

# AMANDA L. GRUSZ

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## EDUCATION

- 2014      **Ph.D. Biology**  
Duke University
- 2006      **B.S. Biology**  
University of North Carolina Wilmington

## PROFESSIONAL APPOINTMENTS

- 2018–      **Research Associate (US)**  
Department of Botany, Smithsonian Institution, Washington, DC
- 2016–      **Assistant Professor**  
Department of Biology, Swenson College of Science and Engineering, University of Minnesota Duluth, Duluth, MN
- 2016–      **Director, Olga Lakela Herbarium (DUL)**  
Department of Biology, Swenson College of Science and Engineering, University of Minnesota Duluth, Duluth, MN
- 2007      **Research Associate**  
Reconciling patterns of phylogenetic rate heterogeneity in ferns with morphology, ecology, and life history, K. M. Pryer lab, Duke University, Durham, NC
- 2006      **Undergraduate Researcher**  
Reconciling patterns of phylogenetic rate heterogeneity in ferns with morphology, ecology, and life history, K. M. Pryer lab, Duke University, Durham, NC

## RESEARCH FELLOWSHIPS

- 2014–2016 **Postdoctoral Fellow**  
Identifying the evolutionary drivers and consequences of an extreme makeover in ferns, E. Schuettpelz (supervisor), Department of Botany, Smithsonian Institution, Washington, DC
- 2012      **Graduate Fellow**  
R. J. Tysor Graduate Research Fellowship, Duke University, Durham, NC
- 2011      **Graduate Fellow**  
Department of Biology Research Fellowship, Duke University, Durham, NC
- 2007      **Graduate Fellow**  
Graduate School 1<sup>st</sup> Year Fellowship, Duke University, Durham, NC
- 2006      **Undergraduate Research Fellow**

CSURF Fellowship, Phylogenetic assessment of Pacific Costa Rican *Gelidium* (Gelidiales, Rhodophyta) using molecular and morphological analyses, D. W. Freshwater lab, Center for Marine Science, UNC Wilmington, Wilmington, NC

2005 **Undergraduate Research Fellow**

National Science Foundation, Research Experience for Undergraduates (REU), Bioinformatic and Phylogenetic Approaches to the Study of Plant and Fungal Biodiversity, K. M. Pryer lab, Duke University, Durham, NC

## TEACHING EXPERIENCE

2017– **Instructor**

Department of Biology, University of Minnesota Duluth  
*Plant Taxonomy, Plant Diversity*

2014– **Instructor**

Organization for Tropical Studies  
*Tropical Plant Systematics*: June–July 2014, 2016, 2018  
Responsibilities include course design, lecture and field teaching, and logistics

2008–2014 **Teaching Assistant**

Department of Biology, Duke University  
*Organismal Diversity*  
*Genetics and Evolution* (Lab Instructor)  
*Molecular Biology* (Lab Instructor)  
*Evolutionary Genetics*  
*Plant Systematics and Evolution* (Lab Instructor)  
*Animal Physiology* (Lab Instructor)  
*Genetics and Molecular Biology* (Lab Instructor)

2011 **Guest Lecturer**

Department of Biology, Duke University  
*Evolutionary Genetics* (with T. Mitchell–Olds)  
Topic: Speciation and Phylogenetics

2010 **Teaching Assistant**

Organization for Tropical Studies  
*Tropical Plant Systematics*: June–July 2010  
Responsibilities included organization of field equipment, general assistance with student research projects, and miscellaneous organizational tasks

## REFEREED PUBLICATIONS

(student authors underlined, undergraduate authors \*)

17. Robison, T., **Grusz, A. L.**, Wolf, P.G., Mower, J.P., Fauskee, B.\*, Sosa, K., E. Schuettpelz. (Submitted, 2018). Mobile elements shape plastome evolution in ferns. *Molecular Biology and Evolution*.
16. **Grusz, A. L.**, E. M. Sigel, C. Witherup. 2017. Homoeologous chromosome pairing across the eukaryote phylogeny. *Molecular Phylogenetics and Evolution* doi: 10.1016/j.ympev.2017.05.025.

