

Ning Zhang
Professor

Foran Hall 201, 59 Dudley Road
Department of Plant Biology
Department of Biochemistry & Microbiology
Rutgers University
New Brunswick, NJ 08901 http://plantbiology.rutgers.edu/faculty/zhang/Ning_Zhang.html

Tel: (848) 932-6348 (office)
(848) 932-6270 (lab)
FAX: (732) 932-3844
E-Mail: ningz@rutgers.edu

Education

Ph.D. (2002) Department of Biological Sciences, Louisiana State University.
M.S. (1996) Systematic Mycology and Lichenology Laboratory, Institute of Microbiology, Chinese Academy of Sciences.
B.S. (1993) Shandong University (China). Major: Microbiology.

Academic Positions

Professor, 2020-present, Department of Plant Biology and Department of Biochemistry & Microbiology, **Rutgers University**.
Associate Professor, 2015-2020, Department of Plant Biology and Department of Biochemistry & Microbiology, **Rutgers University**.
Assistant Professor, 2009-2015, Department of Plant Biology & Pathology and Department of Biochemistry & Microbiology, **Rutgers University**.
Research Associate, 2004-2008, Department of Plant Pathology, **Cornell University**,
Postdoctoral Research Associate, 2002-2004, *Fusarium* Research Center, Department of Plant Pathology, **The Pennsylvania State University**.

Honors and Awards

Research Awards

1. Rutgers **Patent Award**, Office of Research Commercialization, **2017**.
2. **Chancellor's Scholar**, Rutgers University, **2016**.
3. **National Science Foundation CAREER Award**. **2015**.
4. **The Board of Trustees Research Fellowship for Scholarly Excellence**, Rutgers University, **2015**.
5. **Young Investigator Award**, Theobald Smith Society, New Jersey Branch of the American Society for Microbiology. **2013**.
6. **Northeast Award for Excellence in Multistate Research**, Northeastern Regional Association (NERA) of State Agricultural Experiment Station Directors. Participant of the project NE1025 "Biology, Ecology and Management of Emerging Pests of Annual Bluegrass on Golf Courses". **2011**.
7. **"Best of the Best" Team Award**, Rutgers Cooperative Extension, participant of the project: "Integrated Program for Management of Emerging Pests of Annual Bluegrass on Golf Courses". **2011**.
8. **Fungal Environmental Sampling and Informatics Network Travel Award** (an NSF funded research network project). **2010**.
9. **C. W. Edgerton Honor Award**, Louisiana State University. **2002**.
10. **E. S. Luttrell Travel Award**, Mycological Society of America. **2001**.
11. **Uecker Travel Award**, Mycological Society of America. **2000**.

12. **Graduate School Special Achievement Award**, Louisiana State University Graduate Student Association. **2000**.
13. **McDaniel Scholarship**, Louisiana State University. **2000**.
14. **Graduate Research Prize**, Mycological Society of America. **1999**.
15. **Sigma Xi Grant-in-Aid of Research**, Honorable Mention Award. **1999**.

Teaching Awards

1. **William J. Luke Award**. Given annually to a teaching assistant in the plant biology program for outstanding instruction, Louisiana State University. **2001**.
2. **Freshman Biology Award**. Given annually to a teaching assistant in the biological sciences for outstanding instruction in freshman biology laboratories, Louisiana State University. **2001**.

Awards Won by Mentored Students

1. Glen Groben, 1st place oral presentation award, Northeastern Division of APS annual meeting (2021).
2. Peninah Engel, Plant Biology Graduate Student Travel Award (2019): \$250
3. Glen Groben, Plant Biology Graduate Student Travel Award (2018): \$200
4. Peninah Engel, Plant Biology Graduate Student Travel Award (2018): \$200
5. Glen Groben, Peter S. Loft Memorial Scholarship, Rutgers Center for Turfgrass Science (2017): \$1,000
6. Molly Bindell, Caroline Thorn Kissel Summer Environmental Studies Scholarship, Garden Club of America (2016): Awarded \$3,000
7. Molly Bindell, Military Spouse Scholarship, National Military Family Association (2016, 2017): Awarded \$2,000
8. Molly Bindell, Fall 2015 Professional Development Fund (2015): Awarded \$693
9. Molly Bindell, Summer 2015 Professional Development Fund (2015): Awarded \$2,000
10. Stephen Miller (lab PhD student), Clark T. Rogerson Student Research Award (\$1000), Mycological Society of America. 2013.
11. Stephen Miller, New Jersey Mycological Society Scholarship (\$1200). 2012.
12. Stephen Miller, National Science Foundation FESIN Travel Award (\$1000). 2011.
13. Stephen Miller, Graduate Travel Award Rutgers University (\$500). 2011

SCHOLARSHIP

June, 2021: Citations: 12,168, H-Index: 32

PUBLICATIONS

* Corresponding author

† student/postdoc/technician/researcher in N. Zhang lab

Peer-Reviewed Journal Papers (published/in press)

