

Curriculum Vitae

Erica M. Goss
Assistant Professor

Department of Plant Pathology
University of Florida
PO Box 110680
1453 Fifield Hall, Hull Road
Gainesville, FL 32611-0680
Phone: 352-273-4650
Email: emgoss@ufl.edu

Emerging Pathogens Institute
University of Florida
PO Box 100009
2055 Mowry Road
Gainesville, FL 32610
Phone: 352-294-5318

RESEARCH INTERESTS:

Evolution and molecular ecology of emerging pathogens, particularly population genetics, phylogeography, ecology, and molecular evolution of plant pathogens.

EDUCATION:

Ph.D. Ecology and Evolution, The University of Chicago, 2005
B.A. Biology, Wesleyan University, 1997

EMPLOYMENT:

Assistant Professor, University of Florida, 2011 to present.
Research Biologist (Postdoctoral), USDA ARS, Corvallis, OR, 2006 to 2010.
Graduate Fellow, Ecology and Evolution, The University of Chicago, 1999 to 2005.

AWARDS:

APS Leadership Institute Fellow, 2014
Schroth Faces of the Future Award, American Phytopathological Society, 2013
Oomycete Molecular Genetics Network Travel Fellowship, 2007
Oomycete Molecular Genetics Network Traineeship, 2006
Graduate Assistance in Areas of National Need (GAANN) Fellowship in Ecology, 2000 to 2005
Hutchinson Botany Fellowship, University of Chicago, 2000
Phi Beta Kappa Honor Society, Wesleyan University, 1997

SERVICE:

Chair of Genetics Committee, American Phytopathological Society, 2010-2011. Vice-chair, 2009-2010.
Organizer of two hands-on workshops on population genetics and phylogenetics and two special sessions for American Phytopathological Society annual meetings. Co-organizer of workshop on population genetics at the 2014 International Congress of Plant Pathology.
Panel member for University of Florida Office of Postdoctoral Affairs workshop on academic hiring, (Feb 2013), University of Chicago Teaching in Large Public Universities Conference (April 2013), Multicultural Association for Pre-Health Students Research Forum (October 2015).
Referee for *Applied and Environmental Microbiology*, *Ecology*, *European Journal of Plant Pathology*, *Fungal Diversity*, *Fungal Ecology*, *Journal of Molecular Evolution*, *Molecular Ecology*, *MPMI*,

Molecular Plant Pathology, Mycologia, New Phytologist, Phytopathology, Plant Pathology, and PLoS ONE.

Ad hoc reviewer for NSF, BARD, and South Africa's NRF. NSF preliminary proposal review panels 2013, 2014.

UF IFAS Faculty Assembly representative, 2013-2016; IFAS Infrastructure and Resource Committee 2015-present.

REFEREED JOURNAL PUBLICATIONS:

Fayette, J, Raid, R, Roberts, PD, Jones, JB, Pernezny, K, Bull, CT, & Goss, EM (2016) Multilocus sequence typing of strains of bacterial spot of lettuce collected in the United States. *Phytopathology*, 106(11): 1262-1269.

Shin K, Ascunce MS, Narouei-Khandan HA, Sun X, Jones D, Kolawole OO, Goss EM, van Bruggen AH (2016) Effects and side effects of penicillin injection in huanglongbing affected grapefruit trees. *Crop Protection*, 90: 106-116.

Timilsina S, Abrahamian P, Potnis N, Minsavage GV, White FF, Staskawicz BJ, Jones JB, Vallad GE, **Goss EM** (2016) Analysis of sequenced genomes of *Xanthomonas perforans* identifies candidate targets for resistance breeding in tomato. *Phytopathology*, 106(10): 1097-1104.

Wang J, JW Presser, and **EM Goss** (2016) Nuclear DNA content of the hybrid plant pathogen *Phytophthora andina* determined by flow cytometry. *Mycologia* 108, 899-904.

Newberry EA, TM Jardini, I Rubio, PD Roberts, B Babu, ST Koike, H Bouzar, **EM Goss**, JB Jones, CT Bull, ML Paret (2016) Angular leaf spot of cucurbits is associated with genetically diverse *Pseudomonas syringae* strains. *Plant Disease* 100, 1397-1404.

