

MICHAEL JOHN DONOGHUE
Curriculum Vitae

Address: Sterling Professor Emeritus and Research Professor of Ecology and Evolutionary Biology
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Born: Chicago, Illinois; 14 June 1952
Spouse: Susan Fansler
Children: Nina Fitzgerald (1996), Torrey Marie (1999)

Education/Degrees

B.S., Michigan State University, Botany and Plant Pathology (high honor, 1976)
Ph.D., Harvard University, Biology (1982).

Employment/Titles

San Diego State University, Department of Biology, Assistant Professor (1982-85)
University of Arizona, Department of Ecology and Evolutionary Biology, Assistant Professor (1985-88), Associate Professor (1988-90), Professor (1990-92), Adjunct Professor (1993-99)
Harvard University, Department of Organismic and Evolutionary Biology, Professor of Biology (1993-2000); Director, Harvard University Herbaria (1995-1999)
Stanford University, Visiting Professor (1998-99)
Yale University, Department of Ecology and Evolutionary Biology, G. Evelyn Hutchinson Professor (2000-10); Joint Faculty, School of Forestry and Environmental Studies (2000-2018); Joint Faculty, Geology and Geophysics (2000-12); Curator of Botany, Peabody Museum of Natural History (2000-2022); Chair, Department of Ecology and Evolutionary Biology (2001-02); Director, Peabody Museum of Natural History (2003-2008); Vice President for West Campus Planning and Program Development (2008-10); Sterling Professor of Ecology and Evolutionary Biology (2011-); Director, Marsh Botanical Garden (2015-18); Curator of Paleobotany, Peabody Museum of Natural History (2016-2022); Curator of Informatics, Peabody Museum of Natural History (2017-21); Director, Yale Institute for Biospheric Studies (2019 -2021); Research Professor (2022-); Sterling Professor Emeritus (2022-)
University of Arizona, Visiting Professor (2017-18)

Selected Awards/Honors

Bessey Award, Michigan State Univ. (1975)
Board of Trustees' Award, Michigan State Univ. (1975)
George R. Cooley Award, American Society of Plant Taxonomists (1979)
Timeos Award, National Freshman Honor Society, San Diego State Univ. (1984)
Exceptional Merit Service Award, San Diego State Univ. (1984)
Gompertz Lecture in Integrative Biology, Univ. California, Berkeley (1991)
Sewall Wright Lecturer, Committee on Evolutionary Biology, Univ. Chicago (1992)
Senior Mellon Fellow, Smithsonian Institution (1992-94)
Fellow, American Association for the Advancement of Science (1997)
Glaser Distinguished Visiting Professor, Florida International University (1998)
NAS US National Committee, International Union of Biological Sciences (1999)
Perspectives in Biology Lecturer, Wake Forest Univ. (1999)
Highly Cited Researcher, Clarivate Analytics (2001)
Wheeler Lecture, University of North Dakota (2001)
Melinda Denton Lecture, University of Washington (2002)
Karling Lecturer, American Mycological Association, Asilomar (2003)
Lundell Lecturer, University of Texas, Austin (2004)
Distinguished Lecture, Departments of Biology and Geology, Virginia Tech (2005)
Outstanding Alumni Award, College of Natural Science, Michigan State Univ. (2005)
Distinguished Alumni Award, Michigan State Univ. (2005)
Elected as a Member of the U.S. National Academy of Sciences (2005)
Wagner Lecture, University of Michigan (2006)
William Skinner Cooper Award, Ecological Society of America (2008)
Elected as a Member of the American Academy of Arts and Sciences (2008)
Elected as a Member of the Connecticut Academy of Science and Technology (2009)
Horowitz Lecture, California Institute of Technology (2010)
President's Award for Best Paper in 2009, American Society of Naturalists (2010)
Carpenter Lecture, San Diego State University (2010)
Sterling Professorship, Yale University (2011)
Dahlgren Prize in Botany, Royal Physiographic Society, Sweden (2011)
Distinguished Lecture in Plant Biology, University of North Carolina, Chapel Hill (2014)
Distinguished Fellow, Botanical Society of America (2014)
Elected as a Fellow of the Linnean Society of London (2016)
Hamm Memorial Lecture, University of Minnesota (2016)
Asa Gray Award, American Society of Plant Taxonomists (2017)
Fredrickson-Adams Lecture, University of Washington (2017)
James Rodman Lecture, Michigan State University (2018)
Edward P. Bass Distinguished Lecture, Yale University (2022)

Selected Past Grant Support

NSF Graduate Fellowship (1976-79)
NSF Doctoral Dissertation Grant (1979-80)
Summer Faculty Fellowship, San Diego State Univ. Foundation (1982, 1983)
NSF Systematic Biology (1985-88): "Character analysis and cladistic relationships in
Viburnum (Caprifoliaceae)"

NSF Equipment (1988): "Acquisition of a preparative ultracentrifuge for shared use" (M. Kidwell, PI)

NIH Research Support Grant, Univ. Arizona (1988-89)

Univ. Arizona Small Grants Program (1988-89)

NSF Systematic Biology (1989-91): "Cladistic analyses of *Viburnum* based on molecular characters"

NSF Dissertation Improvement (1992-93, for G. Bharathan)

NSF Research Training Group Award (1991-96): "The analysis of biological diversification" (ca. \$1.5 million)

Mellon Foundation Senior Fellowship, Evolution of Terrestrial Ecosystems, National Museum of Natural History, Smithsonian Institution (1992-93)

NSF SGER (1993-95): "A prototype database of phylogenetic studies" (with M. Sanderson)

Sloan Foundation/NSF, Molecular Evolution (1994-96, for K. Rice)

NSF PEET Grant (1995-00): "Enhancing taxonomic expertise in filamentous ascomycetes" (D. Pfister, PI)

NSF EHR (1995-2000): "Graduate research training in plant systematics"

NSF Dissertation Improvement (1996-98, for D. Ferguson);

NSF RCSE (1996-99): "Support for Harvard University Herbaria Service Activities" (with P. Stevens, D. Boufford)

NSF Systematic Biology (1996-99): "Molecular systematics of homobasidiomycetes" (with D. Hibbett)

NSF BSI (1997-2000): "Plant and fungal diversity of western Sichuan and eastern Xizang, China" (with D. Boufford, B. Tan, D. Pfister)

NSF Dissertation Improvement (1998-00, for G. Weiblen)

NSF Systematic Biology (1998-01): "Duplicate genes and plant phylogeny: phytochromes and the rooting of seed plants, angiosperms, and eudicots" (with S. Mathews)

Sloan Foundation/NSF, Molecular Evolution (1996-99, for B. Chang)

NSF Dissertation Improvement (1999-01, for R. Ree);

NSF Systematic Biology (1999-02): "Morphological and ecological diversification in homobasidiomycetes: a molecular phylogenetic analysis" (with D. Hibbett)

NSF BON workshop (1999, P. Kocielek, California Academy of Sciences, PI)

NSF Dissertation Improvement (2000-02, for C. Davis)

NSF Tree of Life workshop (2000, J. Cracraft, American Museum of Natural History, PI)

NSF RCSE, Wireless Technology for Biodiversity (2000-01, with C. Webb, J. Gauthier)

NIH Science Education Partnership Award (2000-04, with L. Munsterman): "Peabody Fellows biodiversity and human health program"

NSF Dissertation Improvement (2001-03, for C. Bell)

NSF Plant Genome Research, Comparative genomics of angiosperm MADS-box genes (2001-03, with V. Irish, PI)

NCEAS workshop award, "Phylogenies and community ecology" (2001-02, with C. Webb)

NSF Ecology, "Phylogenetic structure of woody-plant communities" (with C. Webb, and D. Ackerly)

NSF Tree of Life (ATOL): Deep green phylogenetics: Novel analytical methods for scaling data from genomics to morphology (2002-2007, w. C. O'Kelly et al.)