2021

1. Walsh E†, Luo J†, Khiste W†, Scalera A†, Sajjad S†, **Zhang N***. 2021. *Pygmaeomycetaceae*, a new root associated family in *Mucoromycotina* from the pygmy pine plains. ***Mycologia*** 113:134-145. DOI: 10.1080/00275514.2020.1803649
2. Lücking R, Aime MC, Robbertse B, Miller AN, Ariyawansa HA, Aoki T, Cardinali G, Crous PW, Druzhinina IS, Geiser DM, Hawksworth DL, Hyde KD, Irinyi L, Jeewon R, Johnston PR, Kirk PM, Malosso E, May TW, Meyer W, Öpik M, Robert V, Seifert KA, Stadler M, Thines M, Vu D, Yurkov AM, **Zhang N**, Schoch CL. 2021. Fungal taxonomy and sequence-based nomenclature. ***Nature Microbiology*** 6: 540-548. DOI: 10.1038/s41564-021-00888-x
3. Aime MC, Miller A, Aoki, T, Bensch K, Cai L, Crous P, Hawksworth DL, Hyde K, Kirk P, Lücking R, May T, Malosso E, Redhead SA, Rossman A, Stadler M, Thines M, Yurkov A, **Zhang N**, Schoch C. 2021. How to publish a new fungal species, or name, version 3.0. ***IMA Fungus*** 12: 11. Pages 1-15. DOI: 10.1186/s43008-021-00063-1
4. Bindell M†, Luo J†, Walsh E†, Wagner NE, Miller SJ†, Cai G, Bonos SA, **Zhang N***. Arbuscular mycorrhizal fungal communities associated with switchgrass (*Panicum virgatum* L.) in the acidic, oligotrophic pine barrens ecosystem. 2021. ***Grass Research*** 1:2, pages 1-10. DOI: 10.48130/GR-2021-0002
5. Vines PL, Daddio RM, Luo J†, Wang R, **Zhang N**, Clarke BB, Meyer WA, Bonos SA. *Pyricularia oryzae* incites gray leaf spot disease on hard fescue (*Festuca brevipila*). 2021. ***International Turfgrass Society Research Journal***. 2021: 1-6. DOI: 10.1002/its2.17
6. David M. Geiser, Abdullah M. S. Al-Hatmi, Takayuki Aoki, Tsutomu Arie, Virgilio Balmas, Irene Barnes, Gary C. Bergstrom, Madan K. Bhattacharyya, Cheryl L. Blomquist, Robert L. Bowden, Balázs Brankovics, Daren W. Brown, Lester W. Burgess, Kathryn Bushley, Mark Busman, José F. Cano-Lira, Joseph D. Carrillo, Hao-Xun Chang, Chi-Yu Chen, Wanquan Chen, Martin Chilvers, Sofia Chulze, Jeffrey J. Coleman, Christina A. Cuomo, Z. Wilhelm de Beer, G. Sybren de Hoog, Johanna Del Castillo-Múnera, Emerson M. Del Ponte, Javier Diéguez-Uribeondo, Antonio Di Pietro, Véronique Edel-Hermann, Wade H. Elmer, Lynn Epstein, Akif Eskalen, Maria Carmela Esposto, Kathryn L. Everts, Sylvia P. Fernández-Pavía, Gilvan Ferreira da Silva, Nora A. Foroud, Gerda Fourie, Rasmus J. N. Frandsen, Stanley Freeman, Michael Freitag, Omer Frenkel, Kevin K. Fuller, Tatiana Gagkaeva, Donald M. Gardiner, Anthony E. Glenn, Scott E. Gold, Thomas R. Gordon, Nancy F. Gregory, Marieka Gryzenhout, Josep Guarro, Beth K. Gugino, Santiago Gutierrez, Kim E. Hammond-Kosack, Linda J. Harris, Mónica Homa, Cheng-Fang Hong, László Hornok, Jenn-Wen Huang, Macit Ilkit, Adriaana Jacobs, Karin Jacobs, Cong Jiang, María del Mar Jiménez-Gasco, Seogchan Kang, Matthew T. Kasson, Kemal Kazan, John C. Kennell, Hye-Seon Kim, H. Corby Kistler, Gretchen A. Kuldau, Tomasz Kulik, Oliver Kurzai, Imane Laraba, Matthew H. Laurence, Theresa Lee, Yin-Won Lee, Yong-Hwan Lee, John F. Leslie, Edward C.Y. Liew, Lily W. Lofton, Antonio F. Logrieco, Manuel S. López-Berges, Alicia G. Luque, Erik Lysøe, Li-Jun Ma, Robert E. Marra, Frank N. Martin, Sara R. May, Susan P. McCormick, Chyanna McGee, Jacques F. Meis, Quirico Migheli, N. M. I. Mohamed Nor, Michel Monod, Antonio Moretti, Diane Mostert, Giuseppina Mule', Françoise Munaut, Gary P. Munkvold, Paul Nicholson, Marcio Nucci, Kerry O'Donnell, Matias Pasquali, Ludwig H. Pfenning, Anna Prigitano, Robert H. Proctor, Stéphane Ranque, Stephen A. Rehner, Martijn Rep, Gerardo Rodríguez-Alvarado, Lindy Joy Rose, Mitchell G. Roth, Carmen Ruiz-Roldán, Amgad A. Saleh, Baharuddin Salleh, Hyunkyung Sang, María Mercedes Scandiani, Jonathan Scauflaire,

David G. Schmale III, Dylan P. G. Short, Adnan Šišić, Jason A. Smith, Christopher W. Smyth, Ellie Spahr, Jason E. Stajich, Emma Steenkamp, Christian Steinberg, Rajagopal Subramaniam, Haruhisa Suga, Brett A. Summerell, Antonella Susca, Cassandra L. Swett, Christopher Toomajian, Terry J. Torres-Cruz, Anna M. Tortorano, Martin Urban, Lisa J. Vaillancourt, Gary E. Vallad, Theo A. J. van der Lee, Dan Vanderpool, Anne D. van Diepeningen, Martha M. Vaughan, Eduard Venter, Marcele Vermeulen, Paul E. Verweij, Altus Viljoen, Cees Waalwijk, Emma C. Wallace, Grit Walther, Jie Wang, Todd J. Ward, Brian L. Wickes, Nathan P. Wiederhold, Michael J. Wingfield, Ana K. M. Wood, Jin-Rong Xu, Xiao-Bing Yang, Tapani Yli-Mattila, Sung-Hwan Yun, Latiffah Zakaria, Hao Zhang, **Ning Zhang**, Sean X. Zhang, Xue Zhang. **2021**. Phylogenomic analysis of a 55.1 kb 19-gene dataset resolves a monophyletic *Fusarium* that includes the *Fusarium solani* species complex. **Phytopathology**. DOI: 10.1094/PHYTO-08-20-0330-LE