15. PPG I. 2016. A community-derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution* doi: 10.1111/jse.12229. \*Awarded JSE Outstanding Paper 2016
14. **Grusz, A. L.** 2016. A current perspective on apomixis in ferns. *Journal of Systematics and Evolution* doi: 10.1111/jse.12228. \*Awarded JSE Outstanding Paper by Young Investigator 2016
13. **Grusz, A. L.**, C. J. Rothfels, and E. Schuettpelz. 2016. Transcriptome sequencing reveals genome-wide variation in molecular evolutionary rate among ferns. *BMC Genomics* 17: 692.
12. **Grusz, A. L.** and K. M. Pryer. 2015. Development of microsatellite markers for the apomictic triploid fern, *Myriopteris lindheimeri* (Pteridaceae). *Applications in Plant Sciences* 3: 1500061.
11. **Grusz, A. L.**, M. D. Windham, G. Yatskievych, L. Huiet, G. J. Gastony, and K. M. Pryer. 2014. Patterns of diversification in the xeric-adapted fern genus *Myriopteris* (Pteridaceae). *Systematic Botany* 39: 698–794.
10. **Grusz, A. L.** and D. W. Freshwater. 2014. Studies of Costa Rican Gelidiales (Florideophyceae): II. Two Pacific taxa including *Gelidium microglossum* sp. nov. *Pacific Science* 68: 97–110.
9. **Grusz, A. L.** and M. D. Windham. 2013. Toward a monophyletic *Cheilanthes*: the resurrection and recircumscription of *Myriopteris* (Pteridaceae). *PhytoKeys* 32: 49–64.
8. **Grusz, A. L.** 2013. *Myriopteris windhamii* sp. nov., a new name for *Cheilanthes villosa* (Pteridaceae). *American Fern Journal* 103: 112–117.
7. **Lagomarsino, L. P., A. L. Grusz,** and R. C. Moran. 2012. Primary hemiepiphytism and gametophyte morphology in *Elaphoglossum amygdalifolium* (Dryopteridaceae). *Brittonia* 64: 226–235.
6. Wolf, P. G., J. P. Der, A. M. Duffy, J. B. Davidson, **A. L. Grusz,** and K. M. Pryer. 2011. The evolution of chloroplast genes and genomes in ferns. *Plant Molecular Biology* 76: 251–261.
5. Pryer, K. M., E. Schuettpelz, L. Huiet, **A. L. Grusz,** C. J. Rothfels, T. Avent, D. Schwartz, and M. D. Windham. 2010. DNA barcoding exposes case of mistaken identity in the fern horticultural trade. *Molecular Ecology Resources* 10: 979–985.
4. **Grusz, A.L.,** M. D. Windham, and K. M. Pryer. 2009. Deciphering the origins of apomictic polyploids in the *Cheilanthes yavapensis* complex (Pteridaceae). *American Journal of Botany* 96: 1636–1645.
3. Windham, M. D., L. Huiet, E. Schuettpelz, **A. L. Grusz,** C. J. Rothfels, J. B. Beck, G. Yatskievych, and K. M. Pryer. 2009. Using plastid and nuclear DNA sequences to redraw generic boundaries and demystify species complexes in cheilanthoid ferns. *American Fern Journal* 99: 128–132.
2. Schuettpelz, E., **A. L. Grusz,** M. D. Windham, and K. M. Pryer. 2008. The utility of nuclear *gapCp* in resolving polyploid fern origins. *Systematic Botany* 33: 621–629.
1. Rothfels, C. J., M. D. Windham, **A. L. Grusz,** G. J. Gastony, and K. M. Pryer. 2008. Toward a monophyletic *Notholaena* (Pteridaceae): resolving patterns of evolutionary convergence in xeric-adapted ferns. *Taxon* 57: 712–724.