NSF Education, Yale University Graduate Teaching Fellows in Biodiversity (2003-2006, with L. Munsterman)

NSF ITR: Building the Tree of Life: A national resource for phyloinformatics and computational phylogenetics (2003-2008, subcontract from U. New Mexico)
NSF BDI: Rapid digital specimen image and data capture (R. Beaman, PI; 2004-2009)
NSF Tree of Life (ATOL): Resolving the trunk of the angiosperm tree (2004-09, w. D. Soltis et al.)
NSF Dissertation Improvement (2005-07, for R. Novick)
NSF NESCent Working Group Award: "Phytogeography of the Northern Hemisphere," Duke Univ. 2005-07, with Paul Manos)
NIH Science Education Partnership Award (2005-09, with L. Munsterman, PI): "Curricula modeled on biodiversity and vector borne disease"
NSF iPlant, iPTOL (Plant Tree of Life), (2009-2012, with M. Sanderson, Univ. Arizona)
NSF "The Evolution of Leaf Form in *Viburnum* (Adoxaceae)" (2009-2013, with E. Edwards, Brown Univ.)
NSF "ARTS: A cyber-enabled global monograph of *Viburnum*" (Adoxaceae, Dipsacales) (2012-2015).
NSF "Digitization TCN: Mobilizing New England Vascular Plant Specimen Data to Track Environmental Changes" (2012-2016, with P. Sweeney, Yale)
IMLS Tree Room Project: Teaching and learning evolutionary relationships (2012-2014)
NSF, ADBC PEN: Digitization of Lichen and Bryophyte collections (2013-2016, P. Sweeney, PI)
NSF "Testing a new hypothesis for global patterns in leaf form using *Viburnum* (Adoxaceae)" (2013-2017, with E. Edwards, Brown Univ.)
NSF "Replicated Evolution of Leaf Form in a Neo-Tropical Radiation of *Viburnum* (Adoxaceae) (2016-2019, with D. Eaton, Yale, and E. Edwards, Brown Univ.).

Current External Funding

NSF "Honeysuckle phylogenomics and the evolution of organ fusion (Lonicera, Caprifoliaceae) (2019-2022, with W. Clement, The College of New Jersey, and D. Howarth, St. John's Univ.)

Postdoctoral Associates/Visiting Professors

William Friedman (1986-1987)
Henry Loconte (NSF Fellow, 1988-1990)
Larry Hufford (NSF Fellow, 1988-1990)
Bruce Baldwin (NSF Fellow, 1991-1992)
James Doyle (sabbatical, 1991-1992)
Christopher Campbell (NSF Mid-Career Fellow, 1991-1992)
Zack Murrell (NSF Fellow, 1992-1993)
David Hibbett (NSF Fellow, 1993-1995)
Gregory Mueller (visiting scientist, 1994)
David Ackerly (NSF Fellow, 1994-1996)
Torsten Eriksson (Swedish-American Foundation Fellow, 1994-1995)
Paul Wilson (Harvard Forest/Mellon Fellow, 1994-1995)
Kenneth Rice (Sloan/NSF Fellow, 1994-1996)
Daming Zhang (1995-96)
Tao Sang (Mercer Fellow, 1995-1996)
Francis Harrington (NSF PEET Fellow, 1995-1997)

Belinda Chang (Sloan/NSF Fellow, 1996-1999)
Katherine Gould (Arnold Arboretum Putnam Fellow, 1997-98)
Jianhua Li (Arnold Arboretum Mercer Fellow, 1997-99)
William Alverson (1997-98)
William Piel (1997-98)
Sarah Mathews (1998-00)
Lisa Schulthies (Arnold Arboretum Mercer Fellow, 1999-01)
Campbell Webb (Yale Univ. Donnelley Fellow 2000-02; NSF 2002-05)
Richard Winkworth (2000-05)
Dianella Howarth (2002-07)
Margaret Evans (Yale Univ. Donnelley Fellow 2005-08)
Philip Cantino (visiting scientist, 2005)
David Tank (2006-08)
Eugenia Lo (2008-11)
Wendy Clement (2008-12)
Andrew Leslie (w. P. Crane, 2010-14)
Allison Snow (Ohio State University, 2011)
Matt Ogburn (Yale Univ. Donnelley Fellow, 2012-14)
Charlotte Jander (2014-15)
Deren Eaton (2014-17)
David Chatelet (2015)
Michael Landis (2016-19)
Anthony Baniaga (2019-2021)
Carlos Maya-Lastra (2022-)

Graduate Students

San Diego State University (5 committees)
James Dice, M.S. (1987)

University of Arizona (25 committees)
Michael Sanderson, Ph.D. (1989)
James Malusa, Ph.D. (1989)
Laurie Abbott, M.S. (1992)
J. Mark Porter, Ph.D. (1993)
Geeta Bharathan (R Geeta), Ph.D. (1993)

Harvard University (16 committees)
Diane Ferguson, Ph.D. (1998)
Carlo Maley, Ph. D. (MIT, 1998)
George Weiblen, Ph.D. (1999)
Russell Spangler, Ph.D. (w. E. Kellogg, 2000)
Richard Ree, Ph.D. (w. D. Baum, 2001)
Thomas Flores, Ph.D. (w. D. Pfister, 2002)
Charles Davis, Ph.D. (w. D. Pfister, 2002)

Yale University (10 committees)
Charles Bell, Ph.D. (2003)
Erika Edwards, Ph.D. (2005)
Brian Moore, Ph.D. (2007)
Sang-Tae Kim, Ph.D. (2007)
Rachel Novick, Ph.D. (2008)

Stephen Smith, Ph.D. (2008)
Sara Carlson, Ph.D. (2010)
Jeremy Beaulieu (2012)
Anne Greenberg (2013)
Elizabeth Forrestel (2015)
Sarah Federman (2017)
Elizabeth Spriggs (2018)
Brian Park (2018)
Miranda Sinnott-Armstrong (2019)
Mansa Srivastav (6th year)

Professional Societies

American Academy of Arts and Sciences
American Association for the Advancement of Science
American Society of Naturalists
American Society of Plant Taxonomists
Botanical Society of America
Connecticut Academy of Science and Technology
Connecticut Botanical Society
(Molecular Biology and Evolution Society)
(National Center for Science Education)
(Natural Science Collections Alliance)
(New England Botanical Club)
Paleontological Society
(Sigma Xi)
Society for the Study of Evolution
Society of Systematic Biologists
US National Academy of Sciences
American Academy of Arts and Sciences

Selected Committees/Service

Editorial Committee, *Systematic Botany* (1983-87)
Systematics and Evolution Program Coordinator, San Diego State Univ. (1984-85)
Councilor, Willi Hennig Society (1986-89)
Research Curator Search Committee, American Museum of Natural History (1987)
Editorial Board, Smithsonian Institution, Comparative Evolutionary Biology (1988-96)
Councilor, Society of Systematic Zoology (1988-91)
Program Chairman, Society of Systematic Biologists (1990-93)
Honors Committee, American Society of Plant Taxonomists (1990-92)
Associate Editor, *Evolution* (1990-92)
Search Committee Chairman, Univ. Arizona, Plant and Insect Systematics (1990)
Director, Laboratory of Systematics and Evolution, University of Arizona (1990-91)
Advisory Board, Tucson Botanical Garden (1991-92)
Faculty of Science Advisory Council, Univ. Arizona (1991-92)
Editorial Board, *Molecular Phylogenetics and Evolution* (1991-98)
Consultant on the Herbarium, University of Michigan (1991)
Steering Committee and Co-Chair, Systematics Agenda 2000 (1991-95)