2020

7. Groben G†, Clarke BB, Murphy J, Koch P, Crouch J, Lee S, **Zhang N***. **2020**. Real-time PCR detection of *Clariireedia* spp., the causal agent of dollar spot in turfgrasses. **Plant Disease** 104: 3118–3123. DOI: 10.1094/PDIS-04-20-0726-RE
8. Lücking R, Aime MC, Robbertse B, Miller AN, Ariyawansa HA, Aoki T, Cardinali G, Crous PW, Druzhinina IS, Geiser DM, Hawksworth DL, Hyde KD, Irinyi L, Jeewon R, Johnston PR, Kirk PM, Malosso E, May TW, Meyer W, Öpik M, Robert V, Seifert KA, Stadler M, Thines M, Vu D, Yurkov AM, **Zhang N**, Schoch CL. **2020**. Unambiguous identification of fungi: where do we stand and how accurate and precise is fungal barcoding? **IMA Fungus** 11:14 (pages 1-32). DOI: 10.1186/s43008-020-00033-z
9. Vines PL, Hoffmann FG, Meyer F, Allen TW, Luo J†, **Zhang N**, Tomaso-Peterson M. **2020**. *Magnaporthiopsis cynodontis*, a novel turfgrass pathogen with wide distribution in the United States. **Mycologia** 112: 51-63. DOI:10.1080/00275514.2019.1676614
10. Kerry O'Donnell, Abdullah M. S. Al-Hatmi, Takayuki Aoki, Jeffrey J. Coleman, Christina A. Cuomo, G. Sybren de Hoog, Antonio Di Pietro, Rasmus J. Frandsen, Donald M. Gardiner, David M. Geiser, Igor V. Grigoriev, Josep Guarro, Gert Kema, Hye-Seon Kim, H. Corby Kistler, Imane Laraba, John F. Leslie, Erik Lysøe, Li-Jun Ma, Jacques F. Meis, Wieland Meyer, Robert H. Proctor, Martijn Rep, Jason E. Stajich, Emma Steenkamp, v Richard C. Summerbell, Brett A. Summerell, Theo A. J. van der Lee, Anne D. van Diepeningen, Paul E. Verweij, y Cees Waalwijk, m Todd J. Ward, Brian L. Wickes, Nathan P. Wiederhold, Michael J. Wingfield, **Ning Zhang**, Sean X. Zhang. **2020**. No to *Neocosmospora*: Phylogenomic and practical reasons for continued inclusion of the *Fusarium solani* species complex in the genus *Fusarium*. **mSphere** 5:e00810-20 (pages 1-7). DOI:10.1128/mSphere.00810-20

2019

11. Valent B, Farman M, Tosa Y, Begerow D, Fournier E, Gladieux P, Kamoun S, Kemler M, Lebrun MH, Stajich J, Talbot NJ, Terauchi R, Tharreau D, **Zhang N**. **2019**. *Pyricularia graminis-tritici* is not the correct species name for the wheat blast fungus: Response to Ceresini et al. (MPP 20:2). **Molecular Plant Pathology** 20: 173-179. DOI:10.1111/mpp.12778

12. Cai G, Fleury T, **Zhang N**. 2019. Comparative genomics approach to build a genome-wide database of high quality, informative microsatellite markers: application on *Phytophthora sojae*, a soybean pathogen. **Scientific Reports** 9: 7969, pages 1-6. DOI: <https://doi.org/10.1038/s41598-019-44411-z>
13. Meuhlbauer MF, Tobia J, Honig JA, **Zhang N**, Hillman BI, Gold MK, Molnar TJ. 2019. Population differentiation within *Anisogramma anomala* in North America. **Phytopathology** 109: 1074-1082. DOI: <https://doi.org/10.1094/PHYTO-06-18-0209-R>
14. Menon RR, Luo J†, Chen X, Zhou H, Liu Z, Zhou G, **Zhang N***, Jin C. 2019. Screening of fungi for potential application of self-healing concrete. **Scientific Reports** 9: 2075, pages 1-12. DOI: <https://doi.org/10.1038/s41598-019-39156-8>

2018

15. Walsh E†, Duan W†, Mehdi M†, Naphri K†, Khiste S†, Scalera A†, **Zhang N***. 2018. *Cadophora meredithiae* and *C. interclivum*, new species from roots of sedge and spruce in a Western Canada subalpine forest. **Mycologia** 110: 201-214. DOI: <http://dx.doi.org/10.1080/00275514.2017.1406748>
16. **Zhang N***, Cai G, Price D, Crouch J, Gladieux P, Hillman B, Khang CH, LeBrun M-H, Lee Y-H, Luo J†, Qiu H, Veltri D, Wisecaver, JH, Zhu J, Bhattacharya D. 2018. Genome wide analysis of the transition to pathogenic lifestyles in *Magnaporthales* fungi. **Scientific Reports** 8:5862 (pages 1-13). DOI:10.1038/s41598-018-24301-6
17. Luo J†, Chen X, Crump J, Zhou H, Davies GD, Zhou G, **Zhang N***, Jin C. 2018. Interactions of fungi with concrete: significant importance for bio-based self-healing concrete. **Construction and Building Materials** 164: 275-285. DOI: <https://doi.org/10.1016/j.conbuildmat.2017.12.233>
18. Thines M, Crous P, Aime MC, Aoki T, Cai L, Hyde K, Miller AN, **Zhang N**, Stadler M. 2018. Ten reasons why a sequence-based nomenclature is not useful for fungi anytime soon. **IMA Fungus** 9: 177-183. DOI: 10.5598/imafungus.2018.09.01.11
19. Tariq A, Naz F, Altaf R, Jabeen Z, Rauf CA, Irshad G, Raja MU, Shaheen FA, Sultana T, Aslam M, Bennett JW, **Zhang N**. 2018. First report of fruit rot of bell pepper caused by *Fusarium incarnatum* in Pakistan. **Plant Disease** 102: 2645-2646. DOI: 10.1094/PDIS-02-18-0221-PDN
20. Trigiano RN, Hadziabdic D, Mantooth K, Windham MT, Ownley BH, Staton ME, Miller S†, **Zhang N**. 2018. Dogwood anthracnose: the story continues. **Acta Horticulturae** 1191. DOI: 10.17660/ActaHortic.2018.1191.11
21. Naz F, Tariq A†, Rauf A, Abbas MF, Walsh E†, Luo J†, Kingskey K, **Zhang N**, Bennett JW. 2018. First report of *Botrytis cinerea* causing gray mold of bell pepper in Pakistan. **Plant Disease** 102: 1449-1450. DOI: <https://doi.org/10.1094/PDIS-10-17-1632-PDN>

