TIMOTHY YONG JAMES
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RESEARCH INTERESTS

My research covers multiples aspects of the evolutionary genetics fungi. Particular research foci center around traits unique to fungi or for which fungi make excellent models. These include the genetics of multiallelic and multilocus mating systems, heterokaryosis, spore dispersal strategies, population structure, mitotic recombination, and the evolution of virulence. I also study the fungal tree of life and its relationship to the evolution of phenotypes such as mating systems, morphology, and the genome.

EDUCATION

Ph.D. in Biology and Program in Cell and Molecular Biology (2003), Duke University, Durham, NC, USA
B.Sc. in Botany (1996), University of Georgia, Athens, GA, USA

PROFESSIONAL EXPERIENCE

2015- **Lewis E. Wehmeyer and Elaine Prince Wehmeyer Professor of Mycology**
College of Literature Sciences and the Arts, University of Michigan, Ann Arbor, MI, USA

2015- **Associate professor and associate curator of fungi**, Dept. of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI, USA

2009-2015 **Assistant professor and assistant curator of fungi**, Dept. of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI, USA

2008 **Postdoctoral researcher**, Dept. of Biology, McMaster University, Hamilton, ON, Canada
Advisor: Dr. Jianping Xu
Genetic control of mitochondrial inheritance by the mating-type locus of the pathogenic yeast *Cryptococcus neoformans*.

2006-2007 **Postdoctoral researcher**, Dept. of Evolutionary Biology, Uppsala University & Dept. of Forest Mycology and Plant Pathology, Swedish University of Agricultural Sciences, Uppsala, Sweden
Advisors: Dr. Hanna Johannesson & Dr. Jan Stenlid
Competition and cooperation among nuclei of the forest pathogen *Heterobasidion annosum*.

2003-2006 **Postdoctoral researcher**, Dept. of Biology, Duke University, Durham, NC
Advisor: Dr. Rytas Vilgalys

Assembling the Fungal Tree of Life (AFTOL), molecular systematics of basal fungal lineages

1997-2003 **Ph.D. Student**, Dept. of Biology, Duke University, Durham, NC
Advisor: Dr. Rytas Vilgalys
Evolution of mating type in mushroom fungi, systematics of chytrid fungi

TEACHING EXPERIENCE

Instructor

2010-2015 Genetics, University of Michigan (co-taught with MCDB faculty member)
2009-2015 Biology of Fungi, University of Michigan (odd years)
2006 Evolutionary Genetics, Duke University (1/4 semester)

Teaching Assistantships

2002 The Diversity of Life, Duke University, NC, USA
2002 Molecular Evolution, Duke University, NC, USA
2001 Experimental Cell and Molecular Biology, Duke University, Durham, NC, USA
2000 Mycology, Duke University, Durham, NC, USA
2000 Microbial Ecology and Evolution, Duke University, Durham, NC, USA
1999 Introductory Microbiology, Duke University, Durham, NC, USA

Workshops

2013 Workshop on Microbial Population Genetics and Evolution, Chinese Academy of Sciences, Institute of Microbiology, Beijing, China

AWARDS AND GRANTS

2016 Chinese Academy of Sciences, President's International Fellowship Initiative (¥170,000). Sabbatical fellowship support.
2016 U-M Energy Institute, Enhancing long-term carbon sequestration in soils by mycorrhizal fungi ($19,000). Seed grant. Role: Co-PI with Mark Hunter (PI).
2016 National Science Foundation, Dissertation Research: Evolutionary consequences of pathogen strain competition in an emerging fungal disease ($20,150). Dissertation improvement grant for Thomas Jenkinson.
2015 U-M Water Center, Building real-time quantitative PCR capabilities for the monitoring of harmful algal blooms and their parasites across the Great Lakes Region ($20,000). Equipment Grant.
2015 U. Michigan, 2015 Class of 1923 Memorial Teaching Award
2015 National Science Foundation, Digitization TCN Collaborative Research: The Microfungi Collections Consortium: A networked approach to digitizing small fungi with large impacts on the function and health of ecosystems, 1502703, ($118,277). Role: PI.
2014 Joint Genome Institute, U.S. Department of Energy, Community Sequencing Program: Revealing the ecological function of uncultured fungal dark matter in freshwater ecosystems using single cell genomics. Award of 1.4 Tb of sequence data. Role: PI
2014 National Science Foundation, DEB Genealogy of Life (GoLife), Collaborative Research: The Zygomycetes Genealogy of Life (ZyGoLife)- the conundrum of Kingdom Fungi,

DEB 1441677 ($690,389). Role: PI Includes subcontracts with U. Florida and U. Ottawa, $303,224 for U-M.

2014 Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Ciências sem Fronteiras: Ecologia & Evolução do fungo quitrídeo de anfíbios no Brasil. National Council for Scientific and Technological Development, Science without Borders: Ecology and Evolution of the amphibian chytrid fungus in Brazil ($160,000). Role: Co-PI with L. Felipe Toledo.

2014 National Science Foundation, DEB Biodiversity: Discovery and Analysis, Unveiling the diversity and ecological role of the obligate parasitic fungi in phylum Cryptomycota, DEB-1354625 ($550,000). Role: PI. Includes a $158,129 sub-award to U-C Berkeley.

2013 U-M Graham Sustainability Institute, U-M/Brazil collaboration seed grants, Assessing the threat of exotic disease to Atlantic Forest frogs: fostering multi-institutional collaboration, ($10,000). Role: PI

2013 U-M Water Center, Identifying the environmental controls of algal pathogen epidemics and their influence on harmful algal blooms in Lake Erie, ($50,000). Role: PI

2013 National Institutes of Health, NIAID, R21: How eukaryotic pathogens explore the fitness landscape by mitotic recombination, AI105167-02 ($427,625). Role: PI

2012 US Fish and Wildlife Service, The role of the North American bullfrog in spreading chytridiomycosis across endangered frog populations in the Atlantic Forest of Brazil, F12AP00997 ($25,985). Role: PI

2012 National Science Foundation, Catalyzing New International Collaboration Grant, Into the Heart of an Epidemic: a US-Brazil Collaboration for Integrative Studies of the Amphibian-Killing Fungus in Brazil, OISE 1159513 ($54,656). Role: PI

2012 National Science Foundation, Digitization TCN Collaborative Research: Consortium: Unlocking a Biodiversity Resource for Understanding Biotic Interactions, Nutrient Cycling and Human Affairs, EF 1206134 ($455,210). Role: PI

2011 Alexopoulos Prize for Outstanding Early-Career Mycologist; Mycology Society of America

2011 National Science Foundation, Digitization TCN Collaborative Research: North American Lichens and Bryophytes: Sensitive Indicators of Environmental Quality and Change, EF 115030 ($217,595). Role: PI

2010 Office of the Vice President for Research U. Michigan, Preliminary Projects: A genomic map of the fungal pathogen causing the current amphibian chytridiomycosis pandemic ($15,000). Role: PI

2008 Michael G. DeGroote Postdoctoral Fellowship: Mechanism of mitochondrial inheritance in the human pathogenic fungus *Cryptococcus neoformans*

2006 Wenner-Gren Postdoctoral Fellowship: Individuality and cooperation among nuclei of the root-rot fungus *Heterobasidion annosum*

2005 Deep Hypha Conference Travel Award

2002 Mycological Society of America International Conference Travel Award

2002 Mycological Society of America Graduate Student Fellowship: The evolution of the mating-type genes in the hymenomycetes (mushroom fungi)

2001 Dissertation Improvement Grant; National Science Foundation: The evolution of the *A* mating type genes in the hymenomycetes (mushroom fungi)