Director, NSF Research Training, "Analysis of Biological Diversification," Univ. Arizona(1991-92)
Advisory Editorial Board, *Trends in Ecology and Evolution* (1992-00)
Chair, Users Group, Molecular Systematics and Evolution Lab, Univ. Arizona (1992)
Councilor, American Society of Plant Taxonomists (1992-94)
President-elect (1993-94), President (1994-95), and Past-President (1995-96), Society of Systematic Biologists
External Advisory Board, Yale Institute of Biospheric Studies (1994-00)
Visiting Committee, Biology Department, Princeton University (1995-99)
Steering Committee, "Evolution, Science, and Society" (1995-97)
Committee on Research Policy, Harvard University (1995-97)
Chairman, Invertebrate/Insect Systematics Search Committees, Harvard Univ. (1995)
Director, Graduate Research Training, "Plant Systematics," Harvard Univ. (1995-00)
Panel Member, Bay Foundation Biodiversity Leadership Awards (1996-99)
Council, New England Botanical Club (1997-99)
Director, Harvard University Herbaria (1995-99)
Chairman, Plant Evolution Search Committee, Harvard Univ. (1997-98)
Program Committee, XVI International Botanical Congress (1996-99)
IUBS/DIVERSITAS Systematics Steering Committee (1997-)
Visiting Committee, Department of Ecology and Evolution, SUNY Stony Brook (1997)
Visiting Committee, Univ. California, Berkeley, Herbaria (1998)
DIVERSITAS International Biodiversity Observation Year (IBOY) Committee (1998-99)
Visiting Committee, Section of Ecology and Systematics, Cornell University (1999)
NSF Biodiversity Observation Network (BON) workshops -- NCEAS, Santa Barbara (1999), California Academy (co-organizer; 1999)
NAS, US National Committee, Int. Union of Biological Sciences (1999-2005)
NSF National Ecological Observatory Network (NEON) workshop, Florida (2000)
Yale Institute for Biospheric Studies, Faculty Council (2000-)
Chair, Biodiversity/Systematics Search Committee, Yale Univ. (2000-01)
Co-chair, EEB/FES Ecology Search Committee, Yale Univ. (2000-01)
Nominations Committee, Society of Systematic Biologists (2000)
NCEAS Biogeography Working Group (2000-02)
NCEAS Adaptive Radiations Working Group (2001-02)
Visiting Committee, Arnold Arboretum of Harvard University (2001-)
Visiting Committee, Department of Integrative Biology, UC Berkeley (2001)
Executive Committee, Discovering Life in America, Smokey Mountain ATBI (2001-05)
DIVERSITAS Steering Committee and Vice Chairman (2002-09)
Editorial Board, *American Naturalist* (2002-05)
Visiting Committee, Ecology and Evolutionary Biology, Princeton University (2002-06)
Visiting Committee, Ecology and Evolutionary Biology, Brown University (2002)
Hartford Science Museum Planning Committee (2003-05)
Chair, Environmental Science Center Building Committee, Yale University (2003-08)
Science Council, Yale University (2003-08)
Marsh Botanical Garden Committee, Yale University (2002-)
Yale Institute for Biospheric Studies, Donnelley Fellow Selection Committee (2002- 03)
Science Board, All Species Foundation (2003-06)
Arts Area Advisory Committee, Yale University (2004-08)
Biological Sciences Advisory Committee, Yale University (2004-06)
Board of Directors, Natural Science Collections Alliance (2004-09)

Graduate School Degree Committee for the Physical and Biological Sciences, Yale University (2004-09)
Digital Landscape Committee, Yale University (2005-08)
Board of Directors, International Festival of Arts and Ideas, New Haven, CT (2005-09)
Councilor, Society of Systematic Biologists (2005-08)
Executive Committee, Yale Center for International and Area Studies (2005-)
Visiting Committee, American Museum of Natural History (2005)
Visiting Committee, New York Botanical Garden (2005)
Scientific Committee, Global Mountain Biodiversity Assessment (2006-)
Co-Chair, DIVERSITAS bioGENESIS Core Project (2006-09)
Visiting Committee, Missouri Botanical Garden, St. Louis, MO (2006)
National Ecological Observatory Network, STEAC Advisory Committee (2009-2014)
Nominations Committee, American Institute of Biological Sciences (2009)
Biological Science Advisory Committee, National Science Foundation (2009-12)
Chair, Carty Award Committee, US National Academy of Sciences (2009)
Chair, NSF Museum Collection Digitization Workshop, NESCent, Durham, NC (2010)
Chair, Science and Engineering Council, Yale University (2010)
Nominations Committee, American Academy of Arts and Sciences (2010-11)
Chair, Yale Peabody Museum Informatics Committee (2010-)
Board of Directors, Phyloinformatics Research Foundation (2010-)
Council Member, International Organization for Systematic and Evolutionary Biology (IOSEB) (2011-2014)
Member-at-Large, NRC US National Committee, DIVERSITAS (2011-2014)
Member, Academic Review Committee, Yale University (2012-14)
Chair, EEB Tenure Review Committee, Yale University (2012-13)
Chair, Plant Ecology Search Committee, Yale University (2012-13)
Member, FES Plant Physiological Ecology Search Committee, Yale University (2013-14)
Member, Biological Sciences Advisory Committee, Yale University (2013-15)
President, International Society for Phylogenetic Nomenclature (2014-15)
External Review Committee, Field Museum of Natural History, Chicago, IL (2015)
Scholar Awards Committee, Yale University (2015-2016)
Collections Advisory Committee, Arnold Arboretum, Harvard University (2015-)
Director, Marsh Botanical Garden, Yale University (2015-18)
Steering Committee, Plant Science Research Network, NSF RCN (2015-)
Wilbur Cross Medal Selection Committee, Yale Graduate School (2015)
Search Committee, Dean of the School of Forestry and Environmental Studies (2016)
Chair, Assistant Professor Reappointment Committee, EEB, Yale University (2016)
Class Membership Committee, National Academy of Sciences (2017)
Chair, Professor Appointment Committee, EEB, Yale University (2017)
Chair, Informatics Search Committee, Peabody Museum of Natural History (2017)
Chair, Assistant Professor Promotion Committee, EEB, Yale University (2018)
Distinguished Fellow and Emerging Leader Selection Committee, Botanical Society of America (2019)
Director, Yale Institute for Biospheric Studies (2019-2021)
President-Elect, Botanical Society of America (2020-2021)
COVID-19 Off-campus Research and Fieldwork Committee, Yale University (2020-2021)
President, Botanical Society of America (2021-2022)
Steering Committee, Planetary Solutions Project, Yale University (2019-)
Co-Chair, Yale Planetary Solutions Project Grant Evaluation Committee (2022)

Past-President, Botanical Society of America (2022-2023)

Selected Reviews

American Journal of Botany
American Naturalist
Amherst College
The Auk
Biology and Philosophy
Bioscience
Cambridge University Press
Cladistics
Current Biology
Evolution
Evolutionary Theory
International Journal of Plant Sciences
Journal of Evolutionary Biology
Journal of Phycology
Journal of Theoretical Biology
Journal of Vertebrate Paleontology
MacArthur Foundation
Molecular Phylogeny and Evolution
National Geographic Society
National Science Foundation
Nature
New Phytologist
Ohio University
Organization for Tropical Studies
Oxford University Press
Plant Systematics and Evolution
Proceedings of the National Academy of Science
Review of Paleobotany and Palynology
Science
Seed Science
Sinauer Press
Smithsonian Institution
State University of New York Press
Systematic Botany
Systematic Botany Monographs
Systematic Zoology/Biology
Taxon
Univ. Chicago Press
Yearbook of Physical Anthropology