2017

22. Tripp E, **Zhang N**, Schneider H, Huang Y, Mueller GM, Hu Z, Häggblom M, Bhattacharya D. **2017**. Reshaping Darwin's Tree: Impact of the Symbiome. *Trends in Ecology and Evolution* 32: 552-555. <http://dx.doi.org/10.1016/j.tree.2017.05.002>
23. Luo J†, Walsh E†, Miller S†, Blystone D†, Dighton J, **Zhang N***. **2017**. Root endophytic fungal communities associated with pitch pine, switchgrass, and rosette grass in the pine barrens ecosystem. *Fungal Biology* 121:478-487. DOI: 10.1016/j.funbio.2017.01.005
24. Luo J†, Vines PL, Grimshaw A, Hoffman L, Walsh E†, Bonos S, Clarke BB, Murphy JA, Meyer WA, **Zhang N***. **2017**. *Magnaporthiopsis meyeri-festucaae* sp. nov. associated with a summer patch-like disease of fine fescue turfgrasses. *Mycologia* 109: 780-789. DOI: <http://dx.doi.org/10.1080/00275514.2017.1400306>
25. Mantooth K, Hadziabdic D, Boggess S, Windham M, Miller S†, Cai G, Spatafora J, **Zhang N**, Staton M, Ownley B, Trigiano R. **2017**. Confirmation of independent introductions of an exotic plant pathogen of *Cornus* species, *Discula destructiva*, on the east and west coasts of North America. *PLoS ONE* 12(7): e0180345. <https://doi.org/10.1371/journal.pone.0180345>
26. Schoch CL, Aime MC, de Beer W, Crous P, Hyde KD, Penev L, Seifert KA, Stadler M, **Zhang N**, Miller AN. **2017**. Using standard keywords in publications to facilitate updates of new fungal taxonomic names. *IMA Fungus* 8(2): 70-73
27. Zhao G†, Yin G, Inamdar A, Luo J†, **Zhang N**, Yang I, Buckley B, Bennett JW. **2017**. Volatile organic compounds emitted by filamentous fungi isolated from flooded homes after Hurricane Sandy show toxicity in a *Drosophila* bioassay. *Indoor Air* 27: 518-528. DOI: 10.1111/ina.12350

2016

28. Qiu H†, Cai G, Luo J†, Bhattacharya D, **Zhang N***. **2016**. Extensive horizontal gene transfers between plant pathogenic fungi. *BMC Biology* 14:41, pg 1-11. DOI: 10.1186/s12915-016-0264-3
29. **Zhang N***, Luo J, Rossman A, Aoki T, Chuma I, Crous PW, Dean R, de Vries RP, Donofrio N, Hyde KD, Lebrun M, Talbot NJ, Tharreau D, Tosa Y, Valent B, Wang Z, Xu J. **2016**. Generic Names in Magnaporthales. *IMA Fungus* 7(1): 155-159. DOI: 10.5598/imafungus.2016.07.01.09
30. Miller SJ†, Masuya H, Zhang J, Walsh E†, **Zhang N***. **2016**. Real-time PCR detection of dogwood anthracnose fungus in historical herbarium specimens from Asia. *PLoS ONE* 11(4):e0154030, pg 1-9. DOI:10.1371/journal.pone.0154030
31. Schroers HJ, Samuels GJ, **Zhang N**, Short D, Juba J, Geiser DM. **2016**. Epitypification of *Fusisporium* (*Fusarium*) *solani* and its assignment to a common phylogenetic species in the *F. solani* species complex. *Mycologia* 108: 806-819. DOI:10.3852/15-255
32. Cheng L†, **Zhang N**, Huang B. **2016**. Effects of ACC-deaminase Producing Bacteria on Perennial Ryegrass Growth and Physiological Responses to Salinity Stress. *Journal of the American Society for Horticultural Science* 141:233-241

2015

33. Walsh E†, Luo J†, Naik A†, Preteroti T†, **Zhang N***. 2015. *Barrenia*, a new genus associated with roots of switchgrass and pine in the oligotrophic pine barrens. ***Fungal Biology*** 119: 1216-1225. DOI: 10.1016/j.funbio.2015.09.010
34. Luo J†, Walsh E†, Blystone D†, **Zhang N***. 2015. Five new *Pseudophialophora* species from grass roots in the oligotrophic pine barrens ecosystem. ***Fungal Biology*** 119: 1205-1215. DOI: 10.1016/j.funbio.2015.08.016
35. Luo J†, Qiu H, Cai G, Wagner NE, Bhattacharya D, **Zhang N***. 2015. Phylogenomic analysis uncovers the evolutionary history of nutrition and infection mode in rice blast fungus and other Magnaporthales. ***Scientific Reports*** 5:9448. DOI: 10.1038/srep09448
36. Luo J†, Walsh E†, **Zhang N***. 2015. Toward monophyletic generic concepts in Magnaporthales: species with *Harpophora* asexual states. ***Mycologia*** 107: 641-646. DOI:10.3852/14-302
37. Zhou N, Chen Q, Carroll G, **Zhang N**, Shivas RG, Cai L. 2015. Polyphasic characterization of four new plant pathogenic *Phyllosticta* species from China, Japan, and the United States. ***Fungal Biology*** 119: 433-446. DOI: 10.1016/j.funbio.2014.08.006
38. Beck A, Divakar PK, **Zhang N**, Molina MC, Struwe L. 2015. Evidence of ancient horizontal gene transfer between fungi and the terrestrial alga *Trebouxia*. ***Organisms Diversity and Evolution*** 15: 235-248. DOI: 10.1007/s13127-014-0199-x
39. Li S, Darwish O, Alkharouf, N, Matthews, B, Ji P, Domier LL, **Zhang N**, Blum BH. 2015. Draft genome sequence of *Phomopsis longicolla* isolate MSPL 10-6. ***Genomics Data*** 3: 55-56. DOI: <http://dx.doi.org/10.1016/j.gdata.2014.11.007>

2014

40. Walsh E†, Luo J†, **Zhang N***. 2014. *Acidomelania panicicola* gen. et. sp. nov. from switchgrass roots in acidic New Jersey Pine Barrens. ***Mycologia*** 106:856-864. DOI: 10.3852/13-377
41. Luo J†, Walsh E†, Naik A†, Zhuang WY, Zhang K, Cai L, **Zhang N***. 2014. Temperate pine barrens and tropical rain forests are both rich in undescribed fungi. ***PLoS ONE*** 9(7): e103753. DOI: 10.1371/journal.pone.0103753
42. White JF Jr, Torres MS, Somu MP, Johnson H, Irizarry I, Chen Q, **Zhang N**, Walsh E†, Tadych M, Bergen M. 2014. Hydrogen peroxide staining to visualize intracellular bacterial infections of seedling root cells. ***Microscopy Research and Technique*** 77: 566-573. DOI: 10.1002/jemt.22375
43. Schoch CL, Robbertse B, Robert V, Vu D, Cardinali G, Irinyi L, Meyer W, Nilsson RH, Hughes K, Miller AN, Kirk PM, Abarenkov K, Aime MC, Ariyawansa HA, Bidartondo M, Boekhout T, Buyck B, Cai Q, Chen J, Crespo A, Crous PW, Damm U, De Beer ZW, Dentinger BTM, Divakar PK, Dueñas M, Feau N, Fliegerova K, García MA, Ge Z-W, Griffith GW, Groenewald JZ, Groenewald M, Grube M, Gryzenhout M, Gueidan C, Guo L,