2001 Genetics Society of America; Conference Travel Grant, 21st Fungal Genetics Conference

2000 Duke University Graduate School; Conference Travel Fellowship

1999 Grant-in-Aid of Research, Sigma Xi, The Scientific Research Society: Concerted evolution of rDNA in the cosmopolitan mushroom *Schizophyllum commu*ne

1997 Duke University Program in Cell and Molecular Biology, Doctoral Fellowship

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PEER-REVIEWED PUBLICATIONS

legend*: undergraduate student trainees, graduate student trainees*, postdoctoral trainees

99. Su, Y., D. Qi, **T. Y. James**, W. Chen, X. Wang, C. Gao, W. Yang, L. Chen, J. Liang, and L. Cai. (*in review*). Fungal communities in the gut of giant panda.
98. Farrer, R. A., A. Martel, E. Verbrugghe, A. Abouelleil, R. Ducatelle, J. E. Longcore, T. Y. James, M. C. Fisher, and C. A. Cuomo. (*in press*). Genomic innovations linked to infection strategies across emerging pathogenic chytrid fungi. *Nature Comm.*
97. Arellano, M. L., M. A. Velasco, F. P. Kacoliris, *A. M. Belasen*, **T. Y. James**. (*in press*). First record of chytrid fungus in *Pleuroderma somuncurense*, a critically endangered species from Argentina. *Herp. Rev.*
96. Hérivaux, A., T. D. de Bernonville, C. Roux, M. Clastre, V. Courdavault, A. Gastebois, J.-P. Bouchara, **T. Y. James**, J.-P. Latgé, F. Martin, and N. Papon. (*in press*). Phytohormone receptors in lower fungi: Sensing plants to get out from the water. *mBio*.
95. Becker, C. G., S. E. Greenspan, K. E. Tracy, J. A. Dash, C. Lambertini, *T. S. Jenkinson*, D. S. Leite, L. F. Toledo, J. E. Longcore, **T. Y. James**, K. R. Zamudio. (2017). Variation in phenotype and virulence among endemic and pandemic amphibian chytrid strains. *Fungal Ecol.* 26: 45-50.
94. Letcher, P. M., J. E. Longcore, C. A. Quandt, D. da Silva Leite, **T. Y. James**, and M. J. Powell. (2017). Morphological, molecular, and ultrastructural characterization of *Rozella rhizoclosmatii*, a new species in Cryptomycota. *Fungal Biol.* 121: 1-10.
93. *Betancourt-Román, C. M.*, *C. C. O'Neil*, and **T. Y. James**. (2016). Rethinking the role of non-vertebrate hosts in the life cycle of the amphibian chytridiomycosis pathogen. *Parasitology* 143: 1723-1729.
92. Spatafora, J. W., Y. Chang, G. L. Benny, K. Lazarus, M. E. Smith, M. L. Berbee, G. Bonito, N. Corradi, I. Grigoriev, A. Gryganskyi, **T. Y. James**, K. O'Donnell, T. N. Taylor, J. Uehling, R. Vilgalys, M. M. White, and J. E. Stajich. (2016). A phylum-level phylogenetic classification of zygomycete fungi based on genome-scale data. *Mycologia* 108: 1028-1046.
91. Nieuwenhuis, B. P. S., and **T. Y. James**. (2016). The frequency of sex in fungi. *Phil. Trans. R. Soc. B.* 371: 20150540.
90. Jackson, D., *A. T. Zemenick, B. Malloure*, C. A. Quandt, and **T. Y. James**. (2016). Fine-scale spatial genetic structure of a fungal parasite of coffee scale insects. *J. Invert. Pathol.* 139: 34-41.
89. *Jenkinson, T. S.*, *C. M. Betancourt Román*, C. Lambertini, A. V. Aguilar, C. H. L. Nunes de Almeida, J. Ruggeri, *A. M. Belasen*, D. da Silva Leite, K. R. Zamudio, J. E. Longcore, L. F. Toledo, and **T. Y. James**. (2016). Amphibian-killing chytrid in Brazil comprises both stable endemic and recently expanded populations. *Mol. Ecol.* 25: 2978-2996.
87. **James, T. Y.**, J. A. Marino, I. Perfecto, and J. Vandermeer. (2016). Identification of coffee rust mycoparasites using single molecule DNA sequencing of infected pustules. *Appl. Environ. Microbiol.* 82: 631-639.
86. Lambertini, C., C. G. Becker, *T. S. Jenkinson*, D. Rodriguez, D. da Silva Leite, **T. Y. James**, K. R. Zamudio, and L. F. Toledo. (2016). Local phenotypic variation in amphibian-killing fungus predicts infection dynamics. *Fungal Ecol.* 20: 15-21.

85. Grossart, H.-P., C. Wurzbacher, **T. Y. James**, and M. Kagami. (2016). Discovery of dark matter fungi in aquatic ecosystems demands a reappraisal of the phylogeny and ecology of zoosporic fungi. *Fungal Ecol.* 19: 28-38.
84. de Jesus, A. L., A. V. Marano, J. I. de Souza, **T. Y. James**, G. H. Jerônimo, S. C. O. Rocha, D. R. Gonçalves, M. C. Boro, and C. L. A. Pires-Zottarelli. (2015). *Achlya catenulata sp. nov.*, a new Saprolegniales (Oomycetes, Straminipila) from Brazilian mangrove swamp. *Phytotaxa* 212: 221-228.
83. **James, T. Y.** (2015). Why mushrooms have evolved to be so promiscuous: Insights from evolutionary and ecological patterns. *Fungal Biol. Rev.* 29: 167-178.
82. Baranova, M. A., M. D. Logacheva, A. A. Penin, V. B. Seplyarskiy, Y. Safanova, S. A. Naumenko, A. V. Klepikova, E. S. Gerasimov, G. A. Bazykin, **T. Y. James**, and A. S. Kondrashov. (2015). Extraordinary genetic diversity in a wood decay mushroom. *Mol. Biol. Evol.* 32: 2775-2783.
81. **James, T. Y.**, L. F. Toledo, D. Rödder, D. da Silva Leite, *A. M. Belasen*, *C. M. Betancourt Román*, *T. S. Jenkinson*, C. Soto-Azat, C. Lambertini, A. V. Longo, J. Ruggeri, J. P. Collins, P. Burrowes, K. R. Lips, K. R. Zamudio, and J. E. Longcore. (2015). Disentangling the host, pathogen, and environmental determinants of a recently emerged wildlife diseases: Lessons from the first 15 years of amphibian chytridiomycosis research. *Ecol. Evol.* 5: 4079-4097.
80. Duffy, M. A., **T. Y. James**, and *A. Longworth*. (2015). Ecology, virulence, and phylogeny *of Blastulidium paedophthorum*, a widespread brood parasite of *Daphnia*. *Appl. Environ. Microbiol.* 81: 5486-5496.
79. Jerônimo, G. H., A. L. de Jesus, A. V. Marano, **T. Y. James**, J. I. de Souza, S. C. O. Rocha, and C. L. A. Pires-Zottarelli. (2015). Diversidade de Blastocladiomycota e Chytridiomycota do Parque Estadual da Ilha do Cardoso, Cananéia, SP, Brasil. *Hoehnea* 42: 135-163.
78. *Lazarus, K. L.*, and **T. Y. James**. (2015). Surveying the biodiversity of the early-diverging fungal phylum Cryptomycota using a targeted PCR approach. *Fungal Ecol.* 14: 62-70.
77. Menkis, A., H. Urbina, **T. Y. James**, and A. Rosling. (2014). *Archaeorhizomyces borealis* sp. nov. and a sequence-based classification of related soil fungal species. *Fungal Biol.* 118: 943-955.
76. Haag, K. L., **T. Y. James**, J.-F. Pombert, R. Larsson, T. M. M. Schaer, D. Refardt, and D. Ebert. (2014). Evolution of a morphological novelty occurred before genome compaction in a lineage of extreme parasites. *Proc. Natl. Acad. Sci. U. S. A.* 111: 15480-15485.
75. Seplyarskiy, V. B., M. A. Baranova, E. V. Leushkin, M. D. Logacheva, A. A. Penin, A. S. Kondrashov, and **T. Y. James**. (2014). Crossing-over in a hypervariable species preferentially occurs in regions of high local similarity. *Mol. Biol. Evol.* 31: 3016-3025.
73. Shaw, S. D., L. Berger, S. Bell, S. Dodd, **T. Y. James**, L. F. Skerratt, P. J. Bishop, and R. Speare. (2014). Baseline cutaneous bacteria of free-living New Zealand native frogs (*Leiopelma archeyi* and *Leiopelma hochstetteri*) and implications for their role in defense against the amphibian chytrid (*Batrachochytrium dendrobatidis*). *J. Wildlife Dis.* 50: 723-732.
71. Diez, J. M., I. Ibáñez, J. Silander, R. Primack, H. Higuchi, H. Kobori, A. Sen, and **T. Y. James**. (2014). Beyond seasonal climate: statistical estimation of phenological responses to weather. *Ecol. Appl.* 24: 1793-1802.
70. Marano, A. V., A. L. de Jesus, J. I. de Souza, E. M. Leaño, **T. Y. James**, G. H. Jerônimo, A. W. A. M. de Cock, and C. L. A. Pires-Zottarelli. (2014). A new combination in *Phytopythium: P. kandeliae* (Oomycetes, Straminipila). *Mycosphere* 5: 510-522.