Symposia/Meetings Organized

"Phylogenetic analysis of polymorphic molecular characters" (with C. Mitter), Society of Systematic Zoology/Botanical Society of America (1983)
"Phylogenetic analysis of adaptation" (with J. Coddington), Hennig Society (1985)

"Molecular genetic approaches to phylogeny reconstruction" (with M. Kidwell), American Genetic Association (1991)

"Null models and randomization in phylogenetic analysis," Hennig Society (1991)

"Phylogenetic perspectives on macroevolutionary hypotheses," Society of Systematic Biologists (1991)

"Phylogenetic analysis and population biology," International Organization of Plant Biosystematists (1992)

"New England Molecular Evolutionary Biology," Harvard University (1994)

"Phylogenetic Nomenclature," Harvard University (1998)

"Systematics and the Biodiversity Observation Network" (with P. Kociolek), California Academy of Sciences (1999)

"Phytogeography of the Northern Hemisphere" (with P. Manos), Botanical Society of America / American Society of Plant Taxonomists (2000)

"Tree of Life Initiative" (with J. Cracraft), Yale Univ. (2000)

"Assembling the Tree of Life (with J. Cracraft), American Museum of Natural History (2002)

"Phylogenies and Community Ecology" (with C. Webb), NCEAS Working Group, Santa Barbara, CA (2002)

"New England Botanical Information System" (with N. Cellinese and R. Beaman), Arnold Arboretum, Harvard University (2003)

"New England Botanical Information System" (with N. Cellinese and D. Les), Univ. Connecticut, Storrs (2004)

"Northern Hemisphere Biogeography" (with J. Wen), International Botanical Congress, Vienna, Austria (2005)

"Phyloinformatics," NESCent MetaData Catalysis Group, Duke Univ., NC (2005)

"Phytogeography of the Northern Hemisphere" (with P. Manos), NESCent Working Group, Duke Univ., NC (2005-07)

"Phylogenies and Biodiversity Science," DIVERSITAS Open Science Conference, Oaxaca, Mexico (2005)

"Phylogenetic nomenclature and phyloinformatics," 2nd International meeting of the Society for Phylogenetic Nomenclature, Yale Univ. (2006)

"The origins of biological diversity," DIVERSITAS Core Project Workshop, Paris (2006)

"Overcoming the Digitization Bottleneck in Natural History Collections," NBII/NSCA Workshop, Harvard Univ., Cambridge, MA (with J. Hanken, 2006)

"bioGENESIS Science Committee Meeting," Kyushu, Japan (with T. Yahara, 2006)

"ATOL/BOLI," NESCent, North Carolina (with C. Cunningham et al., 2007)

"NSF Biogeography," Las Vegas, Nevada (with B. Riddle et al., 2007)

"International Tree of Life," Beijing, China (with Y-L Qui et al., 2007)

"iPTOL Data Assembly Working Group," Phoenix, AZ (with D. and P. Soltis, 2009)

"NSF Digitization Initiative," NESCent, Durham, NC (with B. Wiegmann, 2010)

"International *Viburnum* summit," Yale University (with W. Clement, 2012)

"Verrill Medal Symposium," Peabody Museum of Natural History, Yale University (with D. Heiser, 2016)

"Adaptation and the evolution of leaf form", Biodiversity Institute, University of Mexico (with M. Olson and E. Edwards, 2017)

"Biome Evolution," International Botanical Congress, Shenzhen, China (with E. Edwards, 2017)

"Latin American *Viburnum* summit," Yale University (with E. Edwards, 2018)

"PhyloCode 2020: Naming the Tree of Life", Society of Systematic Biologists, Cleveland

(with N. Cellinese, 2020)
"PhyloCode 2020: Naming the Tree of Life", Botanical Society of America, Alaska (with N. Cellinese, 2020)

Selected Invited Presentations

American Institute of Biological Sciences (1982, with W. Maddison: Bot. Soc. Amer. Misc. Publ. 162:78)
American Museum of Natural History (1984)
American Institute of Biological Sciences (1984: Amer. Jour. Bot. 71:1)
Systematics Association and Linnaean Society (1985, with J. Doyle)
Rancho Santa Ana Botanic Garden (1985)
Third Int. Congress of Systematic and Evolutionary Biology (1985, with J. Doyle)
Smithsonian Institution (1985)
XIV International Botanical Congress (1987)
Systematics Association and Linnaean Society (1988, with J. Doyle)
Society for the Study of Evolution (1988)
"Foundations of Evolutionary Biology," Ohio State University (1988)
"The Hierarchy of Life," Nobel Symposium, Sweden (1988)
Geological Society of America (1988: GSA Abstracts Vol.20, No.7:185)
"History and Evolution," Systematics Symposium, Field Museum (1989)
"Foundations of Development and Evolution," Santa Fe Institute (1989)
"Ecology and Evolution of Plant Reproduction," University of Georgia (1991)
"Persistent Controversies in Evolutionary Biology," University of Washington (1991)
Society of Systematic Biologists (1991, with W. Judd and R. Sanders)
Geological Society of America (1991)
"Perspectives in Evolutionary Biology," Uppsala University, Sweden (1992)
International Organization of Plant Biosystematists (1992, with S. Weller, D. Charlesworth, R. Olmstead)
"Molecular Evolution Workshop," Woods Hole, MA (1992, 1993)
"Current Approaches in Systematics," Sweden (1992, with J. Coddington, D. Hillis)
Systematics Symposium, Missouri Botanical Garden (1992)
"Classification of the Monocotyledons," Royal Botanic Gardens, Kew (1993)
American Society of Plant Taxonomists (1993, with D. Baum)
American Society of Plant Taxonomists (1993, with B. Baldwin)
American Museum of Natural History (1993)
"Systematics Agenda 2000," AAAS (1994)
Society of Systematic Biologists (1994)
"Tropical Plant Systematics," Organization for Tropical Studies (1994)
"Phylogenetic classification," American Society of Plant Taxonomists (1995)
Rancho Santa Ana Botanic Garden (1996)
"Conservation Biology," University of Malaysia, Sarawak (1995)
Int. Congress of Systematic and Evolutionary Biology (1996)
"Green Plant Phylogeny," Louisiana State University (1996)
"Plant Life Histories," Royal Society/CIBA Foundation (1996)
"Revisiting Nature," Hastings Center, New York (1996)
Presidential address, Society of Systematic Biologists, St. Louis (1996)
PEET Symposium, Univ. Kansas (1996)
"After the Floras," Melbourne, Australia (1996)