Hambleton S, Hamelin R, Hansen K, Hofstetter V, Hong S-B, Houbraken J, Hyde KD, Inderbitzin P, Johnston PR, Karunarathna SC, Kõljalg U, Kovács GM, Kraichak E, Krizsan K, Kurtzman CP, Larsson K-H, Leavitt S, Letcher PM, Liimatainen K, Liu J-K, Lodge DJ, Luangsa-ard JJ, Lumbsch HT, Maharachchikumbura SSN, Manamgoda D, Martín MP, Minnis A, Moncalvo J-M, Mulè G, Nakasone KK, Niskanen T, Olariaga I, Papp T, Petkovits T, Pino-Bodas R, Powell MJ, Raja HA, Redecker D, Sarmiento-Ramirez JM, Seifert KA, Shrestha B, Stenroos S, Stielow B, Suh S-O, Tanaka K, Tedersoo L, Telleria MT, Udayanga D, Untereiner WA, Uribeondo JD, Subbarao KV, Vágvölgyi C, Visagie C, Voigt K, Walker DM, Weir BS, Weiß M, Zhuang W-Y, Wijayawardene NN, Wingfield MJ, Xu JP, Yang ZL, **Zhang N**, Federhen S. **2014**. Finding needles in haystacks: linking scientific names, reference specimens and molecular data for Fungi. *Database* 2014: 1-21. DOI: 10.1093/database/bau061

44. Luo J†, Walsh E†, **Zhang N***. **2014**. Four new species in Magnaporthaceae from grass roots in New Jersey Pine Barrens. *Mycologia* 106: 580-588. DOI: 10.3852/13-306

2013

45. Molina MC, Divakar PK, **Zhang N**, Gonzalez N, Struwe L. **2013**. Non-developing ascospores in apothecia of asexually reproducing lichen-forming fungi. *International Microbiology* 16: 145-155. DOI: 10.2436/20.1501.01.189
46. **Zhang N**, Mohdzainudin NAI, Scher K, Condon BJ, Horwitz BA, Turgeon BG. **2013**. Iron, oxidative stress, and virulence: roles of iron-sensitive transcription factor Sre1 and the redox sensor ChAp1 in the maize pathogen *Cochliobolus heterostrophus*. *Molecular Plant-Microbe Interactions* 26: 1473-1485. DOI: <http://dx.doi.org/10.1094/MPMI-02-13-0055-R>
47. Luo J†, **Zhang N***. **2013**. *Magnaporthiopsis*, a new genus in Magnaporthaceae (Ascomycota). *Mycologia* 105: 1019-1029. DOI: 10.3852/12-359
48. Zhang K, **Zhang N**, Cai L. **2013**. Typification and phylogenetic study of *Phyllosticta ampellicida* and *P. vaccinii*. *Mycologia* 105: 1030-1042. DOI: 10.3852/12-392
49. Dylan PGS, O'Donnell K, Thrane U, Nielsen KF, **Zhang N**, Juba J, Geiser DM. **2013**. Phylogenetic relationships among members of the *Fusarium solani* species complex in human infections and the descriptions of *F. keratoplasticum* sp. nov. and *F. petroliphilum* stat. nov. *Fungal Genetics and Biology* 53: 59-70. DOI: <http://dx.doi.org/10.1016/j.fgb.2013.01.004>
50. Molnar T, Walsh E†, Capik J, Sathuvalli V, Mehlenbacher S, Rossman A, **Zhang N***. **2013**. A real-time PCR assay for early detection of eastern filbert blight. *Plant Disease* 97: 813-818. DOI: <http://dx.doi.org/10.1094/PDIS-11-12-1041-RE>
51. Geiser DM, Aoki T, Bacon CW, Baker SE, Bhattacharyya MK, Brandt ME, Brown DW, Burgess LW, Chulze S, Coleman JJ, Correll JC, Covert SF, Crous PW, Cuomo CA, De Hoog GS, Di Pietro A, Elmer WH, Epstein L, Frandsen RJN, Freeman S, Gagkaeva T, Glenn AE, Gordon TR, Gregory NF, Hammond-Kosack KE, Hanson LE, Jimenez-Gasco MD, Kang S, Kistler HC, Kuldau GA, Leslie JF, Logrieco A, Lu GZ, Lysoe E, Ma LJ, McCormick SP, Migheli Q, Moretti A, Munaut F, O'Donnell K, Pfenning L, Ploetz RC, Proctor RH, Rehner SA, Robert VARG, Rooney AP, bin Salleh B, Scandiani MM,

Scauflaire J, Short DPG, Steenkamp E, Suga H, Summerell BA, Sutton DA, Thrane U, Trail F, Van Diepeningen A, VanEtten HD, Viljoen A, Waalwijk C, Ward TJ, Wingfield MJ, Xu JR, Yang XB, Yli-Mattila T, **Zhang N**. 2013. One Fungus, One Name: Defining the genus *Fusarium* in a scientifically robust way that preserves longstanding use. ***Phytopathology*** 103: 400-408. DOI: <http://dx.doi.org/10.1094/PHYTO-07-12-0150-LE>

