

**MATTHEW R. HENN, PH.D.**

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• PERSONAL INFORMATION •

Address: 1626 Channing Way, Apt. C, Berkeley, CA 94703  
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• EDUCATION •

*Ph.D.* **University of California, Berkeley**, CA, 2002  
Department of Environmental Science, Policy & Management, Division of Ecosystem Sciences  
*specialization in microbial ecology*

*B.S.* **University of New Hampshire, Durham**, NH, 1997  
Ecology and Evolutionary Biology; Biology Program and Honors Program; *Magna cum laude*

• PUBLICATIONS •

[Henn, M.R., G. Gleixner, and I.H. Chapela \(2002\)](#) Growth-dependent stable carbon isotope fractionation by basidiomycete fungi:  $\delta^{13}\text{C}$  pattern and process. *Applied and Environmental Microbiology* **68**: 4956-4964.

[Henn, M.R. and I.H. Chapela \(2001\)](#) Ecophysiology of  $^{13}\text{C}$  and  $^{15}\text{N}$  isotopic fractionation in forest fungi and the roots of the saprotrophic-mycorrhizal divide. *Oecologia* **128**: 480-487 (DOI 10.1007/s004420100680).

[Chapela, I.H., L. Osher, T. Horton, and M.R. Henn \(2001\)](#) Mycorrhizal fungi associated with exotic pine plantations induce soil carbon depletion. *Soil Biology and Biochemistry* **33**(12-13): 1733-1740.

[Henn, M.R. and I.H. Chapela \(2000\)](#) Differential C isotope discrimination by fungi during decomposition of  $\text{C}_3$ - and  $\text{C}_4$ -derived sucrose. *Applied and Environmental Microbiology* **66**: 4180-4186.

**Henn, M.R.** (2000) Microbial Traces: fungal fractionation effects in the natural distribution of stable isotopes. *Eos Trans. AGU* **81**(48), Fall Meet. Suppl.

Pei Wu, D., **M.R. Henn**, D. Quist, M. Garbelotto and I.H. Chapela (2000) From the Roots: An Underground Perspective on Traditional Agriculture, Forest Regeneration and Conservation. In Leigh, M (ed). *Borneo 2000: Environment, Conservation and Land* (v.3). Kuching, Sarawak, 346-357.

**Henn, M.R.**, R. Rose, and K. Smith (1995) Current status and proposed conservation plan for Mount Lukenya. Final report by the Center for Wildlife Management Studies, Kenya.

*Manuscripts in review, or preparation:*

**Henn, M.R.** and I.H. Chapela. Growth-dependent isotopic fractionation during ammonium assimilation in basidiomycete fungi and its implications for fungal  $\delta^{15}\text{N}$ -values obtained in the field (*in review*).

**Henn, M.R.**, G. Gleixner, and I.H. Chapela. The dominant biochemical pathways responsible for growth-dependent stable carbon isotope fractionation by basidiomycete fungi as determined by PY-GC-MS-IRMS (*in preparation*).

**Henn, M.R.** and I.H. Chapela. Use of isotope tracers to study the functional role of fungi in nutrient fluxes. *In* Eds. J. Dighton, P. Oudemans, and J. White. *The Fungal Community: Its Organization and Role in the Ecosystem*. Dekker Inc, New York (*in preparation*).

• **AWARDS, COMPETITIVE SUPPORT, AND HONORS** •

2003-2006, **NSF Microbiology Postdoctoral Fellowship** (\$150,000, PI)

2000-2003, **NASA Earth System Sciences Fellowship** (\$66,000, PI)

2003, **Honorable Mention, AIBS, Emerging Public Policy Leader Award**

2000, **Honorable Mention, Department of Energy, Graduate Research Environmental Fellowship**

2000, **Presentation Travel Award**, Mycological Society of America

1998-2001, **William Carroll Smith Fellowship**, UC Berkeley, Berkeley, CA

1998, **Graduate Student Presentation Award**, Mycological Society of America

1997-98, **Graduate Student Researcher**, UC Berkeley, Berkeley, CA

1996-1997, **Undergraduate Research Fellowship**, U. of New Hampshire, Durham, NH.