"Phylogeny of Life," University of Arizona (1996)
"Evolution of Plant Development," Keystone Symposium, Taos, New Mexico (1997)
"Molecular Systematics," Paris, France (1997)
"International Biodiversity Observation Year" AAAS (1998)
"From Gene Genealogy to Organismal History," Geneva, Switzerland (1998)
Marsh Lecture, Peabody Museum, Yale (1998)
Plenary Lecture, PEET Workshop, Woods Hole, MA (1998)
"Character Evolution," Society of Systematic Biologists, Vancouver, BC (1998)
Missouri Botanical Garden (1998)
Eminent Biologist Lecture Series, Pittsburgh EcoForum (1999)
"Museums and Biodiversity," Stanford (1999)
Plenary Lecture, International Botanical Congress, St. Louis (1999)
"Northern Hemisphere Biogeography", Int. Botanical Congress, St. Louis (1999)
"The root of angiosperms", Int. Botanical Congress, St. Louis (1999; with S. Mathews)
"Perspectives in Biology," Wake Forest Univ. (1999)
"Frontiers in Phylogenetic Biology," Botanical Society of America, Portland, OR (2000)
"Transference of Function," FASEB Plant Development, Vermont (2000, with D. Baum)
"Phylogenies and global change," Amsterdam (2001)
"Progress in historical biogeography," European Society for Evolutionary Biology,
Aarhus, Denmark (2001)
"Plant Evolution," Banbury Center, Cold Spring Harbor Laboratory (2001)
"Discovering Life in America," Smokey Mountains ATBI, Gatlinberg, TN (2001)
"Integrative historical biogeography," Society for Integrative and Comparative Biology,
Anaheim, CA (2002)
"Flower Evolution," Zurich Switzerland (2002)
"Botany in the Curriculum," Botanical Society of America, Madison, WI (2002)
"The Future of Taxonomy," AAAS-Pacific Division, San Francisco, CA (2003)
"Biodiversity: Past, Present, and Future," AAAS-Pacific Division, San Francisco, CA
(2003)
"Bio/mycodiversity and the future," Mycological Society of America, Asilomar, CA
"Biodiversity," In the Company of Scholars, Yale University (2003)
"New England Plant Diversity," Connecticut Botanical Society Keynote Lecture (2003)
G. E. Hutchinson Memorial Symposium, Yale University (2003)
Perspectives in Science, Yale University (2003)
Science Forum, Yale University (2003)
John Ostrum Lecture, Yale University (2003)
O. C. Marsh Lecture, Yale University (2003)
Yale Alumni Association (2003)
Garden Club of New Haven (2003)
"Evolution of Biomes," Royal Society, (2004)
"Homology," Botanical Society of America, Utah (2004)
"Teaching comparative biology" National Association of Biology Teachers, Chicago
(2004)
"Challenges in BioDISCOVERY," Paris (2005)
"BioDISCOVERY," Japanese Science Council, Tokyo (2005)
"Teaching phylogeny," Society of Systematic Biologists, Alaska (2005)
"Biogeography of the Northern Hemisphere," International Botanical Congress, Vienna
(2005)

“Likelihood-based inference of historical biogeography” Missouri Botanical Garden Annual Symposium (2005, with R. Ree, B. Moore, S. Smith)
New England Botanical Club, New Haven, CT (2005)
PhyloCode versus Linnaean Code: a debate, Linnaean Society, London (2005)
Yale Science and Engineering Association, Yale Club of New York (2005)
Issues at the Forefront of Biology, Yale Univ. Womens Organization (2005)
CIPRES outreach: Building a phylogeny museum exhibit, Austin, TX (2006)
“Latitudinal diversity gradients in plants,” American Society of Naturalists, Stony Brook, NY (2006)
“Phylogeny and biodiversity science,” Associated meeting, Conference of the Parties 8, Convention on Biological Diversity, Curitiba, Brasil (2006)
“Phylogenies, biogeography, and mountain biodiversity,” Global Mountain Biodiversity Assessment, Kazbegi, Republic of Georgia (2006)
“*Metasequoia* phylogeny and conservation,” 2nd International *Metasequoia* Conference, Bryant Univ., Smithfield, RI (2006)
Chinese Tree of Life, Beijing, China (2007)
Phylogenetic Diversity, SSB, Christchurch, New Zealand (2007)
Mediterranean Biogeography, Zurich, Switzerland (2007)
Sackler Symposium, NAS, Irvine, CA (2007)
Madrid Botanical Garden, Spain (2008)
University of Sevilla, Spain (2008)
Darwin in Spain, Sevilla, Spain (2009)
Applied Phylogenetics Workshop, Bodega Bay, CA (2009)
North American Paleontology Convention, Cincinnati, OH (2009)
Campanulid biogeography, Harvard, MA (2009)
Roger Carpenter Lecture, San Diego State Univ. (2010)
Association of Tropical Biologists, Plenary Speaker, Bali, Indonesia (2010)
Computational Phylogenetics Symposium, Univ. Florida (2010)
Sustain What?, New York Botanical Garden, (2010)
Digitization enabled research, Biodiversity Information Standards (TDWG), New Orleans (2011)
Biodiversity and evolution, Kyushu University Anniversary Symposium, Japan (2011)
Biodiversity and evolution, Quebec Centre for Biodiversity Science, McGill University, Montreal, Canada (2011)
Prospects for the Tree of Life, National Museum of Natural History, Smithsonian Institution, Washington DC (2012)
South African Society of Systematic Biology, Arniston, South Africa (2012)
Japanese Evolution Society symposium, Tokyo Metropolitan University, Japan (2012)
Society for the Study of Evolution, Exploration Symposium, Snowbird, Utah (2013)
Plant Radiations Symposium, Zurich, Switzerland (2014)
Keynote Address, Systematics Association Biennial, Oxford, England (2015)
Evolution Matters, Harvard Museum of Natural History, Cambridge, MA (2016)
Keynote Address, Connecticut Tree Protective Association, Plantsville, CT (2017)
Invited Talk, International Biogeography Society, Tucson, Arizona (2017)
Plenary Lecture, Columbian Symposium on Plant Systematics and Evolution, Medellin, Colombia (2017)
Panel Speaker, “Human Imprints on the Tree of Life”, Harvard Univ. Center for the Environment (2017)
Keynote Address, iDigBio meeting, Univ. Michigan (2017)

Plenary Lecture, XIX International Botanical Congress, Shenzhen, China (2017)
Keynote Address, International Biogeography Society, Bangalore, India (2017)
American Philosophical Society, Philadelphia, PA (2019)
Presidential Address, Botanical Society of America (2021)
Symposium Address, Systematikdagarna, Sweden (2021)
Edward P. Bass Distinguished Lecture, Yale University (2022)
Symposium Address, Arnold Arboretum, Jamaica Plain, MA (2022)
Keynote Address, Mexican Botanical Society, Puebla, Mexico (2022)

Selected Contributed Papers/Abstracts (through 2004 only)

- "Hybridization and isolation in *Viburnum* in Chiapas, Mexico," AIBS/ASPT (1978: Bot. Soc. Amer. Misc. Publ. 156:70)
- "Growth patterns in *Viburnum* (Caprifoliaceae) and their taxonomic significance," AIBS/ASPT (1979: Bot. Soc. Amer. Misc. Publ. 157:54)
- "The cladistic relationships of *Viburnum*--equivocal outgroups and a robust hypothesis," AIBS/ASPT (1981: Bot. Soc. Amer. Misc. Publ. 160:67-68)
- "A revised form of outgroup analysis with applications to systematic entomology," Entomological Society of America (1982, with W. Maddison, D. Maddison)
- "Outgroup analysis and global parsimony," Hennig Society (1982, with W. Maddison, D. Maddison)
- "Pollen diversity in the Caprifoliaceae *sensu lato* and the evolution of the exine in *Viburnum*," AIBS/ASPT (1983: Amer. Jour. Bot. 70:111)
- "Reticulation and hierarchy in phylogenetic systematics," AIBS/ASPT (1983, with A. Wyss, K. de Queiroz, M. Norell, Amer. Jour. Bot. 70:135)
- "A method for coding partially ordered multistate characters for cladistic analysis: examples from a phylogenetic study of seed plants," AIBS/ASPT (1985, with J. Doyle, Amer. Jour. Bot. 72:950)
- "Leaf morphology and evolution in the genus *Viburnum*," AIBS/ASPT (1986, with G. Levin, Amer. Jour. Bot. 73:760)
- "Cladistic analysis and the species problem," Hennig Society (1986, with K. de Queiroz)
- "Morphometric analysis of endocarp shape in *Viburnum*," AIBS/ASPT (1988, with R. Strauss, Amer. Jour. Bot. 75(6):170)
- "Development of the ovary in *Viburnum*," AIBS/ASPT (1988, with W. Friedman, Amer. Jour. Bot. 75(6):27)
- "Patterns of homoplasy in the evolution of *Viburnum* fruits," AIBS/ASPT (1988: Amer. Jour. Bot. 75(6):170)
- "A reconsideration of seed plant and angiosperm phylogeny," AIBS/ASPT (1990, with J. Doyle)
- "Are temperate-tropical family pairs sister groups?" AIBS/ASPT (1991, with R. Sanders and W. Judd)
- "The decay index as a measure of relative robustness within a cladogram," Hennig Society (1991, with B. Mishler, V. Albert)
- "Walter Zimmermann and the development of phylogenetic thought," International Society, History, Biology, Social Studies of Biology (1993, with J. Kadereit)
- "Do outgroup nucleotide sequences differ from random sequences in rooting angiosperm trees," Society of Systematic Biologists (1993, with D. Maddison)
- "Phylogenetic analysis of *Viburnum* based on chloroplast DNA restriction-site data," AIBS/ASPT (1993, with K. Sytsma, Amer. Jour. Bot. 80(6):146)