Ali SS, I Amoako-Attah, RA Bailey, MD Strem, M Schmidt, AY Akrofi, S Surujdeo-Maharaj, OO Kolawole, BAD Begoude, GM ten Hoopen, **E Goss**, W Phillips-Mora, LW Meinhardt, BA Bailey (2016). PCR-based identification of cacao black pod causal agents and identification of biological factors possibly contributing to *Phytophthora megakarya's* field dominance in West Africa. *Plant Pathology*, in press. doi:10.1111/ppa.12496.

Patel JS, A Vitoreli, AJ Palmateer, A El-Sayed, D Norman, **E Goss**, MS Brennan and GS Ali (2016) Characterization of *Phytophthora* spp. isolated from ornamental plants in Florida. *Plant Disease*, in press. doi: 10.1094/PDIS-05-15-0598-RE.

Stricker KB, PF Harmon, **EM Goss**, K Clay, SL Flory (2016) Emergence and accumulation of novel pathogens suppress an invasive species. *Ecology Letters* 19, 469-477.

Ascunce MS, JC Hugueta-Tapia, EL Braun, A Ortiz-Urquiza, NO Keyhani, and **EM Goss** (2016) Whole genome sequence of the emerging oomycete pathogen *Pythium insidiosum* strain CDC-B5653 isolated from an infected human in the USA. *Genomics Data* 7, 60-61.

Presser JW and **EM Goss** (2015) Environmental sampling reveals that *Pythium insidiosum* is ubiquitous and genetically diverse in North Central Florida. *Medical Mycology* 53(7): 674-683.

Goss EM (2015) Genome-enabled analysis of plant-pathogen migration. *Annual Review of Phytopathology* 53: 121-135.

Schwartz AR, N Potnis, S Timilsina, M Wilson, J Patane, J Martins, GV Minsavage, D Dahlbeck, A Akhunova, N Almeida, GE Vallad, JD Barak, FF White, SA Miller, D Ritchie, **E Goss**, RS Bart, JC

Setubal, JB Jones and BJ Staskawicz (2015) Phylogenomics of *Xanthomonas* field strains infecting pepper and tomato reveals diversity in effector repertoires and identifies determinants of host specificity. *Frontiers in Microbiology* 6: 535.

Timilsina S, MO Jibrin, N Potnis, GV Minsavage, M Kebede, A Schwartz, R Bart, B Staskawicz, C Boyer, GE Vallad, O Pruvost, JB Jones, **EM Goss** (2015) Multilocus sequence analysis of xanthomonads causing bacterial spot of tomato and pepper reveals strains generated by recombination among species and recent global spread of *Xanthomonas gardneri*, *Applied and Environmental Microbiology* 81(4): 1520-1529.

Zhang Y, N Jalan, X Zhou, **E Goss**, JB Jones, JC Setubal, X Deng, N Wang (2015) Positive selection is the main driving force for evolution of citrus canker-causing *Xanthomonas*, *The ISME Journal* 9: 2128-2138.

Kebede M, S Timilsina, JB Jones, A Ayalew, N Potnis, GV Minsavage, **EM Goss**, B Admassu, JC Hong, GE Vallad, A Strayer, M Paret, JB Jones, G Vallad (2015) Molecular characterization of *Xanthomonas* strains responsible for bacterial leaf spot of tomato in Ethiopia. *European Journal of Plant Pathology* 140(4): 677-688.

Shakya SK, **EM Goss**, NS Dufault, AHC van Bruggen (2015) Potential effects of diurnal temperature oscillations on potato late blight under climate change. *Phytopathology* 105(2): 230-238.

Sharma K, **EM Goss**, ER Dickstein, ME Smith, F Southwick, AHC van Bruggen (2014) *Exserohilum rostratum*: characterization of a cross-kingdom pathogen. *PLoS ONE* 9(10): e108691.

Sharma K, **EM Goss**, AHC van Bruggen (2014) Isolation and identification of *Colletotrichum cordylinicola* causing anthracnose on Cordyline (*Cordyline fruticosa*) in Florida, USA, *HortScience* 49(7): 911-916.

Goss EM, JF Tabima, DEL Cooke, S Restrepo, WE Fry, GA Forbes, VJ Fieland, M Cardenas, and NJ Grünwald (2014) The Irish potato famine pathogen *Phytophthora infestans* originated in central Mexico rather than the Andes. *Proceedings of the National Academy of Sciences USA* 111(24): 8791-8796.

Sharma K, JL Merritt, A Palmateer, **EM Goss**, M Smith, T Schubert, RS Johnson, and AHC van Bruggen (2014) Isolation, characterization and management of *Colletotrichum dracaenophilum* causing anthracnose on lucky bamboo (*Dracaena sanderiana*), *HortScience* 49(4): 453-459.