69. Molloy, D. P., S. L. Glockling, G. W. Beakes, C. A. Siegfried, **T. Y. James**, S. E. Mastitsky, E. Wurdak, L. Giamberini, M. J. Gaylo, and M. J. Nemeth. (2014). *Aquastella gen. nov.*: a new genus of saprolegniaceous oomycete rotifer parasites related to *Aphanomyces*, with unique sporangial outgrowths. *Fungal Biol*. 118: 544-558.
68. Beakes, G. W., S. L. Glockling, and **T. Y. James**. (2014). A new Oomycete species parasitic in nematodes, *Chlamydomyzium dictyuchoides* sp. nov.: developmental biology and phylogenetic studies. *Fungal Biol.* 118: 527-543.
67. Toome, M., R. A. Ohm, R. W. Riley, **T. Y. James**, *K. L. Lazarus*, B. Henrissat, S. Albu, J. Chow, A. Clum, G. Heller, A. Lipzen, M. Nolan, L. Sandor, N. Zvenigorodsky, I. V. Grigoriev, J. W. Spatafora, and M. C. Aime. (2014). Genome sequencing reveals insights into the reproduction, nutrition mode and ploidy of the fern pathogen *Mixia osmundae*. *New Phytol.* 202: 544-564.
66. **James, T. Y.**, S. Sun, W. Li, J. Heitman, H.-C. Kuo, Y.-H. Lee, F. O. Asiegbu, and Å. Olson. (2013). Polyporales genomes reveal the genetic architecture underlying tetrapolar and bipolar mating systems. *Mycologia* 105: 1374-1390.
65. van Diepen, L. T. A., Å, Olson, K. Ihrmark, J. Stenlid, and **T. Y. James**. (2013). Extensive trans-specific polymorphism at the mating type locus of the root decay fungus *Heterobasidion. Mol. Biol. Evol.* 30: 2286-2301.
64. Diez, J. M., **T. Y. James**, M. McMunn, I. Ibáñez, I. (2013). Predicting species-specific responses of fungi to climatic variation using historical records. *Global Change Biol.* 19: 3145-3154.
63. **James, T. Y.**, A. Pelin, L. Bonen, S. Arhendt, D. Sain, N. Corradi, and J. E. Stajich. (2013). Shared signatures of parasitism and phylogenomics unite Cryptomycota and microsporidia. *Curr. Biol.* 23: 1548-1553.
62. Rosenblum, E. B., **T. Y. James**, K. R. Zamudio, T. J. Poorten, D. Ilut, D. Rodriguez, J. M. Eastman, K. Richards-Hrdlicka, S. Joneson, *T. S. Jenkinson*, J. E. Longcore, G. Parra Olea, L. F. Toledo, M. L. Arellano, E. M. Medina, S. Restrepo, S. V. Flechas, L. Berger, C. J. Briggs, J. E. Stajich. (2013). Complex history of the amphibian-killing chytrid fungus revealed with genome resequencing data. *Proc. Natl. Acad. Sci. U. S. A.* 110: 9385-9390.
61. *Malloure, B. M.*, and **T. Y. James**. (2013). Inbreeding depression in urban environments of the bird's nest fungus *Cyathus stercoreus* (Basidiomycota). *Heredity* 110: 355-362.
60. Heitman, J. E., S. Sun, and **T. Y. James**. (2013). Evolution of fungal sexual reproduction. *Mycologia* 105: 1-27.
58. Schloegel, L. M., L. F. Toledo, J. E. Longcore, S. E. Greenspan, C. A. Viera, M. Lee, *S. Zhao, C. Wangen*, C. M. Ferreira, M. Hipolito, A. J. Davies, P. Daszak, C. A. Cuomo, and **T. Y. James**. (2012). Novel, panzootic, and hybrid genotypes of amphibian chytridiomycosis associated with the bullfrog trade. *Mol. Ecol.* 21: 5162-5177.
57. Fernandez-Fueyo, E., F. J. Ruiz-Duenas, P. Ferreira, D. Floudas, D. S. Hibbett, P. Canessa, L. F. Larrondo, **T. Y. James**, D. Seelenfreund, S. Lobos, R. Polanco, M. Tello, Y. Honda, T. Watanabe, T. Watanabe, R. J. San, C. P. Kubicek, M. Schmoll, J. Gaskell, K. E. Hammel, F. J. St. John, A. V. Wymelenberg, G. Sabat, S. S. BonDurant, K. Syed, J. S. Yadav, H. Doddapaneni, V. Subramanian, J. L. Lavín, J. A. Oguiza, G. Perez, A. G. Pisabarro, L. Ramirez, F. Santoyo, E. Master, P. M. Coutinho, B. Henrissat, V. Lombard, J. K. Magnuson, U. Kües, C. Hori, K. Igarashi, M. Samejima, B. W. Held, K. W. Barry, K. M. LaButti, A. Lapidus, E. A. Lindquist, S. M. Lucas, R. Riley, A. A. Salamov, D. Hoffmeister, D. Schwenk, Y. Hadar, O. Yarden, R. P. de Vries, A. Wiebenga, J. Stenlid, D. Eastwood, I. V. Grigoriev, R. M. Berka, R. A. Blanchette, P. Kersten, A. T. Martinez,

R. Vicuna, and D. Cullen. (2012). Comparative genomics of *Ceriporiopsis subvermispora* and *Phanerochaete chrysosporium* provide insight into selective ligninolysis. *Proc. Natl. Acad. Sci. U. S. A.* 109: 5458-5463.