- "Phylogenetic analysis of *Viburnum* based on ribosomal DNA sequences from the internal transcribed spacer regions," AIBS/ASPT (1993, with B. Baldwin, Amer. Jour. Bot. 80(6):145)
- "Evolutionary diversity of polypore fungi: a molecular phylogenetic perspective," Botanical Society of America (1995, with D. Hibbett, Amer. Jour. Bot. 82(6):78)
- "Is *Potentilla* monophyletic?," AIBS/ASPT (1995, with T. Eriksson, Amer. Jour. Bot. 82(6):128)
- "Phylogenetic analyses of *Sambucus* and *Adoxa*," AIBS/ASPT (1995, with T. Eriksson, Amer. Jour. Bot. 82(6):128)
- "A reanalysis of the large *rbcL* dataset," AIBS/ASPT (1995, with K. Rice, R. Olmstead, Amer. Jour. Bot. 82(6):157)
- "Fossil mushrooms in amber and the evolution of homobasidiomycetes," AIBS/MSA (1996, with D. Hibbett, Amer. Jour. Bot. 83(6):105)
- "Simulations of the impact of classification systems on diversity patterns," GSA, Salt Lake City (1997, with C. Maley and H. Robeck)
- "Phylogeny and biogeography of *Triosteum*," AIBS/ASPT (1998, with K. Gould)
- "Phylogeny and biogeography of *Hamamelis*," AIBS/ASPT (1998, with J. Li) (BSA/ASPT, 2000: China, Dipsacales, phylocode)
- "Phylogeny of Valerianaceae," AIBS/ASPT (2002, with C. Bell)
- "*Viburnum* phylogeny," AIBS/ASPT (2002, with R. Winkworth)
- "Evolution of reproductive traits in Dipsacales," AIBS/ASPT (2002)
- "Character evolution in Dipsacales," SSE/SSB (2003)
- "Character evolution and biogeography in *Viburnum*," BSA/ASPT (2003)
- "Historical biogeography of *Viburnum*" (w. R. Winkworth) BSA/ASPT (2004)
- "Supertree of Dipsacales" (w. Brian Moore) BSA/ASPT (2004)
- "CYC evolution in Dipsacales" (w. D. Howarth) BSA/ASPT (2004)
- "Basal cactus phylogeny" (w. E. Edwards) BSA/ASPT (2004)

Invited Departmental Seminars

- American Museum of Natural History (1993)
- Amherst College (1989)
- Arizona State University (1987, 2004)
- Beijing Botanical Institute (1995)
- Boise State University (2020)
- Brown University (1993, 2012)
- California Institute of Technology (1994, 2010)
- Cornell University (1988, 1990)
- Duke University (1990, 1999, 2005)
- Field Museum of Natural History (2004)
- Florida International University (1998)
- Florida State University (2001)
- Harvard University (1984, 1989, 1993, 1995, 1999, 2009, 2011)
- Hong Kong Chinese University (1995)
- Imperial College, London (2010)
- Louisiana State University (1989)
- Madrid Botanical Garden, Spain (2008)
- Massachusetts Institute of Technology (1996)
- Miami University, Ohio (1993)

Michigan State University (1990, 1995, 1997, 2001, 2013, 2018)
National Museum of Natural History (1993, 2012)
New York Botanical Garden (2004)
North Carolina State University (2014)
Northern Illinois University (1989)
Ohio University, Athens (2000)
Princeton University (1994)
Rancho Santa Ana Botanic Garden (1986, 1994)
Royal Botanical Garden, Kew (2014)
San Andres University, La Paz, Bolivia (2017)
San Diego State University (1983, 1985, 1994, 2010)
San Francisco State University (1999)
State University of New York, Stony Brook (1989, 2003, 2017)
Stockholm University, Sweden (1999)
Taiwan National University (2011)
The College of New Jersey (2014)
Trondheim University, Norway (1999)
University of Arizona (1985, 1986, 1987, 1995, 2015, 2017)
University of British Columbia (2004)
University of California, Berkeley (1982, 1991, 1999, 2009)
University of California, Davis (1983, 1984, 1998)
University of California, Irvine (1991)
University of California, Los Angeles (2010, 2012)
University of Cape Town (2012)
University of Chicago (1992)
University of Cincinnati (1993)
University of Colorado (1994)
University of Connecticut (1989, 1995, 2015)
University of Florida (2005, 2010, 2021)
University of Illinois, Champaign (1989)
University of Kansas, Lawrence (1985, 1993)
University of Maine (1997)
University of Maryland (1993)
University of Massachusetts (2006, 2018)
University of Mexico/UNAM (2015, 2021)
University of Michigan (1987, 1989, 1996, 2006)
University of Minnesota (2016)
University of Montreal (2011)
University of New Hampshire (1995)
University of North Carolina, Chapel Hill (2014)
University of North Dakota (2001)
University of Oklahoma (1988)
University of Sevilla, Spain (2008)
University of Tennessee (2014)
University of Texas, Austin (1985, 1993, 2004, 2015)
University of Toronto (1994)
University of Uppsala, Sweden (1992, 1999, 2016)
University of Utah (1991)
University of Washington (1987, 1991, 2002, 2012, 2017)

University of Wisconsin (1990)
Virginia Tech (2005)
Washington University, St. Louis (1991, 2004, 2006)
Yale University (1989, 1997, 2000, 2001, 2002, 2007, 2009, 2012, 2019)
Zurich Botanical Institute (1998, 2007)

Databases/Internet/Museum Contributions

TreeBASE: a relational database for exploring phylogeny (1996, with M. Sanderson, W. Piel, K. Rice, T. Eriksson, C. Henze). <http://www.treebase.org>
Treezilla: reanalysis of 500 rbcL sequences (1995, with K. Rice, R. Olmstead).
<http://herbaria.harvard.edu/~rice/treezilla>
Angiosperm coordinator for the Tree of Life (1996, Maddison, D.R. and W. P. Maddison. The Tree of Life: A distributed internet project containing information about phylogeny and biodiversity). <http://phylogeny.arizona.edu/tree/phylogeny.html>
Phylomatic: a database for applied phylogenetics (2004, with C. Webb)
<http://www.phylodiversity.net/phylomatic/>
“Travels in the Great Tree of Life,” An exhibition on phylogeny for the Peabody Museum, Yale University, New Haven, CT (Curator in Charge).
Peabody Study Gallery Exhibit, Bio104 (2018)