1997, **Magna cum laude**, U. of New Hampshire, Durham, NH

1993-97, **Honors Program**, U. of New Hampshire, Durham, NH

1993-97, **Semester Honors Spring and Fall**, U. of New Hampshire, Durham, NH

• **PROFESSIONAL EXPERIENCE** •

**2003 – Present**, **NSF Microbiology Postdoctoral Fellow, Duke**, Durham, NC: Collaborating with Dr. Rob Jackson, Dr. and Gerd Gleixner on understanding shifts in metabolic function and gene expression in fungi under elevated  $[\text{CO}_2]$  conditions.

**2003, Postdoctoral Associate, UC Berkeley**, Berkeley, USA: Collaborated with Drs. Allen Goldstein and Stephanie Shaw on the contribution of polypore fungi to the production of methyl-halides found in the atmosphere.

**1997-2002, Ph.D. Candidate, UC Berkeley**, Berkeley, USA: Ph.D. thesis research under direction of Dr. Ignacio Chapela; research on the ecophysiological properties of basidiomycete fungi in terrestrial

ecosystems with special attention to biochemical discriminations of C and N stable isotopes and its ecological implications; additionally explored the effect of introduced *Pinus radiata* (Monterey Pine) and their fungal symbionts into grasslands on below ground C processing in Ecuador; initiated several side projects that utilized phylogenetic comparative methods to understand the distribution and physiological capabilities of various fungi.

**2001, Visiting Scholar, Max-Planck Institute for Biogeochemistry, Jena, Germany:** collaborative research with Dr. Gerd Gleixner; determination of stable isotopic signatures of specific compounds produced during fungal metabolism. GC-IRMS, PY-GC-MS-IRMS, and HPLC methods.

**1995-97, B.S. Candidate, University of New Hampshire, Durham, USA:** undergraduate honor's thesis under direction of Dr. James Taylor; Project title: The Relative Abundance and Size of *Eurycea bislineata* (Northern Two-Lined Salamander) as a Function of Land Use in the Great Bay Area of New Hampshire.

**1995, Visiting Scholar, Center for Wildlife Management Studies, Kenya, East Africa:** conducted assessment of Mt. Lukenya identifying its significance to the maintenance of biodiversity and archeological sites in the province; identified current and future threats to the area; produced a report similar to that used in environmental impact assessments that identified major threats and proposed various means of sustainable development. Report was filed with affected parties and the Kenyan Wildlife Service; KWS took action on plan

**1997, Intern, Lucent Technologies Bell Laboratories, Whippany, NJ:** student intern in Network Wireless Dept.; developed intranet based teaching modules for R<sup>3</sup> processes

**1994-1996, Intern, AT&T Bell Laboratories, Whippany, NJ:** student intern in Technology and Environmental Dept., implement Design for Environment practices specifically R<sup>3</sup> Process with incoming suppliers at AT&T Columbus Works Manufacturing facility and improve waste output of recyclable material

#### • PROFESSIONAL SOCIETIES AND SERVICE •

AFFILIATIONS: American Society for Microbiology, Ecological Society of America, Mycological Society of America, American Institute of Biological Sciences

MANUSCRIPTS REVIEWED FOR: *Oecologia, New Phytologist*

PRESENTATIONS: (<sup>†</sup>Invited Talk; <sup>‡</sup>Talk; <sup>¶</sup>Poster)

<sup>‡</sup> 2002, **The 3<sup>rd</sup> International Conference on Applications of Stable Isotope Techniques to Ecological Studies**, Flagstaff, AZ. Biochemical basis and ecological implications of growth dependent carbon and nitrogen isotopic fractionation by fungi.

<sup>†</sup> 2000, **University of California, Davis, Davis, CA.** Stable isotopes at microbial interfaces: ecological, biochemical, and evolutionary, determinants of stable isotope fractionation in fungi.

<sup>†</sup> 2000, **Annual Interdepartmental Student Symposium in Microbiology**, Berkeley, CA. Ecological, evolutionary, and biochemical determinants of stable isotope fractionation in fungi: a field and artificial culture study.

