accelerated Course Design and Instruction. Given on three separate dates, Spring 2016.
- EM Frieders. *Infundibura adhaerens*, a fungus on the move! A new locality, host and classification home – but is it an endophyte? Poster presented at the annual Mycological Society of America meeting, State College, PA, 10-14 August 2008.
- EM Frieders, J Huebschman, and W Weber. Development of a new outcome-based curriculum in the University of Wisconsin-Platteville Biology program. Oral presentation at the Association of College and University Biology Educators annual meeting, Dubuque, IA. 4-6 October 2007.
- EM Frieders. Getting the jellies out of a jam: an updated classification of jelly and jelly-like fungi. Oral presentation at the North American Mycological Association Annual Foray, La Crosse, WI, 21-24 July 2005.

- EM Frieders and K Wright. Invited panelists on the use of service learning in biology classrooms. The Scholarship of Teaching and Service Learning: a Powerful Tool for the Classroom. La Crosse, WI, 22 April 2005.
- EM Frieders, DJ McLaughlin, LJ Szabo, EC Swann. Urediniomycetidae: rusts and their close relatives. Poster presented at the annual MSA meeting, Asheville, NC, 16-21 July 2004.
- P Hagen, EM Frieders, and D Anderson. Fostering International Education through Short-Term Study Tours Abroad. Oral presentation at “Engaging the Global Community: Best Practices in International Education” conference, Lake Geneva, WI, 24-26 October 2004.
- EM Frieders. Rudolf the Red-Nosed Rust Fungus and the Island of Misfit Fungi. Invited seminar, Dept of Plant Pathology, University of Minnesota, St. Paul, MN, 8 March 2004.
- DJ McLaughlin, RW Hanson, Jr., EM Frieders, EC Swann, and LJ Szabo. Ascomycetous mitosis in basidiomycetous yeasts: its evolutionary implications. Poster presented at the 7th International Mycology Congress, Oslo, Norway, 11-17 August 2002.
- Frieders, E. M. Rusts: They Aren't Alone. Seminar presented at the 27th annual Alexander H. Smith Lake States Foray, Ferryville, WI, 20-23 September 2001.
- Frieders, E.M. An Overview of the Urediniomycetes. Seminar presented at the 26th annual Alexander H. Smith Lake States Foray, Westville, IL, 28 September – 1 October 2000.
- Frieders, E. M. and W. Weber. Team teaching and cooperative groups in the interactive learning of evolution. Co-presented at the 43rd annual meeting of the Association of College and University Biology Educators, UW-River Falls, River Falls, WI, 15-17 October 1999.
- Frieders, E. M., and D. J. McLaughlin. Host-parasite interactions in the basidiomycete moss parasites, *Jola* and *Eocronartium*. Poster presented at the 16th International Botanical Congress, St. Louis, MO, 1-7 August 1999.
- Frieders, E. M., E. C. Swann, and D. J. McLaughlin. Will the real Platyglloeales please stand up? Presented at the MSA/American Bryology and Lichenology Society joint meeting, San Juan, Puerto Rico, 11-16 June 1998. Published abstract: *Inoculum* 49(2): 20 (MSA newsletter).
- Frieders, E. M., E. C. Swann, and D. J. McLaughlin. Pulling the plug on the simple septum. Presented at the American Phytopathological Society (APS)/MSA joint meeting, Indianapolis, Indiana, 27-31 July 1996. Published abstract: *Inoculum* 47(3): 8.
- Frieders, E. M. and D. J. McLaughlin. *Eocronartium muscicola* produces conidia in culture. Poster presented at the MSA and American Institute of Biological Sciences (AIBS) annual meeting, San Diego, California, 5-10 August 1995. Published abstract: *Inoculum* 46(3): 14.
- Frieders, E. M. Minute “mushrooms” on mosses. Seminar in “Women in Mycology”, North American Mycological Association Annual Foray, Bemidji, Minnesota, 24-27 August 1995.
- McLaughlin, D. J., E. M. Frieders, and H. S. Lü. A microscopist’s view of heterobasidiomycete phylogeny. Presented at the MSA annual meeting and 5th International Mycological Congress, Vancouver, British Columbia, Canada, August 1994. Published abstract: Abstracts of the 5th International Mycological Congress, p. 66.
- Frieders, E. M. The moss parasites, pivotal ancestors to basidiomycetes, fact or fiction? Biology Department Seminar, St. Olaf College, Northfield, Minnesota, 5 December 1994; Plant Biological Sciences Colloquium Series Seminar, UMinn, 23 November 1993.
- Frieders, E. M., D. J. McLaughlin, D. A. Robin, and K. Rinehart. Cultural and cytological studies of *Jola*, a tropical heterobasidiomycetous moss symbiont. Poster presented at the MSA annual meeting, Athens, Georgia, 18-23 June 1993. Published abstract: *Inoculum* 44(2): 36.
- Frieders, E. M., D. J. McLaughlin, and J. Meyer. Phylogenetic implications of cytoskeletal organization in some basidiomycetous yeasts. Poster presented at the APS/MSA joint meeting, Portland, Oregon, 8-12 August 1992. Published abstract: Abstracts and Presentations at the 1992 APS/MSA Joint Meeting, no. M951.
- Frieders, E. M. and D. J. McLaughlin. Cytoskeletal structure of an anomalous yeast: Immunofluorescence analysis of *Agaricostilbum pulcherrimum*. Poster presented at the MSA and AIBS annual meetings, San Antonio, Texas, 4-8 August 1991.