Field Experience

New World: Mexico (esp. Oaxaca, Chiapas, Puebla, Hidalgo, Veracruz), Jamaica, Costa Rica, Honduras, Guatemala, Colombia, Ecuador, Peru, Chile, Argentina, Bolivia
Old World: China (esp. Sichuan, Qinghai, Yunnan, Hubei), Indonesia, Japan, Malaysia, Philippines, Republic of Georgia, South Africa, Vietnam, Namibia, India

Publications (Google Scholar, August 2022: 52,246 citations, h-index=110)

1. Donoghue, M.J. 1980. Flowering times in *Viburnum*. *Arnoldia* 40:2-22.
2. Donoghue, M.J. 1981. Growth patterns in woody plants with examples from the genus *Viburnum*. *Arnoldia* 41:2-23.
3. Coombs, E.A.K., M.J. Donoghue, and R.J. McGinley. 1981. Characters, computers, and cladograms: a review of the Berkeley cladistics workshop. *Syst. Bot.* 6:359-372.
4. Donoghue, M.J. 1982. A botanical classification. (Review of Dahlgren, R.M.T., and H.T. Clifford. 1982. *The Monocotyledons. A Comparative Study*. New York: Academic Press.) *Science* 217:1133-1134.
5. Mishler, B.D. and M.J. Donoghue. 1982. Species concepts: a case for pluralism. *Syst. Zool.* 31:491-503. [Reprinted in: Ereshefsky, M. (ed.). 1991. *The Units of Evolution: Essays on the Nature of Species*. MIT Press, Cambridge, MA.]
6. Donoghue, M.J. 1983. A preliminary analysis of phylogenetic relationships in *Viburnum* (Caprifoliaceae s.l.). *Syst. Bot.* 8:45-58.
7. Donoghue, M.J. 1983. The phylogenetic relationships of *Viburnum*. In *Advances in Cladistics, Volume 2*, pp.143-166; N.I. Platnick and V.A. Funk (eds.). New York: Columbia Univ. Press.

8. Donoghue, M.J. 1984. Caprifoliaceae of Japan. (Review of Hara, H. 1983. A Revision of Caprifoliaceae of Japan with Reference to Allied Plants in Other Districts and to Adoxaceae. Tokyo: Academia Sci. Books.) Syst. Bot. 9:126-127.
9. Maddison, W.P., M.J. Donoghue, and D.R. Maddison. 1984. Outgroup analysis and parsimony. Syst. Zool. 33:83-103.
10. Donoghue, M.J. and P.D. Cantino. 1984. The logic and limitations of the outgroup substitution approach to cladistic analysis. Syst. Bot. 9:192-202.
11. Donoghue, M.J. 1985. Pollen diversity and exine evolution in *Viburnum* and the Caprifoliaceae sensu lato. Jour. Arnold Arb. 66:421-469.
12. Donoghue, M.J. 1985. A critique of the biological species concept and recommendations for a phylogenetic alternative. The Bryologist 88:172-181.
13. Donoghue, M.J. 1986. Miscellaneous cladistics. (Review of Duncan, T., and T.F. Stuessy. 1984. Cladistics: Perspectives on the Reconstruction of Evolutionary History. New York: Columbia Univ. Press.) Syst. Bot. 11:496-499.
14. Donoghue, M.J. and W.P. Maddison. 1986. Polarity assessment in phylogenetic systematics: a response to Meacham. Taxon 35:534-538.
15. Doyle, J.A. and M.J. Donoghue. 1986. Relationships of angiosperms and Gnetales: a numerical cladistic analysis. In Systematic and Taxonomic Approaches in Paleobotany; B.A. Thomas and R.A. Spicer (eds.). London: Oxford Univ. Press.
16. Doyle, J.A. and M.J. Donoghue. 1986. Seed plant phylogeny and the origin of angiosperms: an experimental cladistic approach. Bot. Rev. 52:321-431.
17. Donoghue, M.J. 1987. Experiments and hypotheses in systematics. Taxon 36:584-587.
18. Doyle, J.A. and M.J. Donoghue. 1987. The importance of fossils in elucidating seed plant phylogeny and macroevolution. Rev. Paleobot. Palyn. 50:63-95.
19. Donoghue, M.J. 1987. South African perspectives on species: an evaluation of the recognition concept. (Review of Vrba, E. S., ed. 1985. Species and Speciation. Pretoria: Transvaal Museum.) Cladistics 3:265-274.
20. Doyle, J.A. and M.J. Donoghue. 1987. The origin of angiosperms: a cladistic approach. In The Origin of Angiosperms and Biological Consequences, pp.17-49; E.M. Friis, W.G. Chaloner, and P.R. Crane (eds.). Cambridge: Cambridge Univ. Press.
21. Donoghue, M.J. and P.D. Cantino. 1988. Paraphyly, ancestors, and the goals of taxonomy: a botanical defense of cladism. Bot. Rev. 54:107-128.
22. de Queiroz, K. and M.J. Donoghue. 1988. Phylogenetic systematics and the species problem. Cladistics 4:317-338.
23. Donoghue, M.J. and J.A. Doyle. 1989. Phylogenetic analysis of angiosperms and the relationships of Hamamelidae. In Evolution, Systematics and Fossil History of the Hamamelidae, Vol.1, pp.17-45; P. Crane and S. Blackmore (eds.). Oxford: Clarendon Press.
24. Donoghue, M.J. and J.A. Doyle. 1989. Phylogenetic studies of seed plants and angiosperms based on morphological characters. In The Hierarchy of Life, pp.181-193; B. Fernholm, K. Bremer, and H. Jornvall (eds.). Nobel Symposium 70. Amsterdam: Elsevier Publ.
25. Donoghue, M.J. 1989. Phylogenies and the analysis of evolutionary sequences, with examples from seed plants. Evolution 43:1137-1156.
26. Crane, P.R., M.J. Donoghue, J.A. Doyle, and E.M. Friis. 1989. Angiosperm origins. Nature 342:131.