Zavala MM, HL Er, **EM Goss**, NY Wang, M Dewdney, AHC van Bruggen (2014) Genetic variation among *Phyllosticta* strains isolated from citrus in Florida that are pathogenic or nonpathogenic to citrus, *Tropical Plant Pathology* 39(2): 119-128.

Er HL, K Hendricks, **EM Goss**, M Smith, TS Schubert, PD Roberts and AHC van Bruggen (2014) Isolation and biological characterization of *Guignardia* species from citrus in Florida, *Journal of Plant Pathology* 96(1): 43-55.

Goss EM, CM Press, NJ Grünwald (2013) Evolution of RXLR-class effectors in the oomycete plant pathogen *Phytophthora ramorum*, *PLoS ONE* 8(11): e79347.

Goss EM, N Potnis, JB Jones (2013) Grudgingly sharing their secrets: new insight into the evolution of plant pathogenic bacteria, *New Phytologist* 199: 630-632.

Cooke DEL, LM Cano, S Raffaele, RA Bain, LR Cooke, G Etherington, KL Deahl, RA Farrer, EM Gilroy, **EM Goss**, NJ Grünwald, I Hein, D MacLean, JW McNicol, E Randall, RF Oliva, MA Pel, DS

- Shaw, JN Squires, MC Taylor, VGAA Vleeshouwers, PRJ Birch, AK Lees, S Kamoun (2012) Genome analyses of an aggressive and invasive lineage of the Irish potato famine pathogen, *PLoS Pathogens* 8(10): e1002940.
- Grünwald NJ, M Garbelotto, **EM Goss**, K Heungens, and S Prospero (2012) Emergence of the sudden oak death pathogen *Phytophthora ramorum*, *Trends in Microbiology* 20 (3): 131-138.
- Grünwald NJ, S Werres, **EM Goss**, CR Taylor, and VJ Fieland (2012) *Phytophthora obscura* sp. nov., a new species of the novel *Phytophthora* subclade 8d. *Plant Pathology* 61: 610–622.
- Vercauteren A, M Larsen, **E Goss**, NJ Grünwald, M Maes, and K Heungens (2011) Identification of new polymorphic microsatellite markers in the NA1 and NA2 lineages of *Phytophthora ramorum*, *Mycologia* 103: 1245-1249.
- Grünwald NJ and **EM Goss** (2011) Evolution and population genetics of exotic and reemerging pathogens: Novel tools and approaches. *Annual Review of Phytopathology* 49: 249–67.
- Goss EM**, ME Cardenas, K Myers, GA Forbes, WE Fry, S Restrepo and NJ Grünwald (2011) The plant pathogen *Phytophthora andina* emerged via hybridization of an unknown *Phytophthora* species and the Irish Potato Famine pathogen, *P. infestans*. *PLoS ONE* 6(9): e24543.
- Goss, EM**, MM Larsen, A Vercauteren, S Werres, K Heungens, and NJ Grünwald (2011) *Phytophthora ramorum* in Canada: Evidence for migration within North America and from Europe. *Phytopathology* 101:166-171.
- Goss, EM**, MM Larsen, GA Chastagner, DR Givens, and NJ Grünwald (2009) Population genetic analysis infers migration pathways of *Phytophthora ramorum* in US nurseries. *PLoS Pathogens* 5: e1000583.
- Grünwald NJ, **EM Goss**, *et al.* (2009) Standardizing the nomenclature for clonal lineages of the sudden oak death pathogen, *Phytophthora ramorum*, *Phytopathology* 99:792-795.
- Goss, EM**, I Carbone, NJ Grünwald (2009) Ancient isolation and independent evolution of the three clonal lineages of the exotic sudden oak death pathogen *Phytophthora ramorum*, *Molecular Ecology* 18: 1161-1174.
- Grünwald, NJ, **EM Goss**, and CM Press (2008) *Phytophthora ramorum*: a pathogen with a remarkably wide host-range causing sudden oak death on oaks and ramorum blight on woody ornamentals, *Molecular Plant Pathology* 9: 729-740.
- Grünwald NJ, M Kitner, V McDonald, and **EM Goss** (2008) Susceptibility in *Viburnum* to *Phytophthora ramorum*, *Plant Disease* 92: 210-214.
- Goss, EM** and J Bergelson (2007) Fitness consequences of infection of *Arabidopsis thaliana* with its natural bacterial pathogen *Pseudomonas viridiflava*, *Oecologia* 152: 71-81.
- Goss, EM** and J Bergelson (2006) Variation in resistance and virulence in the interaction between *Arabidopsis thaliana* and a bacterial pathogen, *Evolution* 60:1562–1573.
- Araki, H, D Tian, **EM Goss**, K Jakob, S. S. Hallsdorsdottir, M Kreitman and J Bergelson (2006) Balancing selection on two pathogenicity islands in a pathogen of *Arabidopsis*, *Proc. Natl. Acad. Sci.* 103:5887-5892.