2012

52. Schoch CL, Seifert KA, Huhndorf S, Robert V, Spouge JL, Levesque CA, Chen W, Bolchacova E, Voigt K, Crous PW, Miller AN, Wingfield MJ, Aime MC, An KD, Bai FY, Barreto RW, Begerow D, Bergeron MJ, Blackwell M, Boekhout T, Bogale M, Boonyuen N, Burgaz AR, Buyck B, Cai L, Cai Q, Cardinali G, Chaverri P, Coppins BJ, Crespo A, Cubas P, Cummings C, Damm U, de Beer ZW, de Hoog GS, Del-Prado R, B D, Dieguez-Uribeondo J, Divakar PK, Douglas B, Duenas M, Duong TA, Eberhardt U, Edwards JE, Elshahed MS, Fliiegerova K, Furtado M, Garcia MA, Ge ZW, Griffith GW, Griffiths K, Groenewald JZ, Groenewald M, Grube M, Gryzenhout M, Guo LD, Hagen F, Hambleton S, Hamelin RC, Hansen K, Harrold P, Heller G, Herrera G, Hirayama K, Hirooka Y, Ho HM, Hoffmann K, Hofstetter V, Hognabba F, Hollingsworth PM, Hong SB, Hosaka K, Houbraken J, Hughes K, Huhtinen S, Hyde KD, James T, Johnson EM, Johnson JE, Johnston PR, Jones EB, Kelly LJ, Kirk PM, Knapp DG, Koljalg U, GM K, Kurtzman CP, Landvik S, Leavitt SD, Ligginstoffer AS, Liimatainen K, Lombard L, Luangsa-Ard JJ, Lumbsch HT, Maganti H, Maharachchikumbura SS, Martin MP, May TW, McTaggart AR, Methven AS, Meyer W, Moncalvo JM, Mongkolsamrit S, Nagy LG, Nilsson RH, Niskanen T, Nyilasi I, Okada G, Okane I, Olariaga I, Otte J, Papp T, Park D, Petkovits T, Pino-Bodas R, Quaedvlieg W, Raja HA, Redecker D, T R, Ruibal C, Sarmiento-Ramirez JM, Schmitt I, Schussler A, Shearer C, Sotome K, Stefani FO, Stenroos S, Stielow B, Stockinger H, Suetrong S, Suh SO, Sung GH, Suzuki M, Tanaka K, Tedersoo L, Telleria MT, Tretter E, Untereiner WA, Urbina H, Vagvolgyi C, Vialle A, Vu TD, Walther G, Wang QM, Wang Y, Weir BS, Weiss M, White MM, Xu J, Yahr R, Yang ZL, Yurkov A, Zamora JC, **Zhang N**, Zhuang WY, Schindel D. 2012. Nuclear ribosomal internal transcribed spacer (ITS) region as a universal DNA barcode marker for Fungi. ***Proceedings of the National Academy of Sciences of the United States of America*** 109: 6241-6246. DOI: 10.1073/pnas.1117018109. (Author contributions: NZ as a member of the Fungal Barcoding Consortium, performed research, collaborated in data generation and edited the manuscript).
53. Zhao S†, Clarke BB, Shen Q, Zhang L, **Zhang N***. 2012. Development and application of a TaqMan real-time PCR assay for rapid detection of *Magnaporthe poae*. ***Mycologia*** 104:1250-1259. DOI:10.3852/11-365 (Zhao: co-advised PhD student, major professor Shen Q,)
54. Wu D, Oide S, **Zhang N**, Choi MY, Turgeon BG. 2012. ChLae1 and ChVel1 regulate T-toxin production, virulence, oxidative stress response, and development of the maize pathogen *Cochliobolus heterostrophus*. ***PLoS Pathogens*** 8(2): e1002542. DOI: 10.1371/journal.ppat.1002542

2011

55. Short PGD, O'Donnell K, **Zhang N**, Juba JH, Geiser DM. 2011. Widespread occurrence of diverse human pathogenic types of the fungus *Fusarium* detected in plumbing drains. ***Journal of Clinical Microbiology*** 49: 4264-4272. DOI: 10.1128/JCM.05468-11

56. Cai L, Giraud T, **Zhang N**, Begerow D, Cai G, Shivas RG. **2011**. The application of species criteria in plant pathogenic fungi. *Fungal Diversity* 50:121-133. DOI: 10.1007/s13225-011-0127-8
57. Rajmohan N†, Gianfagna TJ, Meca G, Moretti A, **Zhang N***. **2011**. Molecular identification and mycotoxin production of *Lilium longiflorum*-associated fusaria isolated from two geographic locations in the United States. *European Journal of Plant Pathology*. 131:631-642. DOI: 10.1007/s10658-011-9838-7 (Rajmohan: co-advised PhD student, major professor T. Gianfagna)
58. **Zhang N***, Zhao S†, Shen Q. **2011**. A six-gene phylogeny reveals the evolution of mode of infection in the rice blast fungus and allied species. *Mycologia* 103(6): 1267-1276. DOI:10.3852/11-022
59. **Zhang N***, Tantardini A, Miller SJ†, Eng A†, Salvatore N†. **2011**. TaqMan real-time PCR method for detection of *Discula destructiva* that causes dogwood anthracnose in Europe and North America. *European Journal of Plant Pathology* 130:551–558. DOI: 10.1007/s10658-011-9777-3
60. Hawksworth DL, Crous PW, Redhead SA, Reynolds DR, Samson RA, Seifert KA, Taylor JW, Wingfield MJ, Abaci O, Aime C, Asan A, Bai F-Y, de Beer ZW, Begerow D, Berikten D, Boekhout T, Buchanan PK, Burgess T, Buzina W, Cai L, Cannon PF, Crane JL, Damm U, Daniel H-M, van Diepeningen AD, Druzhinina I, Dyer PS, Eberhardt U, Fell JW, Frisvad JC, Geiser DM, Geml J, Glienke C, Grafenhan T, Groenewald JZ, Groenewald M, de Gruyter J, Gueho-Kellermann E, Guo L-D, Hibbett DS, Hong S-B, de Hoog GS, Houbraeken J, Huhndorf SM, Hyde KD, Ismail A, Johnston PR, Kadaifciler DG, Kirk PM, Koljalg U, Kurtzman CP, Lagneau P-E, Levesque CA, Liu X, Lombard L, Meyer W, Miller A, Minter DW, Najafzadeh MJ, Norvell L, Ozerskaya SM, Ozic R, Pennycook SR, Peterson SW, Pettersson OV, Quaedvlieg W, Robert VA, Ruibal C, Schnurer J, Schroers H-J, Shivas R, Slippers B, Spierenburg H, Takashima M, Taskin E, Thines M, Thrane U, Uztan AH, van Raak M, Varga J, Vasco A, Verkley G, Videira SIR, de Vries RP, Weir BS, Yilmaz N, Yurkov A, **Zhang N**. **2011**. The Amsterdam Declaration on Fungal Nomenclature. *IMA Fungus* 2:105-112. DOI: 10.5598/imafungus.2011.02.01.14
61. Njambere EN†, Clarke BB, **Zhang N.*** **2011**. Dimeric oligonucleotide probes enhance diagnostic microarray performance. *Journal of Microbiological Methods* 86: 52-61. DOI: 10.1016/j.mimet.2011.03.015
62. Njambere EN†, Clarke BB, Bonos SA, Murphy JA, Buckley R, Tirpak S, **Zhang N***. **2011**. First Report of Brown Ring Patch Caused by *Waitea circinata* var. *circinata* on *Poa annua* and *Agrostis stolonifera* in New Jersey. *Plant Disease* 95: 78-79. DOI: 10.1094/PDIS-08-10-0606