CURRENT PROFESSIONAL AFFILIATIONS

Mycological Society of America
Scientific American
Sigma Xi, The Scientific Research Society, University of Minnesota Chapter
The Honor Society of Phi Kappa Phi

SERVICE AND COMMITTEE WORKUniversity of Wisconsin–Platteville Department of Biology:

Chair, Department Salary and Promotion Committee, 2015-2021
Chair, Retention and Tenure Review Body, 2015-2021
Co-coordinator of the Biology Department greenhouses. Fall 2004-present
Dept Assessment Committee, 2012-current
Professional Development Committee, 1997- 2004 (Chair, 1997-2001)
Alumni Relations Committee, 2001-2012, Representative on the Ag/Biology Alumni Chapter Board.
Biology Advisory Council, member 1997-2011; Chair 1999-2004
Biology Departmental Review Board, 1997-2004, 2007
Scholarship Committee, 2001-2012.
Search and Screen Committees. 2000-2001– served on and was the secretary for two hiring committees.
2002-2003 - served on one hiring committee. 2004-2005 and 2007-2008 – Chair of one hiring committee each year. 2012-2013 – served on “genetics” hiring committee. 2015-2016 – served on the Molecular Biology/Biotechnology search and screen committee
1999-2002 -- reorganized storage room containing teaching material used in plant-related courses, including supplementary handouts, microscope slides, preserved and dried specimens, equipment and supplies.
Student Advising Committee, 2002-2004
Technical/Science Writing Review Committee, Chair, 1998-1999 (ad hoc)
Biology Alumni Survey (Assessment) Committee (ad hoc), Spring 2002
Alumni Review Committee, Fall 2000 (ad hoc)
Biology Internship/Coop Committee, 1998-2001, 2002-2003
Biology Club Co-Advisor, 1997-2003.
Beta Beta Beta National Biological Honor Society, Theta Beta Chapter, Advisor, 1999-2004.
Secretary for Department Faculty Meetings, 1998-1999.
Capstone Course Committee, 1998-1999 (ad hoc).

College of Business, Industry, Life Science, and Agriculture:

Faculty Advisory Committee. Jan 2017-2021.
Reclamation Council, 1997-present
Faculty Professional Development Committee, 1997-2001, 2015-2017
College Rank, Salary, and Tenure Committee, 2004-2006; 2008-2012
International Study Committee, 2003-2010.
Equity and Diversity Committee, 2001-2003
Search and Screen Committees: 1) 1998-1999 for Reclamation faculty; 2) Fall 2005 for Soil & Crop faculty; 3) Spring 2013 for Plant Geneticist/Physiologist (Environmental Hort/Soil&Crop faculty).
Greenhouse Planning Committee, 1997-2000 (ad hoc)
Ornamental Horticulture Major Planning Committee, 1998-2000 (ad hoc)
College Curriculum Committee, 2008-2009.

University:

Broadfield Science Interdisciplinary Council, member 2000-present

Registration Committee, 2001-2018 (chair 2012-2014).

University Rank, Salary, Tenure and Policy Committee, 2009-2012, 2016-2020 (secretary in 2016-2017).

Improvement of Learning Committee, 2003-2004; 2009-2011, 2013-2019.

Advisor for the UWP Homebrewing Club, 2007-2018.

Advisor for the UWP Equestrian Club, 2010-2018.

Advisor for the English and Western show teams, Intercollegiate Horse Show Association. 2014-2017

University Undergraduate Curriculum Committee, 2006-2009.

Faculty Senate, 2002-2005 (vice-chair 2004-2005)

Academic Standards Committee, 2001-2005 and 2007-2010 (chair 2001-2004).

Affirmative Action and Equal Opportunity Committee, 2001-2002.

Natural Sciences Assessment Committee (ad hoc), 2001.

Environmental Impact Committee, 1998-1999.

Pioneer Academic Center for Community Engagement (PACCE) planning committee, Summer 2008 – 2011.

Chemistry Department Search and Screen Committee, 2009-2010.

Professional:

Phi Kappa Phi, UW-Platteville chapter president elect 2013-2015; president 2015-2017

Mycological Society of America Mentor Travel Awards committee member, 2005-2008 (chair 2007-2008).

Mycological Society of America Education Committee member, 2010-2014

Community:

Answered various questions about diseased plants and/or fungi found in the area. Some involved detailed microscopic examination for identification.

Answered various questions about native and invasive plants, plant identification, etc.

Assisted staff of the Dubuque newspaper on writing an article on house molds, October 2002.

Board of Director for the Platteville Community Arboretum, Inc., 2004-2014.