56. Olson, Å., A. Aerts, F. Asiegbu, L. Belbahri, O. Bouzid, A. Broberg, B. Canbäck, P. Countinho, D. Cullen, K. Dalman, G. Deflorio, L. T. A. van Diepen, C. Dunand, S. Duplessis, M. Durling, P. Gonthier, J. Grimwood, C. Gunnar Fossdal, D. Hansson, B. Henrissat, A. Hietala, K. Himmelstrand, D. Hoffmeister, N. Högberg, **T. Y. James**, M. Karlsson, M. Lind, A. Kohler, U. Kües, Y.-H. Lee, Y.-C. Lin, E. Lindquist, V. Lombard, S. Lucas, K. Lundén, E. Morin, C. Murat, J. Park, T. Raffaello, P. Rouzé, A. Salamov, J. Schmutz, H. Solheim, J. Ståhlberg, H. Vélëz, R. de Vries, A. Wiebenga, S. Woodward, I. Yakolev, M. Garbelotto, F. Martin, I. Grigoriev, J. Stenlid. (2012). Insight into trade-off between wood decay and parasitism from the genome of a fungal forest pathogen. *New Phytol.* 194: 1001-1013.
55. Padamsee, M., T. K. Arun Kumar, R. Riley, M. Binder, A. Boyd, A. Calvo, K. Furukawa, C. Hesse, S. Hohmann, **T. Y. James**, K. LaButti, A. Lapidus, E. Lindquist, S. Lucas, K. Miller, S. Shantappa, I. Grigoriev, D. S. Hibbett, D. J. McLaughlin, J. W. Spatafora, M. C. Aime. (2012). The genome of the xerotolerant mold *Wallemia sebi* reveals adaptations to osmotic stress and suggests cryptic sexual reproduction. *Fungal Genet. Biol*. 49: 217-226.
54. **James, T. Y.**, M. L. Berbee. (2012). No jacket required- new fungal lineage defies dress code. *BioEssays* 34: 94-102.
52. Longcore, J. E., P. M. Letcher, and **T. Y. James**. (2011). *Homolaphlyctis polyrhiza* gen. et sp. nov., a species in the Rhizophydiales (Chytridiomycetes) with multiple rhizoidal axes. *MycoTaxon* 118: 433-440.
51. **James, T. Y.**, Y. Hoffman, A. Zarka, and S. Boussiba. (2011). *Paraphysoderma sedebokerense*, gen. et sp. nov., an aplanosporic relative of *Physoderma* (*Blastocladiomycota*). *MycoTaxon* 118: 177-180.
50. Garland, S., **T. Y. James**, D. Blair, L. Berger, and L. F. Skerratt. (2011). Polymorphic repetitive loci of the amphibian pathogen *Batrachochytrium dendrobatidis*. *Dis. Aquat. Organ*. 97: 1-9.
49. Rosling, A., F. Cox, K. Cruz-Martinez, K. Ihrmark, G.-A. Grelet, B. L. Lindahl, A. Menkis, and **T. Y. James.** (2011). Archaeorhizomycetes: unearthing an ancient class of ubiquitous soil fungi. *Science* 333: 876-879.
48. van Peer, A. F., S.-Y. Park, P.-G. Shin, K.-Y. Jang, Y.-B. Yoo, Y.-J. Park, B.-M. Lee, G.-H. Sung, **T. Y. James**, and W.-S. Kong. (2011). Comparative genomics of the mating-type loci of the mushroom *Flammulina velutipes* reveals widespread synteny and recent inversions. *PLoS ONE* 6: e22249.
47. Porter, T. M., W. W. Martin, **T. Y. James**, J. E. Longcore, F. Gleason, P. H. Adler, P. M. Letcher, and R. Vilgalys. (2011). Molecular phylogeny of the Blastocladiomycota (Fungi) based on nuclear ribosomal data. *Fungal Biol.* 115: 381-392.
46. Yun, H. Y., Y. H. Kim, and **T. Y. James**. (2011). First report of false rust caused by *Synchytrium minutum* on kudzu in Korea. *Plant Dis.* 95: 358.1.
45. **James, T. Y.,** M. Lee, L. T. A. van Diepen. (2011). A single mating-type locus comprised of homeodomain genes promotes nuclear migration and heterokaryosis in the white-rot fungus *Phanerochaete chrysosporium*. *Eukaryot. Cell* 10: 249-261.
44. Rosenblum, E. B., M. C. Fisher, **T. Y. James**, J. E. Stajich, J. E. Longcore, L. R. Gentry, and T. J. Poorten. (2010). A molecular perspective on the biology of the emerging pathogen *Batrachochytrium dendrobatidis. Dis. Aquat. Org*. 92: 131-147.

43. Schloegel, L. M., C. M. Ferreira, **T. Y. James**, M. Hipolito, J. E. Longcore, A. D. Hyatt, M. Yabsley, A. M. C. Martins-Martins, R. Mazzoni, A. J. Davies, and P. Daszak. (2010). The North American Bullfrog (*Rana catesbeiana*) as a reservoir for the spread of *Batrachochytrium dendrobatidis* in Brazil. *Animal Conserv.* 13: 53-61.
42. Strandberg, R., K. Nygren, A. Menkis, **T. Y. James**, L. Wik, J. E. Stajich, and H. Johannesson. (2010). Conflict between reproductive gene trees and species phylogeny among heterothallic and pseudohomothallic members of the filamentous ascomycete genus *Neurospora*. *Fungal Genet. Biol*. 47: 869-878.
41. Stajich, J. E., S. K. Wilke, D. Ahren, C. H. Au, B. W. Birren, M. Borodovsky, C. Burns, B. Canback, L. A. Casselton, C. K. Cheng, J. X. Deng, F. S. Dietrich, D. C. Fargo, M. L. Farman, A. C. Gathman, J. Goldberg, R. Guigo, P. J. Hoegger, J. B. Hooker, A. Huggins, **T. Y. James**, T. Kamada, S. Kilaru, C. Kodira, U. Kues, D. Kupfert, H. S. Kwan, A. Lomsadze, W. X. Li, W. W. Lilly, L. J. Ma, A. J. Mackey, G. Manning, F. Martin, H. Muraguchi, D. O. Natvig, H. Palmerini, M. A. Ramesh, C. J. Rehmeyer, B. A. Roe, N. Shenoy, M. Stanke, V. Ter-Hovhannisyan, A. Tunlid, R. Velagapudi, T. J. Vision, Q. D. Zeng, M. E. Zolan, and P. J. Pukkila. (2010). Insights into evolution of multicellular fungi from the assembled chromosomes of the mushroom *Coprinopsis cinerea* (*Coprinus cinereus*). *Proc. Natl. Acad. Sci. U. S. A.* 107:11889-11894.
40. Li, M. J. Liang, Y. Li, B. Feng, Z.-L. Yang, **T. Y. James**, and J. Xu. (2010). Genetic diversity of Dahongjun, the commercially important "Big Red Mushroom" from southern China. *PLoS One* 5: e10684.
39. Skosireva, I., **T. Y. James**, S. Sun, and J. Xu. (2010). Mitochondrial inheritance in haploid x non-haploid crosses in *Cryptococcus neoformans*. *Curr. Genet*. 56: 163-176.
38. Stajich, J. E., M. L. Berbee, M. Blackwell, D. S. Hibbett, **T. Y. James**, J. W. Spatafora, and J. W. Taylor. (2009). The Fungi. *Curr. Biol*. 19: R840-R845.
37. Parrent, J. L., **T. Y. James**, R. Vasaitis and A. F. S. Taylor. (2009). Friend or foe? Evolutionary history of glycoside hydrolase family 32 genes encoding for sucrolytic activity in fungi and its implications for plant-fungal symbioses. *BMC Evol. Biol*. 9: 148.
36. **James T. Y**., A. P. Litvintseva,, R. Vilgalys, J. A. T. Morgan, J. W. Taylor, M. C. Fisher, L. Berger, C. Weldon, L. du Preez, and J. E. Longcore. (2009). Rapid global expansion of the fungal disease chytridiomycosis into declining and healthy amphibian populations. *PLoS Pathog*. 5: e1000458.
35. **James, T. Y.**, *S. Johannson*, and H. Johannesson. (2009*)*. Trikaryon formation and nuclear selection in pairings between heterokaryons and homokaryons of the root rot pathogen *Heterobasidion parviporum*. *Mycol. Res.* 113: 583-590.
34. Martinez, D., J. Challacombe, I. Morgenstern, D. Hibbett, M. Schmoll, C. P. Kubicek, P. Ferreira, F. J. Ruiz-Duenas, A. T. Martinez, P. Kersten, K. E. Hammel, A. Vanden Wymelenberg, J. Gaskell, E. Lindquist, G. Sabat, S. Splinter BonDurant, L. F. Larrondo, P. Canessa, R. Vicuna, J. Yadav, H. Doddapaneni, V. Subramanian, A. G. Pisabarro, J. L. Lavín, J. A. Oguiza, E. Master, B. Henrissat, P. M. Coutinho, P. Harris, J. K. Magnuson, S. Baker, K. Bruno, W. Kenealy, P. J. Hoegger, U. Kües, P. Ramaiya, S. Lucas, A. Salamov, H. Shapiro, H. Tu, C. L. Chee, M. Misra, G. Xie, S. Teter, D. Yaver, **T. James**, M. Mokrejs, M. Pospisek, I. Grigoriev, T. Brettin, D. Rokhsar, R. Berka, and D. Cullen (2009). Genome, transcriptome, and secretome analysis of wood decay fungus *Postia placenta* supports unique mechanisms of lignocellulose conversion. *Proc. Natl. Acad. Sci. USA*. 106: 1954-1959.
33. Simmons, D. R., **T. Y. James**, A. Meyer, and J. E. Longcore. (2009). *Lobulomycetales*, a new order in the *Chytridiomycota*. *Mycol. Res*. 113: 45-160.