27. Donoghue, M.J., J.A. Doyle, J. Gauthier, A.G. Kluge, and T. Rowe. 1989. The importance of fossils in phylogeny reconstruction. *Ann. Rev. Ecol. Syst.* 20:431-460.
28. Sanderson, M.J. and M.J. Donoghue. 1989. Patterns of variation in levels of homoplasy. *Evolution* 43:1781-1795.
29. de Queiroz, K. and M.J. Donoghue. 1990. Phylogenetic systematics or Nelson's version of cladistics? *Cladistics* 6:61-76.
30. Donoghue, M.J. 1990. Sociology, selection, and success: a critique of David Hull's analysis of science and systematics. *Biol. Phil.* 5:125-138.
31. de Queiroz, K. and M.J. Donoghue. 1990. Phylogenetic systematics and species revisited. *Cladistics* 6:83-90.
32. Donoghue, M.J. 1990. Why parsimony? (Review of Sober, E. 1988. *Reconstructing the Past: Parsimony, Evolution, and Interference*. Cambridge: M.I.T. Press.) *Evolution* 44:1121-1123.
33. Donoghue, M.J. and J.A. Doyle. 1991. Angiosperm monophyly. *Trends Ecol. Evol.* 6:407.
34. Barrett, M., M.J. Donoghue, and E. Sober. 1991. Against consensus. *Syst. Zool.* 40:486-493.
35. Donoghue, M.J. and M.J. Sanderson. 1992. The suitability of molecular and morphological evidence in reconstructing plant phylogeny. In *Molecular Systematics in Plants*, pp.340-368; P.S. Soltis, D.E. Soltis, and J.J. Doyle (eds.). New York: Chapman and Hall.
36. Donoghue, M.J., R.G. Olmstead, J.F. Smith, and J.D. Palmer. 1992. Phylogenetic relationships of Dipsacales based on *rbcL* sequences. *Ann. Missouri Bot. Gard.* 79:333-345.
37. Donoghue, M.J. and J.W. Kaderiet. 1992. Walter Zimmerman and the growth of phylogenetic theory. *Syst. Biol.* 41:74-85.
38. Donoghue, M.J. and S.M. Scheiner. 1992. The evolution of endosperm: a phylogenetic account. In *Ecology and Evolution of Plant Reproduction: New Approaches*, pp.356-389; R. Wyatt (ed.). New York: Chapman and Hall.
39. Doyle, J.A. and M.J. Donoghue. 1992. Fossils and seed plant phylogeny reanalyzed. *Brittonia* 44:89-106.
40. Donoghue, M.J. 1992. Homology. In *Keywords in Evolutionary Biology*; pp. 170-179; E. Fox Keller and E. Lloyd (eds.). Cambridge: Harvard Univ. Press.
41. Doyle, J.A. and M.J. Donoghue. 1993. Phylogenies and angiosperm diversification. *Paleobiology* 19:141-167.
42. Wojciechowski, M.F., M.J. Sanderson, B.G. Baldwin, and M.J. Donoghue. 1993. Monophyly of the aneuploid species of *Astragalus*: evidence from nrDNA internal transcribed spacer sequences. *Amer. Jour. Bot.* 80:711-722.
43. Barrett, M., M. J. Donoghue, and E. Sober. 1993. Crusade? A reply to Nelson. *Syst. Biol.* 42:216-217.
44. Sanderson, M. J., B. G. Baldwin, G. Bharathan, C. S. Campbell, D. Ferguson, J. M. Porter, C. Von Dohlen, M. F. Wojciechowski & M. J. Donoghue. 1993. The growth of phylogenetic information and the need for a phylogenetic database. *Syst. Biol.* 42:562-568.
45. Judd, W.S., R.W. Sanders, and M.J. Donoghue. 1994. Angiosperm family pairs--preliminary phylogenetic analyses. *Harvard Papers in Botany* 5:1-51.

46. Donoghue, M. J. and M. J. Sanderson. 1994. Complexity and homology in plants. In *Homology: The Hierarchical Basis of Comparative Biology*; pp. 393-421; B. Hall (ed.). San Diego: Academic Press.
47. Sanderson, M. J. and M. J. Donoghue. 1994. Shifts in diversification rate with the origin of angiosperms. *Science* 264:1590-1593.
48. Blake, J. A., C. J. Bult, M. J. Donoghue, J. Humphries, and C. Fields. 1994. Interoperability of biological databases: a meeting report. *Syst. Biol.* 42:562-568.
49. Doyle, J. A., M. J. Donoghue, and E. A. Zimmer. 1994. Integration of morphological and ribosomal RNA data on the origin of angiosperms. *Ann. Missouri Bot. Gard.* 81:419-450.
50. Donoghue, M. J. 1994. Progress and prospects in reconstructing plant phylogeny. *Ann. Missouri Bot. Gard.* 81:405-418.
51. Weller, S. G., M. J. Donoghue, and D. Charlesworth. 1995. The evolution of self-incompatibility in flowering plants: a phylogenetic approach. In *Experimental and Molecular Approaches to Plant Biosystematics*; pp. 355-382; P. C. Hoch and A. G. Stephenson (eds.). St. Louis: Missouri Bot. Gard.
52. Baldwin, B. G., M. J. Sanderson, J. M. Porter, M. F. Wojciechowski, C. S. Campbell, and M. J. Donoghue. 1995. The ITS region of nuclear ribosomal DNA: a valuable source of evidence on angiosperm phylogeny. *Ann. Missouri Bot. Gard.* 82:247-277.
53. Baum, D. A. and M. J. Donoghue. 1995. Choosing among alternative "phylogenetic" species concepts. *Syst. Bot.* 20:560-573.
54. Campbell, C. S., M. J. Donoghue, B. G. Baldwin, and M. F. Wojciechowski. 1995. Phylogenetic relationships in Maloideae (Rosaceae): Evidence from sequences of internal transcribed spacers of nuclear ribosomal DNA and its congruence with morphology. *Amer. Jour. Bot.* 82:903-918.
55. Hibbett, D. S. and M. J. Donoghue. 1995. Progress toward a phylogenetic classification of the Polyporaceae through parsimony analysis of mitochondrial ribosomal DNA sequences. *Can. Jour. Bot.* 73:S853-S861.
56. Manchester, S. R. and M. J. Donoghue. 1995. Winged fruits of Linnaeae (Caprifoliaceae) in the Tertiary of Western North America: *Diplodipelta* gen. nov. *Int. Jour. Plant Sci.* 156:709-722.
57. Hibbett, D. S., Y. Fukumasa-Nakai, A. Tsuneda, and M. J. Donoghue. 1995. Phylogenetic diversity in shiitake inferred from ribosomal DNA sequences. *Mycologia* 87:618-638.
58. Ackerly, D. D. and M. J. Donoghue. 1995. Phylogeny and ecology reconsidered. *Jour. Ecology* 83:730-733.
59. Hibbett, D. S., D. Grimaldi, and M. J. Donoghue. 1995. Cretaceous mushrooms in amber. *Nature* 377:487.
60. de Queiroz, A., M. J. Donoghue, and J. Kim. 1995. Separate versus combined analysis of phylogenetic evidence. *Ann. Rev. Ecol. Syst.* 26:657-681.
61. Sanderson, M. J. and M. J. Donoghue. 1996. Reconstructing shifts in diversification on phylogenetic trees. *Trends Ecol. Evol.* 11:15-20.
62. Hibbett, D. S. and M. J. Donoghue. 1996. Implications of phylogenetic studies for conservation of genetic diversity in shiitake mushrooms. *Conser. Biol.* 10:1321-1327.
63. Sanderson, M. J. and M. J. Donoghue. 1996. The relationship between homoplasy and confidence in a phylogenetic tree. Pp. 67-89 *in* Homoplasy and the

Evolutionary Process, M. J. Sanderson and L. Hufford (eds.). San Diego: Academic Press.

64. Donoghue, M. J. and D. D. Ackerly. 1996. Phylogenetic uncertainties and sensitivity analyses in comparative biology. *Phil. Trans. Roy. Soc.* 351:1241-1249. (Reprinted in: Silvertown, J., M. Franco, and J. L. Harper. 1997. *Plant Life Histories: Ecology, Phylogeny and Evolution*. Cambridge Univ. Press.)
65. Backlund, A. and M. J. Donoghue. 1996. Morphology and phylogeny of the order Dipsacales. In *Phylogeny of the Dipsacales*, A. Backlund, Doctoral Dissertation. Uppsala: Department of Systematic Botany, Uppsala Univ.
66. Campbell, C. S., M. F. Wojciechowski, B. G. Baldwin, L. A. Alice, and M. J. Donoghue. 1997. Persistent nuclear ribosomal DNA sequence polymorphism in the *Amelanchier* agamic complex (Rosaceae). *Mol. Biol. Evol.* 14:81-90.
67. Donoghue, M.J. 1997. *Viburnum*. In *A flora of the Chihuahuan Desert Region*; J. Henrickson and M.C. Johnston (ed.). Privately published by J. Henrickson, Los Angeles.
68. Hibbett, D. S., D. Grimaldi, and M. J. Donoghue. 1997. Fossil mushrooms from Miocene and Cretaceous ambers and the evolution of homobasidiomycetes. *Amer. Jour. Bot.* 84: 981-991.
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