2010

63. O'Donnell K, Sutton DA, Rinaldi MG, Sarver BAJ, Balajee SA, Schroers HJ, Summerbell RC, Robert VARG, Crous PW, **Zhang N**, Aoki T, Jung K, Park J, Lee YH, Kang S, Park B, Geiser DM. **2010**. An internet-accessible DNA sequence database for identifying

fusaria from human and animal infections. *Journal of Clinical Microbiology* 48: 3708-3718. DOI: 10.1128/JCM.00989-10

64. Molnar T, Capik J, Zhao S†, Zhang N. 2010. First report of Eastern Filbert Blight on *Corylus avellana* 'Gasaway' and 'VR20-11' caused by *Anisogramma anomala* (Peck) E. Müller in New Jersey. *Plant Disease* 94: 1265. DOI: 10.1094/PDIS-06-10-0445
65. O'Donnell K, Sutton DA, Fothergill A, McCarthy D, Rinaldi MG, Brandt ME, Zhang N, Geiser DM. 2008. Molecular phylogenetic diversity, multilocus haplotype nomenclature, and in vitro antifungal resistance within the *Fusarium solani* species complex. *Journal of Clinical Microbiology* 46:2477-2490.
66. Bidartondo MI, Bruns TD, Blackwell M, Edwards I, Taylor AFS, Horton T, Zhang N, Koljalg U, May G, Kuyper TW, Bever JD, Gilbert G, Taylor JW, DeSantis TZ, Pringle A, Borneman J, Thorn G, Berbee M, Mueller GM, Andersen GL, Vellinga EC, Branco S, Anderson I, Dickie IA, Avis P, Timonen S, Kjoller R, Lodge DJ, Bateman RM, Purvis A, Crous PW, Hawkes C, Barraclough T, Burt A, Nilsson RH, Larsson KH, Alexander I, Moncalvo JM, Berube J, Spatafora J, Lumbsch HT, Blair JE, Suh SO, Pfister DH, Binder M, Boehm EW, Kohn L, Mata JL, Dyer P, Sung GH, Dentinger B, Simmons EG, Baird RE, Volk TJ, Perry BA, Kerrigan RW, Campbell J, Rajesh J, Reynolds DR, Geiser D, Humber RA, Hausmann N, Szaro T, Stajich J, Gathman A, Peay KG, Henkel T, Robinson CH, Pukkila PJ, Nguyen NH, Villalta C, Kennedy P, Bergemann S, Aime MC, Kauff F, Porras-Alfaro A, Gueidan C, Beck A, Andersen B, Marek S, Crouch JA, Kerrigan J, Ristaino JB, Hodge KT, Kuldau G, Samuels GJ, Raja HA, Voglmayr H, Gardes M, Janos DP, Rogers JD, Cannon P, Woolfolk SW, Kistler HC, Castellano MA, Maldonado-Ramirez SL, Kirk PM, Farrar JJ, Osmundson T, Currah RS, Vujanovic V, Chen WD, Korf RP, Atallah ZK, Harrison KJ, Guarro J, Bates ST, Bonello P, Bridge P, Schell W, Rossi W, Stenlid J, Frisvad JC, Miller RM, Baker SE, Hallen HE, Janso JE, Wilson AW, Conway KE, Egerton-Warburton L, Wang Z, Eastburn D, Ho WWH, Kroken S, Stadler M, Turgeon G, Lichtwardt RW, Stewart EL, Wedin M, Li DW, Uchida JY, Jumpponen A, Deckert RJ, Beker HJ, Rogers SO, Xu JAP, Johnston P, Shoemaker RA, Liu MA, Marques G, Summerell B, Sokolski S, Thrane U, Widden P, Bruhn JN, Bianchinotti V, Tuthill D, Baroni TJ, Barron G, Hosaka K, Jewell K, Piepenbring M, Sullivan R, Griffith GW, Bradley SG, Aoki T, Yoder WT, Ju YM, Berch SM, Trappe M, Duan WJ, Bonito G, Taber RA, Coelho G, Bills G, Ganley A, Agerer R, Nagy L, Roy BA, Laessle T, Hallenberg N, Tichy HV, Stalpers J, Langer E, Scholler M, Krueger D, Pacioni G, Poder R, Pennanen T, Capelari M, Nakasone K, Tewari JP, Miller AN, Decock C, Huhndorf S, Wach M, Vishniac HS, Yohalem DS, Smith ME, Glenn AE, Spiering M, Lindner DL, Schoch C, Redhead SA, Ivors K, Jeffers SN, Geml J, Okafor F, Spiegel FW, Dewsbury D, Carroll J, Porter TM, Pashley C, Carpenter SE, Abad G, Voigt K, Arenz B, Methven AS, Schechter S, Vance P, Mahoney D, Kang SC, Rheeder JP, Mehl J, Greif M, Ngala GN, Ammirati J, Kawasaki M, Gwo-Fang YA, Matsumoto T, Smith D, Koenig G, Luoma D, May T, Leonardi M, Sigler L, Taylor DL, Gibson C, Sharpton T, Hawksworth DL, Dianese JC, Trudell SA, Paulus B, Padamsee M, Callac P, Lima N, White M, Barreau C, Juncal MA, Buyck B, Rabeler RK, Liles MR, Estes D, Carter R, Herr JM, Chandler G, Kerekes J, Cruse-Sanders J, Marquez RG, Horak E, Fitzsimons M, Doring H, Yao S, Hynson N, Ryberg M, Arnold AE, Hughes K. 2008. Preserving accuracy in GenBank. *Science* 319:1616.