32. Walker, S. F., J. Bosch, **T. Y. James**, A. P. Litvintseva, J. A. O. Valls, S. Piña, G. García, G. A. Rosa, A. A. Cunningham, S. Hole, R. Griffiths, and M. C. Fisher. (2008). Introduced pathogens threaten species recovery programs. *Current Biology* 18: R853-R854.
31. **James, T. Y.**, J. Stenlid, Å. Olson, and H. Johannesson. (2008). Evolutionary significance of imbalanced nuclear ratios within heterokaryons of the basidiomycete fungus *Heterobasidion parviporum*. *Evolution* 62: 2279-2296.
30. Hoffman, Y., C. Aflalo, A. Zarka, J. Gutman, **T. Y. James**, and S. Boussiba. (2008). Isolation and characterization of a novel chytrid species (Phylum Blastocladiomycota), parasitic on the green alga *Haematococcus*. *Mycol. Res*. 112: 70-81.
27. Ceresini, P. C., H. D. Shew, **T. Y. James,** R. J. Vilgalys, and M. A. Cubeta. (2007). Phylogeography of the Solanaceae-infecting Basidiomycota fungus *Rhizoctonia solani* AG-3 based on sequence analysis of two nuclear DNA loci. *BMC Evolutionary Biology* 7: 163.
26. Hibbett, D. S., M. Binder, J. F. Bischoff, M. Blackwell, P. F. Cannon, O. E. Eriksson, S. Huhndorf, **T. James**, P. M. Kirk, R. Lucking, H. T. Lumbsch, F. Lutzoni, P. B. Matheny, D. J. McLaughlin, M. J. Powell, S. Redhead, C. L. Schoch, J. W. Spatafora, J. A. Stalpers, R. Vilgalys, M. C. Aime, A. Aptroot, R. Bauer, D. Begerow, G. L. Benny, L. A. Castlebury, P. W. Crous, Y.-C. Dai, W. Gams, D. M. Geiser, G. W. Griffith, C. Gueidan, D. L. Hawksworth, G. Hestmark, K. Hosaka, R. A. Humber, K. D. Hyde, J. E. Ironside, U. Koljalg, C. P. Kurtzman, K.-H. Larsson, R. Lichtwardt, J. Longcore, J. Miadlikowska, A. Miller, J.-M. Moncalvo, S. Mozley-Standridge, F. Oberwinkler, E. Parmasto, V. Reeb, J. D. Rogers, C. Roux, L. Ryvarden, J. P. Sampaio, A. Schüßler, J. Sugiyama, R. G. Thorn, L. Tibell, W. A. Untereiner, C. Walker, Z. Wang, A. Weir, M. Weiss, M. M. White, K. Winka, Y.-J. Yao and N. Zhang. (2007). A higher-level phylogenetic classification of the Fungi. *Mycol. Res*. 111: 509-547.
23. **James, T. Y.**, P. M. Letcher, J. E. Longcore, S. E. Mozley-Standridge, D. Porter, M. J. Powell, G. W. Griffith, R. Vilgalys (2006). A molecular phylogeny of the flagellated Fungi (Chytridiomycota) and a proposal for a new phylum (Blastocladiomycota). *Mycologia* 98: 860-871.
22. White, M. M., **T. Y. James**, K. O'Donnell, M. J. Cafaro, Y. Tanabe, and J. Sugiyama. (2006). Phylogeny of the Zygomycota based on nuclear ribosomal sequence data. *Mycologia* 98: 872-884.
21. **James, T. Y.**, F. Kauff, C. Schoch, P. B. Matheny, V. Hofstetter, C. Cox, G. Celio, C. Gueidan, E. Fraker, J. Miadlikowska, H. T. Lumbsch, A. Rauhut, V. Reeb, A. E. Arnold, A. Amtoft, J. E. Stajich, K. Hosaka, G.-H. Sung, D. Johnson, B. O'Rourke, M. Crockett, M. Binder, J. M. Curtis, J. C. Slot, Z. Wang, A. W. Wilson, A. Schüßler, J. E. Longcore, K. O'Donnell, S. Mozley-Standridge, D. Porter, P. M. Letcher, M. J. Powell, J. W. Taylor, M. M. White, G. W. Griffith, D. R. Davies, R. A. Humber, J. B. Morton, J. Sugiyama, A. Y. Rossman, J. D. Rogers, D. H. Pfister, D. Hewitt, K. Hansen, S. Hambleton, R. A. Shoemaker, J. Kohlmeyer, B. Volkmann-Kohlmeyer, R. A. Spotts, M. Serdani, P. W. Crous, K. W. Hughes, K. Matsuura, E. Langer, G. Langer, W. A. Untereiner, R. Lücking, B. Büdel, D. M. Geiser, A. Aptroot, P. Diederich, I. Schmitt, M. Schultz, R. Yahr, D. Hibbett, F Lutzoni, D. McLaughlin, J. Spatafora, and R. Vilgalys. (2006). Reconstructing the early evolution of the fungi using a six gene phylogeny. *Nature* 443: 818-822.
20. Henkel, T. W., **T. Y. James**, S. L. Miller, M. C. Aime, and O. K. Miller, Jr. 2006. The mycorrhizal status of *Pseudotulostoma volvata* (Elaphomycetaceae, Eurotiales, Ascomycota). *Mycorrhiza* 16: 241-244.