Goss, EM, M Kreitman, and J Bergelson (2005) Genetic diversity, recombination, and cryptic clades in *Pseudomonas viridiflava* infecting natural populations of *Arabidopsis thaliana*, *Genetics* 169:21-35.

Jakob, K, **EM Goss**, H Araki, T Van, M Kreitman, and J Bergelson (2002) *Pseudomonas viridiflava* and *P. syringae* – Natural Pathogens of *Arabidopsis thaliana*, *Molecular Plant-Microbe Interactions* 15:1195-1203.

Menges, ES, PJ McIntyre, MS Finer, **EM Goss** and R Yahr (1999) Microhabitat of the narrow Florida scrub endemic, *Dicerandra christmanii*, with comparisons to its congener *D. frutescens*, *Journal of the Torrey Botanical Society* 126:24-31.

REFEREED BOOK CHAPTERS AND NOTES:

Grünwald NJ and **EM Goss**, Analysis of Population Genetic Data, In: *Exercises in Plant Disease Epidemiology*, 2nd edition, eds. K. Stevenson and M. Jeger, APS Press.

Grünwald NJ and **EM Goss** (2009) Evolution and Genetics of the Invasive Sudden Oak Death Pathogen *Phytophthora ramorum*. In: Oomycete Genetics and Genomics: Biology, Interactions with Plants and Animals, and Toolbox, eds. K Lamour and S Kamoun, Wiley.

Grünwald, NJ, **EM Goss**, MM Larsen, CM Press, VT McDonald, CL Blomquist, and SL Thomas (2008) First report of the European lineage of *Phytophthora ramorum* on *Viburnum* and *Osmanthus* spp. in a California nursery, *Plant Disease* 92: 314.

Garay-Serrano, E, SP Fernandez-Pavia, G Rodriguez-Alvarado, WG Flier, H Lozoya-Saldana, RI Rojas-Martinez, **EM Goss**, and NJ Grünwald (2007) First report of haplotype I-b of *Phytophthora infestans* in central Mexico, *Plant Disease* 91: 909.

TEACHING:

Instructor, College of Agriculture and Life Sciences Honors Orientation, University of Florida, Fall and Spring semesters, 2012-present

Instructor, Applied Population Genetics of Microbes, University of Florida, Spring 2012, 2014

Instructor, Colloquium in Plant Pathology: Oral Presentations, University of Florida, Spring 2015

Instructor, Plant Pathology Department Seminar, University of Florida, Fall 2011, 2015

Guest lecturer, Colloquium on Plant Pests of Regulatory Significance, G. Leibee, U. Florida, Spring 2012

Guest lecturer, Plant Pathology, C. Mundt, Oregon State University

Teaching Assistant, Environmental Ecology, M. Leibold, University of Chicago

Teaching Assistant, Theoretical Ecology, P. Amarasekare, University of Chicago

Teaching Apprentice, Intro. Biology II: Genetics and Development, Wesleyan University

GRANTS:

USDA Specialty Crop Research Initiative, co-PD, \$3,404,674, 2015-2020

FL Specialty Crop Block Grant, co-PI, \$135,000, 2016-2017

APS Foundation JANE Award, PI, \$3000, 2015

FL Department of Agriculture and Consumer Services, co-PI, \$90,000, 2014-2015

Gloeckner Foundation, PI, \$10,000, 2014-2015

Borlaug LEAP Fellowship, PI, \$20,000, 2013-2014

UF IFAS Early Career Seed Funding Award, PI, \$53,834, 2013-2014

UF Research Opportunity Award, Office of Research, PI, \$88,161, 2012-2014

NSF Doctoral Dissertation Improvement Grant, student awardee, \$11,715 2003-2005

INVITED SEMINARS:

Department of Plant Pathology, The University of Ohio, June 2016
Department of Plant Pathology, University of Georgia Tifton, November 2015
Animal Molecular and Cell Biology program, University of Florida, September 2014.
Florida veterinary pathology group, College of Veterinary Medicine, University of Florida, September 2012.
Department of Plant Pathology, University of Georgia, September 2011
Department of Plant Pathology, University of Florida, May 2010
Department of Biology, University of Florida, February 2010
Department of Integrative Biology, University of South Florida, February 2010
Department of Botany and Plant Pathology, Oregon State University, February 2007

INVITED SYMPOSIA TALKS:

Plant and Animal Genome XXIV Conference, “Genome-enabled analysis of pathogen migration and evolution,” San Diego, CA, January 2016.
X Congreso Internacional Interdisciplinario de Investigación Científica, Ministerio de Educación Superior Ciencia y Tecnología, “The power of population genetic tools to study plant pathogen evolution and migration,” Santo Domingo, Dominican Republic, June 2014.
Smithsonian Botanical Symposium, National Museum of Natural History and the U.S. Botanic Garden, “Untangling the origin and global movement of notorious *Phytophthora* plant pathogens,” Washington, DC, April 2014.
10th International Congress of Plant Pathology, “Multilocus support for a Central Mexico center of origin for *Phytophthora infestans*,” Beijing, China, August 2013
5th International Phytophthora, Pythium, and Related Genera Workshop, “Molecular epidemiology of *Phytophthora*,” Beijing, China, August 2013
American Phytopathological Society 2013 Annual Meeting, “Migration and evolution of *Phytophthora* plant pathogens in the age of globalization,” Austin, TX, August 2013
American Phytopathological Society 2012 Annual Meeting, “Emergence of *Phytophthora* pathogens by hybridization,” Providence, RI, August 2012
Florida Genetics 2011 Symposium, “Plant-pathogen coevolution gone awry: pathogen emergence in the age of globalization,” University of Florida, November 2011
American Phytopathological Society 2010 Annual Meeting, “Inference of *Phytophthora ramorum* migration pathways,” Charlotte, NC, August 2010

SCIENTIFIC ORGANIZATION AFFILIATIONS:

American Phytopathological Society
Society for the Study of Evolution
Ecological Society of America
Florida Phytopathological Society
International Society for Molecular Plant-Microbe Interactions
Mycological Society of America

GRADUATE STUDENTS (current):

Jeannie Klein, PhD Plant Pathology, Committee chair
Fernanda Iruegas, PhD Plant Pathology, Committee chair
Maria Ratti, PhD Plant Pathology, Committee chair
Norma Flor, PhD Agronomy, Committee member
Anne Vitoreli, PhD Plant Pathology, Committee member
Sujan Timilsina, PhD Plant Pathology, Committee member
Massimiliano Tagliamonte, PhD Veterinary Medical Sci., Committee member
Mason Newark, PhD Plant Pathology, Committee member
Eric Newberry, PhD Plant Pathology, Committee member
Peter Abrahamian, PhD Plant Pathology, Committee member

Chris Ference, PhD Plant Pathology, Committee member

GRADUATE STUDENTS ADVISED:

Jianan Wang, PhD Plant Pathology, Committee chair

Jackson Presser, MS Interdisciplinary Ecology, Committee chair

Shankar Shakya, MS Plant Pathology, Committee co-chair

Carla Burkle, DPM Plant Medicine Program, Committee co-chair

Joubert Fayette, PhD Plant Pathology, Committee member

VISITING STUDENTS

Fernando Espinoza, CIBE ESPOL, Guayaquil, Ecuador, 2015

Mirian Villavicencio, CIBE ESPOL, Guayaquil, Ecuador, 2015

Oluwaseun Kolawole, University of Ibadan, Nigeria, 2014

Romana Anjum, University of Agriculture Faisalabad, Pakistan, 2014

UNDERGRADUATE STUDENTS MENTORED:

Leticia Fridman (Spring & Summer 2011)

Jordan McLendon (Summer 2011– Spring 2012)

Jackson Presser (Spring 2011–Summer 2015 with MS degree)

Samantha Leung (Fall 2012–Summer 2012)

Chandler Burns (Spring 2015-Fall 2015)

Tatyana Zamkovaya (Summer 2015-Spring 2016)

Jonelle Joseph (Fall 2015-present)

Parker Novak (Summer 2016-present)

HIGH SCHOOL STUDENTS MENTORED:

Daysi Gomez, Summer 2013

Ramona Parkash, Summer 2015

Jay Shah, Summer 2016