<sup>¶</sup> 2000, **General Meeting of the American Geophysical Union**, San Francisco, CA. Microbial Traces: fungal fractionation effects in the natural distribution of stable isotopes.

- <sup>Y</sup> 2000, **Annual Meeting of the Mycological Society of America**, Burlington, VT. Stable isotopes at fungal interfaces: determinants of isotopic discrimination.
- <sup>Y</sup> 2000, **UC Berkeley Ecolunch**, Berkeley, CA. Stable isotopes at microbial interfaces.
- <sup>Y</sup> 1999, **Annual Meeting of the Ecological Society of America**, Spokane, WA. Ecological, evolutionary, and biochemical determinants of stable isotope fractionation in fungi: a field and artificial culture study.
- <sup>n</sup> 1998, **Annual Meeting of the Mycological Society of America**, San Juan, Puerto Rico. Mycorrhizal fungi associated with exotic pine plantations induce soil carbon depletion. (Best Student Presentation Award)
- <sup>n</sup> 1998, **Annual Meeting of the Ecological Society of America**, Baltimore, MD. Mycorrhizal fungi associated with exotic pine plantations induce soil carbon depletion. (Best Poster Award)
- <sup>Y</sup> 1998, **Dept. of Environmental Science, Policy, & Management Forum**, Berkeley, CA. Stable isotope fractionation in fungi.

COMMITTEES:

**2000-2001, Graduate Programs Committee:** one of two graduate students appointed by Department Head to sit on committee. The committee is responsible for overseeing all graduate related requests in the department including course approval, funding allocations, conflict resolution, and graduate program design.

**2001, Graduate Admissions Committee:** one of four graduate students appointed by Department Head to sit on committee. The committee was responsible for selecting 52 admits from a pool of over 325 highly qualified individuals for admissions into UC Berkeley's Department of Environmental Science, Policy, and Management and the allocation of available funds to incoming graduate students.

**1998-2000, Graduate Student Representative for Ecosystem Sciences:** elected position responsible for representing graduate students at departmental faculty meetings

**1999-2000, Student Dean's Council Representative:** appointed position by Department Head responsible for serving as the interface between students and the Associate Dean for the College of Natural Resources

**1999, Faculty Search Committee:** appointed position by college dean responsible as a full voting member for new plant pathologist hire at UC Berkeley

• **TECHNICAL EXPERIENCE** •

**Knowledge Base:** Broad working knowledge of microbiology, ecology, biochemistry, biogeochemistry, and evolutionary biology.

**Compound Characterization:** familiar with both Europa Scientific and Finnigan-Mat platforms for stable isotope analysis; continuous flow and dual inlet systems; GC-IRMS; PY-GC-MS/IRMS; various sample preparations including offline combustion. HPLC. Enzyme Assays. Infa-Red Spectroscopy

**DNA Molecular methods:** Working knowledge of various molecular methods including: PCR, ITS/RFLP, AFLP; familiar with McClade, PAUP, and Sequencher software packages; coursework in phylogenetic comparative methods

**Microbial cell culture techniques:** expertise in axenic and microcosm culturing techniques for fungi and other microorganisms

**Microscopy:** PC; DIC; fluorescent; digital image capture and manipulation

**Photography:** expertise in traditional development and printing of both black & white and color film; knowledgeable of digital photographic methods and Adobe Photoshop and Denebe Canvas software

**Miscellaneous:** web-page design with html; ceramics

• TEACHING EXPERIENCE •

**2002, Graduate Student Instructor:** University of California, Berkeley; responsible for design and preparation of discussion sections and field data collection sessions for upper division course on ecological research methods. Helped students develop and prepare senior thesis research proposals.

**1999, Graduate Student Instructor:** University of California, Berkeley; responsible for design, preparation and leading laboratory section for introductory principles of Ecology and Environmental Science class; lectured several times for course.

**1999, Supervisor:** University of California, Berkeley; hired undergraduate research assistant and coordinated training of individual in various isotope and DNA molecular methods.

**1997, Undergraduate Teaching Assistant:** University of New Hampshire; Introductory Biology

• OUTREACH •

**2003, Science Fair Judge,** Arthur Anderson Learning Center, Alameda, CA