19. Hoegger, P. J., S. Kilaru, **T. Y. James**, J. R. Thacker, and U. Kües. (2006). Phylogenetic comparison and classification of laccase and related multicopper oxidase protein sequences. *FEBS Journal* 273: 2308-2326.
18. **James, T. Y.**, P. Srivilai, U. Kües, and R. Vilgalys. (2006). Evolution of the bipolar mating system of the mushroom *Coprinellus disseminatus* from its tetrapolar ancestors involves loss of mating-type-specific pheromone receptor function. *Genetics* 172: 1877-1891.
17. Harris, R. N., **T. Y. James**, A. Lauer, M. A. Simon, and *A. Patel*. (2006). Amphibian pathogen *Batrachochytrium dendrobatidis* is inhibited by the cutaneous bacteria of amphibian species. *EcoHealth* 3: 53-56.
15. Adl, S. M., A. G. B. Simpson, M. A. Farmer, R. A. Andersen, O. R. Anderson, J. R. Barta, S. S. Bowser, G. Brugerolle, R. A. Fensome, S. Fredericq, **T. Y. James**, S. Karpov, P. Kugrens, J. Krug, C. E. Lane, L. A. Lewis, J. Lodge, D. H. Lynn, D. G. Mann, R. M. Mccourt, L. Mendoza, Ø. Moestrup, S. E. Mozley-Standridge, T. A. Nerad, C. A. Shearer, A. V. Smirnov, F. W. Spiegel, and M. F. J. R. Taylor. (2005). The new higher level classification of eukaryotes with emphasis on the taxonomy of protists. *J. Eukaryot. Microbiol.* 52: 399-451.
13. Lutzoni, F., F. Kauff, C. J. Cox, D. McLaughlin, G. Celio, B. Dentinger, M. Padamsee, D. Hibbett, **T. Y. James**, E. Baloch, M. Grube, V. Reeb, V. Hofstetter, C. Schoch, A. E. Arnold, J. Miadlikowska, J. Spatafora, D. Johnson, S. Hambleton, M. Crockett, R. Shoemaker, G.-H. Sung, R. Lücking, T. Lumbsch, K. O'Donnell, M. Binder, P. Diederich, D. Ertz, C. Gueidan, K. Hansen, R. C. Harris, K. Hosaka, Y.-W. Lim, B. Matheny, H. Nishida, D. Pfister, J. Rogers, A. Rossman, I. Schmitt, H. Sipman, J. Stone, J. Sugiyama, R. Yahr and R. Vilgalys. (2004). Assembling the fungal tree of life: Progress, classification, and evolution of subcellular traits. *Am. J. Bot*. 91: 1446-1480.
12. **James, T. Y.**, S.-R. Liou, and R. Vilgalys. (2004). The genetic structure and diversity of the *A* and *B* mating-type genes from the tropical oyster mushroom, *Pleurotus djamor*. *Fungal Genet. Biol.* 41: 813-825.
11. **James, T. Y.**, U. Kües, S. A. Rehner, and R. Vilgalys. (2004). Evolution of the gene encoding mitochondrial intermediate peptidase and its cosegregation with the *A* mating-type locus of mushroom fungi. *Fungal Genet. Biol.* 41: 381-390.
10. *Morehouse, E. A.*, **T. Y. James**, A. R. D. Ganley, R. Vilgalys, L. Berger, P. J. Murphy, and J. E. Longcore. (2003). Multilocus sequence typing suggests the chytrid pathogen of amphibians is a recently emerged clone. *Mol. Ecol.* 12: 395-403.
9. Moncalvo, J.-M., R. Vilgalys, S. A. Redhead, J. E. Johnson, **T. Y. James**, M. C. Aime, V. Hofstetter, S. Verduin, E. Larsen, T. J. Baroni, R. G. Thorn, S. Jacobsson, H. Clémençon, and O. K. Miller, Jr. (2002). One hundred and seventeen clades of euagarics. *Mol. Phylogenet. Evol*. 23: 357-400.
8. **James, T. Y**., R. P. Boulianne, A. P. F. Bottoli, J. D. Granado, M. Aebi, and U. Kües (2002). The *pab1* gene of *Coprinus cinereus* encodes a bifunctional protein for *para*-aminobenzoic acid (PABA) synthesis: implications for the evolution of fused PABA synthases. *J. Basic. Microbiol.* 42: 91-103.
7. Miller, O. K., Jr., T. W. Henkel, **T. Y. James**, and S. L. Miller (2001). *Pseudotulostoma*, a remarkable new volvate genus in the Elaphomycetaceae from Guyana. *Mycol. Res.* 105: 1268-1272.
6. **James, T. Y.**, and R. Vilgalys (2001). Abundance and diversity of *Schizophyllum commune* spore clouds in the Caribbean detected by selective sampling. *Mol. Ecol.*10: 471-480.

5. Kües, U., **T. Y. James**, R. Vilgalys, and M. Challen (2001). The chromosomal region containing *pab-1*, *mip*, and the *A* mating type locus of the secondarily homothallic basidiomycete *Coprinus bilanatus*. *Curr. Genet.* 39: 16-24.
4. **James, T. Y.**, J.-M. Moncalvo, S. Li, and R. Vilgalys (2001). Polymorphism at the ribosomal DNA spacers and its relation to breeding structure of the widespread mushroom *Schizophyllum commune*. *Genetics*. 157: 149-161.
3. **James, T. Y.**, D. Porter, C. A. Leander, R. Vilgalys, and J. E. Longcore. (2000). Molecular phylogenetics of the Chytridiomycota supports the utility of ultrastructural data in chytrid systematics. *Can. J. Bot.* 78: 336-350.
2. **James, T. Y.**, D. Porter, J. L. Hamrick, and R. Vilgalys. (1999). Evidence for limited intercontinental gene flow in the cosmopolitan mushroom, *Schizophyllum commune*. *Evolution* 53: 1665-1677.
1. **James, T.,** S. Vege, P. Aldrich, and J. L. Hamrick. (1998). Mating systems of three dry forest tropical tree species. *Biotropica* 30: 587-594.

BOOK CHAPTERS

88. Wang, Z., R. H. Nilsson, **T. Y. James**, Y. Dai, and J. P. Townsend. (2016). Future perspectives and challenges of fungal systematics in the age of big data. In D.-W. Li [ed.]. pp. 25-46. Biology of Microfungi. Springer International, Switzerland.
74. Marano, A. V., A. L. Jesus, C. L. A. Pires-Zottarelli, **T. Y. James**, F. H. Gleason, and J. I. de Souza. (2014). Phylogenetic relationships of Pythiales and Peronosporales (Oomycetes, Straminipila) within the "peronosporalean galaxy. *In* K. D. Hyde, G. Jones and K.-L. Pang [eds]. pp. 177–200. *Freshwater fungi*. De Gruyter, Berlin.
72. **James, T. Y.**, T. M. Porter, and W. W. Martin. (2014). Blastocladiomycota. *In* D. J. McLaughlin, and J. W. Spatafora [eds]. pp. 177-207. *The Mycota VII*. Springer Verlag, Berlin.
59. **James, T. Y.** (2012). Ancient yet fast: rapid evolution of mating genes and mating systems in Fungi. *In* R. S. Singh, J. Xu, and R. J. Kulathinal [eds]. pp. 187-200. *Evolution in the Fast Lane: Rapidly Evolving Genes and Genetic Systems*. Oxford University Press, Oxford, U.K.
53. Kües, U., **T. Y. James**, and J. Heitman. (2011). Mating type in Basidiomycetes: Unipolar, bipolar, and tetrapolar patterns of sexuality. *In* S. Pöggeler, and J. Wöstemeyer [eds.]. pp. 97-160. *Evolution of fungi and fungal-like organisms, The Mycota XIV*. Springer Verlag, Berlin.
29. **James, T. Y.** (2007). Analysis of mating-type locus organization and synteny in mushroom fungi- beyond model species. pp. 317-331. *In* J. Heitman, J. Kronstad, J. W. Taylor, and L. A. Casselton [eds.]. pp. 317-331. *Sex in fungi: molecular determination and evolutionary implications*. ASM Press, Washington, D. C.
28. Idnurm, A., **T. Y. James**, and R. Vilgalys. (2007). Sex in the rest: mysterious mating in the Chytridiomycota and Zygomycota. *In* J. Heitman, J. Kronstad, J. W. Taylor, and L. A. Casselton [eds.]. pp. 407-418. *Sex in fungi: molecular determination and evolutionary implications*. ASM Press, Washington, D. C.
25. Beakes, G. W., S. L. Glockling, and **T. Y. James**. (2006). The diversity of oomycete pathogens of nematodes and its implications to our understanding of oomycete

phylogeny. *In* W. Meyer, C. Pearce [eds.] pp. 7-12. Proceedings of the Eighth International Mycological Congress. Medimond: Italy.