## **INTERNATIONAL (AND PROLONGED DOMESTIC) FIELD EXPERIENCE**

### **United States**

Extended (>14 days) field expeditions to the desert southwestern USA (including AZ, CA, NM, NV, and UT): 2005, 2008 (organized permits), 2010 (organized all aspects of expedition), 2013 (organized travel)

**Costa Rica**

Organization for Tropical Studies field course in Tropical Plant Systematics (>2 months): 2010 (teaching assistant), 2014– (coordinator; organized all aspects of course alongside M. Bonifacino)  
Organized all aspects of expedition to collect ferns and lycophytes across all distinct habitat: 2008

**Peru**

Participated in field trek and collected ferns in the northern Andes of Peru (14 days): 2012

**Scotland**

Participated in foray led by botanists from the Royal Botanic Garden Edinburgh (2 days): 2011

**Malaysia**

Participated in National Geographic Society-funded field expedition to collect fern specimens for morphological, cytological, and molecular study throughout peninsular Malaysia (22 days): 2008

**Austria**

Participated in a short excursion to observe ferns in the Alps (4 days): 2005

**Belize**

Participated in field expedition to collect palms in southern Belize (10 days): 2005

**Mexico**

Participated in field expedition to collect ferns in the state of Puebla (14 days): 2015

**Canada**

Organized and led field expedition to collect ferns in the Province of Ontario, Sleeping Giant Provincial Park (5 days): 2017

**RESEARCH GRANTS AND AWARDS**

2018–2020	Smithsonian Institution, NMNH Research Grant Program for Science (Core Program). (\$139,880)
2017	University of Minnesota Grant-in-Aid (\$31,787)
2010–2013	National Science Foundation Doctoral Dissertation Improvement Grant (\$14,956)
2010	American Society of Plant Taxonomists S. & A. Graham Graduate Research Grant (\$1000)
2009	Sigma Xi Grant in Aid of Research (\$500)
2009	Duke University Department of Biology Grant-in-Aid (\$1000)
2009	Botanical Society of America Women in Science Award (\$500)
2009	American Fern Society Pteridological Student Travel Award (\$500)
2008	Organization for Tropical Studies: Plant Systematics Research Award (\$963)
2008	Society of Systematic Biologists Graduate Student Research Award (\$2000)
2006	Deep Time Student Travel Award (\$700)
2006	University of North Carolina Wilmington, CSURF Student Travel Award (\$500)
2004–2006	University of North Carolina Wilmington, Chancellor's Achievement Award

## RESEARCH PRESENTATIONS

(presenting author underlined)

### **Invited**

- Sigel, E. M., A. L. Grusz, J. Pinson, P. Fehrenbach, E. Schuettpelz. 2017. A Phylogenetic Approach to Assessing the Evolution of Genomic Repetitive Elements Across the Fern Family Pteridaceae. International Botanical Congress XIX, Shenzhen, China.
- Grusz, A. L. 2017. Recombinant asexuality: a novel source of genotypic diversity in ferns. Missouri Botanical Garden, St. Louis, MO, USA.
- Grusz, A. L., J. Pinson, M. D. Windham. 2015. Exploring genotypic diversity in widespread apomictic species: A case study in the xeric-adapted fern, *Myriopteris lindheimeri* (Pteridaceae). International Pteridological Symposium, Smithsonian Institution, Washington, DC, USA.
- Grusz, A. L., M. D. Windham, and K. M. Pryer. 2012. Secret sex in the desert: Exploring evolution in New World cheilanthoid ferns. Royal Botanic Gardens Edinburgh, Edinburgh, UK
- Grusz, A. L. 2011. How to give a professional scientific talk. Research Scholars Program, Duke University, Durham, NC, USA.
- Grusz, A. L., M. D. Windham, and K. M. Pryer. 2010. Examining the role of apomixis in the evolution of desert-adapted ferns. Apomixis colloquium: Botanical Society of America annual meeting, Providence, RI, USA.
- Grusz, A. L., M. D. Windham, K. M. Pryer. 2010. Origins of genetic variation in apomictic desert ferns. Duke University, Department of Biology, Population Biology Seminar, Durham, NC, USA.
- Grusz, A. L. 2009. Secret Sex in the Desert: Polyploidy, hybridization, and recombination in myriopterid ferns. Duke University, Systematics Seminar, Durham, NC, USA.