67. Zhang N, McCarthy ML, Smart CD. 2008. A macroarray system for the detection of multiple fungal and oomycete pathogens of solanaceous crops from field samples. *Plant Disease* 92:953-960.
68. Gilbert CA, Zhang N, Hutmacher RB, Davis RM, Smart CD. 2008. Development of a DNA-based macroarray for the detection and identification of *Fusarium oxysporum* f. sp. *vasinfectum* in cotton tissue. *Journal of Cotton Science* 12:165-170.
69. Pokharel RR, Abawi GS, Zhang N, Duxbury JM, Smart CD. 2007. Characterization of isolates of *Meloidogyne* from rice-wheat production fields in Nepal. *Journal of Nematology* 39:221-230.
70. Zhang N, Geiser DM, Smart CD. 2007. Macroarray detection of solanaceous plant pathogens in the *Fusarium solani* species complex. *Plant Disease* 91:1612-1620.
71. Hibbett DS, Binder M, Bischoff JF, Blackwell M, Cannon PF, Eriksson OE, Huhndorf S, James T, Kirk PM, Lucking R, Lumbsch HT, Lutzoni F, Matheny PB, Mclaughlin DJ, Powell MJ, Redhead S, Schoch CL, Spatafora JW, Stalpers JA, Vilgalys R, Aime MC, Aptroot A, Bauer R, Begerow D, Benny GL, Castlebury LA, Crous PW, Dai YC, Gams W, Geiser DM, Griffith GW, Gueidan C, Hawksworth DL, Hestmark G, Hosaka K, Humber RA, Hyde KD, Ironside JE, Koljalg U, Kurtzman CP, Larsson KH, Lichtwardt R, Longcore J, Miadlikowska J, Miller A, Moncalvo JM, Mozley-Standridge S, Oberwinkler F, Parmasto E, Reeb V, Rogers JD, Roux C, Ryvarden L, Sampaio JP, Schussler A, Sugiyama J, Thorn RG, Tibell L, Untereiner WA, Walker C, Wang Z, Weir A, Weiss M, White MM, Winka K, Yao YJ, Zhang N. 2007. A higher-level phylogenetic classification of the fungi. *Mycological Research* 111:509-547.
72. Zhang N, Castlebury LA, Miller AN, Huhndorf SM, Schoch CL, Seifert KA, Rossman AY, Rogers JD, Kohlmeyer J, Volkmann-Kohlmeyer B, Sung GH. 2006. An overview of the systematics of the Sordariomycetes based on a four-gene phylogeny. *Mycologia* 98:1077-1088. (Invited lead author)
73. Zhang N, O'Donnell K, Sutton DA, Nalim FA, Summerbell RC, Padhye AA, Geiser DM. 2006. Members of the *Fusarium solani* species complex causing infections in both humans and plants are common in the environment. *Journal of Clinical Microbiology* 44:2186-2190.
74. Tantardini A, Calvi M, Cavagna B, Zhang N, Geiser DM. 2004. Primo rinvenimento in Italia di antracnosi causata da *Discula destructiva* su *Cornus florida* e *C. nuttallii*. *Informatore Fitopatologico* 12:44-47.
75. Geiser DM, Jimenez-Gasco MD, Kang SC, Makalowska I, Veeraraghavan N, Ward TJ, Zhang N, Kuldau GA, O'Donnell K. 2004. FUSARIUM-ID v. 1.0: A DNA Sequence Database for Identifying *Fusarium*. *European Journal of Plant Pathology* 110:473-479.
76. Zhang N, Suh S-O, Blackwell M. 2003. Microorganisms in the gut of beetles: evidence from molecular cloning. *Journal of Invertebrate Pathology* 84:226-233.
77. Zhang N, Blackwell M. 2002. Population structure of dogwood anthracnose fungus. *Phytopathology* 92: 1276-1283.

78. **Zhang N**, Blackwell M. **2002**. Molecular phylogeny of *Melanospora* Corda and similar pyrenomycetous fungi. ***Mycological Research*** 106:148-155.
79. **Zhang N**, Blackwell M. **2001**. Molecular phylogeny of dogwood anthracnose fungus (*Discula destructiva*) and the Diaporthales. ***Mycologia*** 93:356-364.
80. **Zhang N**, Zhuang J-Y, Wei S-X. **1997**. Rust fungi of the Daba Mountains. ***Mycotaxon*** 61:49-79.

Book Chapters

1. **Zhang N***, Luo J†, Bhattacharya D. **2017**. Advances in fungal phylogenomics and their impact on fungal systematics. ***Advances in Genetics*** 100: 309-328.
<https://doi.org/10.1016/bs.adgen.2017.09.004>
2. **Zhang N***, Baird RE, Trigiano RN. **2016**. Plant Pathogenic Species of the *Ascomycota*: *Pezizomycotina*. Pp. 205-220. In ***Plant Pathology: Concepts and Laboratory Exercises***. 3rd edition. Eds. Ownley BH, Trigiano RN. CRC Press.
3. **Zhang N***, Wang Z. **2015**. *Sordariomycetes* and *Leotiomycetes*. Systematics and Evolution. Pp. 57-88. In ***The Mycota*** VII 2nd edition, Eds. McLaughlin DJ, Spatafora JW. Springer-Verlag. Berlin Heidelberg.
4. Turgeon BG, Condon B, Liu J, **Zhang N**. **2010**. Protoplast Transformation of Filamentous Fungi. Pp. 3-20. In ***Molecular and Cell Biology Methods for Fungi***, Methods in Molecular Biology series. Ed. Amir Sharon. Humana Press.

TEACHING

Courses Taught

Molecular Genetics Lab 11:126:482, 4 credits, Biotechnology undergraduate core course. Spring **2010, 2011, 2012, 2013, 2014, 2015, 2016, 2018, 2019, 2020, 2021**

Advanced Mycology 16:765:533, 3 credits, Plant Biology graduate course (co-teach). Spring **2012, 2014, 2016, 2018**

Introduction to Plant Biology 16:765:501, 3 credits, core course in the Plant Biology graduate curriculum. Fall **2009, 2010, 2011**

Guest Lectures

Fungi in the Environment 11:770:402 (one lecture each year), Fall 2009, 2010, 2011, 2012
Fungi and Human Health 11:776:415:01 (one lecture each year), Spring 2015, 2016, 2017, 2018

Introduction to Plant Biology, 16:765:501 (one lecture), Fall 2012

Microbial Biology Seminar 16:682:521 (one lecture each year), Fall 2015, 2016, 2017

Microbial Ecology and Diversity 16:682:572 (one lecture), Fall 2012, 2017

Microbial Life 16:682:501 (one lecture each year), Fall 2012, 2013, 2015, 2016, 2017, 2018, 2019, 2020

Plant Pathogenesis 16: 765:538 (two lectures each year), Spring 2011, 2013, 2015,

Seminar in Microbial Biology 16:682:520 (one lecture), Fall 2010

The Evolution of Eukaryotes, 11:704:401 (one lecture), Fall 2012