24. **James, T. Y.**, and R. Vilgalys. (2006). Amphibian chytridiomycosis as an emerging infectious disease of wildlife: what can we learn from the earliest diverging fungi? pp. 271-278. *In* J. Heitman, S. G. Filler, J. E. Edwards, Jr., and A. P. Mitchell [eds.]. *Molecular Principals of Fungal Pathogenesis*. ASM Press, Washington, D. C.
16. **James, T. Y.** (2005). The population genetics of phycomycetes. pp. 117-148. *In* J. Xu [ed.]. *Evolutionary Genetics of Fungi*. Horizon Bioscience, Norfolk, UK.
14. Taylor, J. W., J. Spatafora, K. O'Donnell, F. Lutzoni, **T. James**, D. S. Hibbett, D. Geiser, T. D. Bruns, and M. Blackwell. (2004). The fungi. pp. 171-194. *In* J. Cracraft and M. J. Donoghue [eds.], *Assembling the tree of life*. Oxford University Press, Oxford, UK.

INVITED PRESENTATIONS

2016 Institute of Microbiology, Chinese Academy of Sciences, Beijing, China. Development of single cell genomics methods to place dark matter fungi on the fungal tree of life.
2016 Guizhou Medical University. Guiyang, China. Genetic analysis of virulence in opportunistic fungi: development of a *Saccharomyces*-insect infection model.
2016 Yunnan Institute of Tropical Crop Science and Technology. Jinghong, China. Phylogenetic methods: principles and practice.
2016 Northwest Agriculture and Forestry University. Yangling, China. Fungal foes, friends and freaks. How genetics illuminates the mysterious nature of The Fungal Kingdom.
2016 Shanxi University. Taiyuan, China. Genetic analysis of virulence in opportunistic fungi: development of a *Saccharomyces*-insect infection model.
2016 Shandong Agricultural University. Tai'an China. The evolution of fungal pathogens: from obligate to opportunistic killers.
2016 Mycological Society of China. Fuzhou, China. The evolutionary spectrum of fungal pathogenesis: from obligate killers to careless guests.
2015 Department of Botany, University of British Columbia, Vancouver. Pathogen sex and recombination during the amphibian chytridiomycosis panzootic.
2014 Mycological Society of Japan, Kanto Branch, Tokyo, Japan. Shedding light on "dark matter fungi": approaches for populating the fungal tree of life with uncultured species.
2014 30th Commemorative Symposium for the Award of the International Prize for Biology, Tokyo, Japan. A parasitic root on the fungal tree of life inferred using phylogenomics.
2014 VIII Congreso Latinoamericano de Micología. Medellin, Colombia. Genetic and geographical patterns of amphibian chytridiomycosis invasion across the Americas.
2014 Gordon Research Conference on Cellular and Molecular Mycology, Holderness, NH. Sex, recombination, and mutation in the amphibian chytrid pathogen revealed by genome resequencing.
2014 Mycological Society of America Annual Meeting, East Lansing, MI. Deciphering the current amphibian chytridiomycosis panzootic using genomics.
2014 Department of Biological Sciences, Humboldt State University, Arcata, CA. Molecular epidemiology of the amphibian killing fungus in the Brazilian Atlantic Coastal Forest.
2013 EMBO Comparative Genomics of Eukaryotic Microorganisms: Complexity Patterns in Eukaryotic Genomes, St. Feliu de Guixols, Spain. How much do we really know about fungal diversity and phylogeny?

2013 Department of Plant Pathology. Michigan State University, East Lansing, MI. What population genetics tells us about the ongoing amphibian chytridiomycosis pandemic.
2013 Departamento de Genética, Universidade Federal de Rio Grande do Sul, Brazil. The role of the frog leg market in the global spread of the deadly amphibian-killing fungus.
2013 Insituto de Biologia, Universidade Estadual de Campinas, Brazil. Genetic diversity of the amphibian chytrid on a global scale and the search for sexual reproduction.
2012 Evolutionary Biology, Zoologisches Institut, Universität Basel, Switzerland. Phylogenomics reveal Cryptomycota as a diverse group of energy parasites at the base of the fungal tree of life.
2012 Department of Ecology & Evolution, University of Lausanne, Switzerland. The evolution of ploidy and recombination across the fungal tree of life.
2012 Department of Biology, University of Toronto Mississauga, Canada. Pathogen recombination during the amphibian chytridiomycosis pandemic: why change what's working?
2012 Duke Symposium in Celebration of Mycology and Mycologists, Department of Molecular Genetics and Microbiology, Duke University, Durham, NC. Pathogen recombination during the amphibian chytridiomycosis pandemic: why change what's working?
2012 Keystone Symposium: Fungal Pathogens from Basic Biology to Drug Discovery, Santa Fe, NM. Pathogen recombination during the amphibian chytridiomycosis pandemic: why change what's working?
2011 Biology Department, University of Ottawa, Ottawa, ON, Canada. What the genome of the endoparasite *Rozella* can tell us about the most recent common ancestor of fungi
2011 Biology Department, Duke University, Durham, NC, What the genome of the endoparasite *Rozella* can tell us about the most recent common ancestor of fungi
2011 Biology Department, Eastern Michigan University, Ypsilanti, MI, Origin and spread of the pandemic fungal disease linked to globally declining amphibian populations
2010 School of Biology and Ecology, U. Maine, Orono, ME, Origin and spread of the fungal disease linked to globally declining amphibian populations
2010 Department of Biology, Bowdoin College, Brunswick, ME, Origin and spread of the fungal disease linked to globally declining amphibian populations
2010 Annual Meeting of the Genetics Society of Canada, McMaster University, Hamilton, ON, Canada, Ancient or fast: the hunt for trans-species polymorphism in mushroom mating genes
2010 Montana Ecology of Infectious Diseases, U. Montana, Missoula, MT, Rare recombination events and the origin and spread of the current amphibian chytridiomycosis pandemic.
2009 Pettengill Lecture, UM Biological Station, A clonal pandemic of the emerging fungal disease chytridiomycosis in both declining and healthy amphibian population
2009 Evolution of Sex & Recombination: in Theory and in Practice, Iowa City, IA, Heterokaryosis and its advantages and disadvantages relative to diploidy.
2009 Mid-Atlantic States Mycology Conference, Beltsville, MD, Mysterious mating and recombination across the Fungal Tree of Life
2008 The IUMS XIIth International Congress of Mycology, Istanbul, Turkey, The phylogeny of basal fungal lineages: attempting a consensus using a handful of mycology's favourite gene regions.
2007 British Mycological Society Annual Meeting, Manchester, UK, Evolution of mating type and mating systems in bipolar mushrooms.

2006 Dept. of Biology, Oslo University, Norway, The deepest of fungi: resolving basal lineages on the fungal tree of life.
2005 Deep Hypha Annual Meeting, Tuscon AZ, Phylogeny of basal lineages of Fungi.
2002 Gordon Research Conference on Cellular and Molecular Mycology, Holderness, NH, Genetic evidence suggests the fungal agent of chytridiomycosis in amphibians is a recently emerged, pandemic clone.
2002 Seventh International Mycological Congress, Global patterns of genetic variation in *Schizophyllum commune*.