### **Contributed**

- Grusz, A. L. 2017. Deep time to species complexes: The evolution of genomic diversity in a eukaryotic non-model lineage. University of Minnesota Duluth, Duluth, MN, USA.
- Grusz, A. L., E. M. Sigel, P. Fehrenbach, J. B. Pinson, and E. Schuettpelz. 2017. From deep phylogeny to species complexes: Life history and the evolution of genomic repetitive elements in ferns. Mobile Elements, Marine Biological Laboratory, Woods Hole, MA, USA.
- Grusz, A. L. 2017. Genome evolution in the fern family Pteridaceae. Repeat Explorer Workshop, Ceske Budejovice, Czech Republic.
- Grusz, A. L., M. D. Windham, and K. M. Pryer. 2014. Premeiotic duplication and genetic variation in apomictic ferns. Botanical Society of America annual meeting, Boise, ID, USA.
- Grusz, A. L. 2012. Using next generation sequencing to develop microsatellite markers in ferns. Botanical Society of American annual meeting, Columbus, OH, USA.
- Grusz, A. L., M. D. Windham, and K. M. Pryer. 2009. A Cheilanthes by any other name: Evolutionary complexity in the New World myriopterid clade (Pteridaceae). Botanical Society of America annual meeting, Snowbird, UT, USA.
- Grusz, A. L. and D. W. Freshwater. 2006. Morphological and molecular assessment of Pacific Costa Rican *Gelidium* (Gelidiales, Rhodophyta). 28<sup>th</sup> Annual Southeastern Phycological Colloquy, Wilmington, NC, USA.
- Grusz, A. L., M. D. Windham, J. Metzgar, and K. M. Pryer. 2006. Polyploids and Reticulate Voids: the *Cheilanthus fendleri* complex revisited. Botanical Society of America annual meeting, Chico, CA.

## **Posters**

Grusz, A. L., M. D. Windham, J. Metzgar, and K. M. Pryer. 2005. Chloroplast inheritance in *Cheilanthes yavapensis* (Pteridaceae). Poster Session: State of North Carolina Undergraduate Research Symposium (SNCURS).

Grusz, A. L., M. D. Windham, J. Metzgar, and K. M. Pryer. 2005. Chloroplast inheritance in the fern genus *Cheilanthes*. NSF-REU Presentations, Department of Biology, Duke University.

## **SYNERGYSTIC ACTIVITIES**

### **Outreach**

- 2013 Leader of the Ellerby Creek Watershed Association Fern Hike, Durham, NC
- 2011, 2013 Science Fair Judge, North Carolina School of Science and Math Regional Science Fair, NCSSM, Durham, NC
- 2012 Volunteer, State of North Carolina Undergraduate Research and Creativity Symposium (SNCURCS), Durham, NC
- 2011, 2014 Instructor/Mentor, National Collegiate Honors Council, Partner in the Parks Program, Great Smoky Mountains National Park
- 2011 Volunteer Mentor, Research Scholars Program, Duke University, Durham
- 2011 Teacher, Females Excelling More in Math, Engineering, and Science (FEMMES), Duke University, Durham, NC
- 2011 Tutor, Bio101, Department of Biology, Duke University, Durham, NC
- 2011 Teacher, Let them eat cake!, 6<sup>th</sup> Grade Students, Brogden Middle School, Durham, NC
- 2010 Keynote Speaker, Kids Inquiry Conference, 7<sup>th</sup> Grade Students, Durham School of the Arts, Durham, NC
- 2010 Teacher, Females Excelling More in Math, Engineering, and Science (FEMMES), Duke University, Durham, NC
- 2009–2010 Athletic Tutor, Duke University, Durham, NC
- 2009 ESL Tutor, E. K. Powe Elementary School, Durham, NC
- 2008 Mentor, Women and Math Mentoring Program (WAMM), Durham, NC
- 2008 Teacher, “Family Trees: You, me, and diversity”, Hearthstone School, Sperryville, VA
- 2006 Tutor, UNC–Wilmington, Wilmington, NC

### **Professional Service**

*Member, ASPT Membership Committee*  
American Society of Plant Taxonomists, 2011–present

*Chair, Women in Science Discussion Group*  
Department of Biology, Duke University: 2011 (Committee Member: 2009–2012)

*Manuscript Review*  
American Fern Journal, American Journal of Botany, Applications in Plant Sciences, Botanical Journal of the Linnean Society, Brittonia, Ecology, International Journal of Plant Sciences, Journal of Plant Research, Molecular Ecology, Molecular Phylogenetics and Evolution, Systematic Botany