PUBLIC LECTURES AND OUTREACH

2015 Michigan Mushroom Hunters Club, Presentation: How much do we really know about fungal diversity and taxonomy?
2015 Co-founded the Midwest American Mycological Information Corp., an educational non-profit, for the dissemination of information related to fungal biology in the region. Among the goals is the establishment of a certification program for mushroom harvesters across the state of Michigan.
2014 Kalamazoo Gazette Interview, "Mysteries of Michigan morel mushrooms stump even the experts". May 21, 2014. http://www.mlive.com/news/kalamazoo/index.ssf/2014/05/the_mysteries_of_michigan_more.html
2012 Michigan Botanical Club, Huron Division, Fungi of the Silver Lake Area (guided walk)
2012 Michigan Mushroom Hunters Club, Tour of MICH Herbarium and overview of ongoing mycological projects.
2011 Michigan Botanical Club, Huron Division, Presentation: Friendly and deadly branches on the fungal tree of life.
2011 National Public Radio Interview, "A New, Somewhat Moldy Branch On The Tree Of Life". May 12, 2011. http://www.npr.org/2011/05/12/136207874/a-new-somewhat-moldy-branch-on-the-tree-of-life
2010 Michigan Mushroom Hunters Club, Presentation: An emerging pandemic caused by an aquatic fungus has led to the decline of global amphibian populations

PROFESSIONAL AFFILIATIONS

American Society of Microbiology
Genetics Society of America
Mycological Society of America

ACADEMIC SERVICE

Associate Editor, *Mycologia* (2012-present).
Editorial Board, *Eukaryotic Cell* (2010-2015).
Research Awards Committee of the Mycological Society of America (2014-present).
Student Awards Committee of the Mycological Society of America (2013-present).
Councilor in Genetics and Molecular Biology of the Mycological Society of America (2013-2015).

Councilor in Systematics and Evolution of the Mycological Society of America (2009-2011).
Annual Karling Lecture Committee of the Mycological Society of America (2008-2011).
Graduate student member of the Deep Hyphae Steering Committee for fostering research collaboration between North American fungal systematists (2000-2006).
Supervisor for high school and undergraduate students in the Howard Hughes Summer Scholars program at Duke University (Erica Morehouse 2000, Sebastian Kearse 2004, T. Alison Mao 2005).
Coauthor of two webpages on fungi for the "Tree of Life web project."
Peer reviewer for the following journals: *Applied and Environmental Microbiology, Biology Letters, BioScience, Bryologist, BMC Evolutionary Biology, BMC Genomics, Canadian Journal of Botany, Current Opinion in Genetics & Development, Diseases of Aquatic Organisms, Ecology Letters, Environmental Microbiology, Eukaryotic Cell, Evolution, Fungal Biology Reviews, Fungal Ecology, Fungal Genetics and Biology, G3, Gene, Genetics, Genome Biology and Evolution, Genome Research, Heredity, Herpetological Conservation and Biology, Herpetological Review, ISME Journal, Journal of Basic Microbiology, Journal of Eukaryotic Microbiology, mBio, Molecular Biology and Evolution, Molecular Ecology, Molecular Phylogenetics and Evolution, Mycologia, Mycological Research, Mycology, Nature, New Phytologist, Nucleic Acids Research, Parasitology Research, Persoonia, Phytopathology, PLoS Biology, PLoS Genetics, PLoS One, PLoS Pathogens, Proceedings of the National Academy of Sciences USA, Proceedings of the Royal Society Series B, Protist, Scientific Reports, Sydowia, Systematic Biology, Trends in Microbiology*.
Grant review panels: DoE Joint Genome Institute: CSP; National Science Foundation: MCB; NIH: ICIDR.
Conference / meeting organizer: Annual A. H. Smith Mycological Foray, U-M Biological Station (2016).

DEPARTMENTAL SERVICE

2015-	Executive Committee
2015-	Search Committee for Vertebrate Biologist
2014-2015	Committee for the Early Career Scientist Symposium, *Microbiomes in Action*
2014-2015	Frontiers Master's Program Admissions Committee
2013-2015	Seminar Committee
2012	Search Committee for Sustainable Food Systems Biologist
2010-2012	Graduate Admissions Committee
2009-2010	Committee for the Early Career Scientist Symposium, *Experimental Evolution*
2009-2010	Search Committee for Computational Evolutionary Biologist
2009-2010	Curriculum Committee

UNIVERSITY SERVICE

2015-	Executive Committee of the Genetics Training Program

KEY COLLABORATORS

Joyce Longcore (University of Maine) *Systematics and population biology of chytrid fungi.*
Steve Rehner (USDA, Beltsville) *Mating-type genes in attine fungi.*
Felipe Toledo (UNICAMP) & Kelly Zamudio (Cornell University) *Population genetics of the amphibian pathogen Batrachochytrium dendrobatidis in Brazil.*
Jason Stajich (University of California at Riverside), Matthew Smith (University of Florida), Joseph Spatafora (Oregon State University), Robert Roberson (Arizona State University), Tom Richards (University of Exeter) & Igor Grigoriev (Joint Genome Institute) *Genomics of early-diverging fungal lineages*.
Jeff Diez (University of California at Riverside) & Inés Ibáñez (University of Michigan) Analysis of effects of climate change on fungal phenology using herbarium specimens.
Meghan Duffy (University of Michigan). *Molecular ecology of parasites of Daphnia*.
John Vandermeer, Ivette Perfecto (University of Michigan). *Trophic interactions and their influence on coffee rust epidemics.*

THESIS ADVISOR AND POSTGRADUATE-SCHOLAR SPONSOR

Graduate (10 total): Kevin Amses, Ph.D. (2020, expected); Robert Powers, Ph.D. (2020, expected), M.S. (2015); Buck Castillo, Ph.D. (2019, expected), M.S. (2015), co-advised with Dr. Knute Nadelhoffer; Jillian Myers, Ph.D. (2019, expected), Anat Belasen, Ph.D. (2018, expected); Adolfo Gomez Delgado, M.S. (2017, expected); Thomas S. Jenkinson, Ph.D. (2016, expected); Clarisse Betancourt-Román, M.S. (2014); Iman Sylvain, M.S. (2012); Stina Johansson, M.S. (2007), Uppsala University, co-advised with Dr. Hanna Johannesson.
Postdoctoral (5 total): William J. Davis (2016-), Catherine A. Quandt (2014-), John A. Marino (2014), Sujal Phadke (2013-2015), Linda T. A. van Diepen (2009-2010).
Undergraduate theses (2 total): Katherine L. Lazarus, B.Sc. (2013); Amit Patel, B.Sc. (2006), Duke University, senior thesis, co-advised with Dr. Rytas Vilgalys.

THESIS COMMITTEES

Kevin Bakker (Ph.D.)
Cindy Bick (Ph.D.)
Wesley Bickford (Ph.D.)
Adrian Melo Carrillo (M.Sc.): received 2015
Christian Cely (Ph.D.)
Lauren Cline (Ph.D.; SNRE): received 2015
Elizabeth Mae Entwistle (Ph.D.; SNRE), (M.Sc.): received 2011
Huijie Gan (Ph.D.): received 2013
Camden Gowler (Ph.D.)
Minh Chau Ho (M.Sc.)
Qixin He (Ph.D.): received 2014
Huateng Huang (Ph.D.): received 2011
Douglas Jackson (Ph.D.): received 2012
Beatriz Otero Jiménez (Ph.D.)
Chuan Li (Ph.D.)
Tristan McKnight (Ph.D.)
Amanda Meier (Ph.D.)
Brian Metzger (Ph.D.): received 2015

Theresa Ong (Ph.D.), (M.Sc.): received 2011
Kathryn Picard (Ph.D., Duke University)
Alex Taylor (Ph.D.)
Andrea Thomaz (Ph.D.)
Jorge Ronny Diaz Valderrama (Ph.D., Purdue University)
Joseph Walker (Ph.D.)
Lisa Walsh (M.Sc.): received 2014
Na Wei (Ph.D.): received 2015
Senay Yitbarek (Ph.D.): received 2016