

MADELAINE E. BARTLETT

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EDUCATION

PhD	Plant Biology, 2010 <i>University of California Berkeley, USA</i> Advisor: Dr. Chelsea Specht
BSc (Hons)	Genetics and Developmental Biology, 2005, with distinction <i>University of the Witwatersrand, South Africa.</i> Advisor: Dr. Tracy McLellan
BSc	Molecular and Cell Biology, 2004, with distinction <i>University of the Witwatersrand, South Africa.</i>

PROFESSIONAL EXPERIENCE

2014 – present	<i>Assistant Professor.</i> Biology Department, University of Massachusetts Amherst.
2010 –2013	<i>Postdoctoral Fellow.</i> Biology Department, Brigham Young University Advisor: Dr. Clinton Whipple
2005 – 2010	<i>Graduate Student Researcher,</i> Department of Plant and Microbial Biology, University of California Berkeley
2001 - 2005	<i>Mathematics, Chemistry, and Physics Tutor,</i> Genius 1on1 Tuition, Johannesburg, South Africa
2004	<i>High School Chemistry and Physics Teacher,</i> British International College, South Africa

AWARDS AND HONORS

Fellowships and honors since arriving at UMass:

2019	UMass Lilly teaching fellow
2018	Nominated for the UMass Distinguished Teaching Award
2018	Received the Botanical Society of America Emerging Leader Award
2016	Nominee for the Packard Fellowship competition (one of two UMass nominees)
2015	Awarded a UMass Student Centered Teaching and Learning Fellowship

Postdoc and graduate student awards:

2008 – 2010	National Research Foundation (South Africa) Scholarship for Study Abroad (One of 12 awarded countrywide in 2008.)
2007	UC Berkeley Outstanding Graduate Student Instructor Award

PUBLICATIONS

*Bartlett lab undergraduate, ** Bartlett lab graduate student or postdoc, ¹co-first authors, [§]UMass
 affiliation for **Bartlett**, Corresponding Author

Submitted manuscripts:

Man**, J, Gallagher, JP**, **Bartlett, ME** (accepted). Structural variation in the LRR-RLK gene family
 drives receptor diversification. *New Phytologist*.

Bartlett, ME and Patterson E** (accepted). Many ways to drop a fruit: the evolution of abscission zones in the grasses. *New Phytologist*. (Invited Commentary)

Peer reviewed manuscripts published since arriving at UMass:

Bartlett, ME[§] (2019). Looking back to look forward: protein–protein interactions and the evolution of development. *New Phytologist*. DOI: 10.1111/nph.16179 (Invited Tansley Insight)

Man, J** and **Bartlett, ME**[§] (2019). Efficient assembly of large multiplex CRISPR/Cas9 guide arrays for maize genome editing. *Bio-Protocol*. DOI: 10.21769/bioprotoc.3223

Rodriguez-Leal¹, D, Xu¹, C, Kwon, C-T, Soyars, C, Demesa Arevalo, E, Man, J**, Lei, L, Lemmon, ZH, Jones, DS, Van Eck, J, **Jackson, DP**, **Bartlett, ME**[§], Nimchuk, ZL, and **Lippman, ZB** (2019). Evolution of buffering in a genetic circuit controlling plant stem cell proliferation. *Nature Genetics*. 51:786–792. DOI: 10.1038/s41588-019-0389-8

Vofely, RV¹, Gallagher, JP**¹, Pisano, GD*, **Bartlett, ME**[§], **Braybrook, SA** (2018). Of puzzles and pavements: a quantitative exploration of leaf epidermal cell shape. *New Phytologist*. DOI: 10.1111/361717.

- Cover article for first New Phytologist issue of 2019.
- Featured as a Nature Plants Research Highlight (<https://bit.ly/2B7KVGF>); ASPB Plantae's 'What We're Reading' (<https://bit.ly/2DEdZrr>)

Klein, HR**, Xiao, Y, Conklin, P, Govindarajulu, R, Kelly, J, Scanlon, M, Whipple, CJ, and **Bartlett, ME**[§] (2018). Bulked-Segregant Analysis Coupled to Whole Genome Sequencing (BSA-Seq) for Rapid Gene Cloning in Maize. *G3: Genes Genomes Genetics*. DOI: 10.1101/357384

Je, BI, Xu, F, Wu, Q, Liu, L, Meeley, R, Gallagher, JP**, Corcilus, L, Payne, R, **Bartlett, ME**[§], **Jackson, D** (2018). The CLAVATA receptor FASCIATED EAR2 responds to distinct CLE peptides by signaling through two downstream effectors. *eLife*. DOI: 10.7554/eLife.35673

van Gisbergen, PAC, Wu, S-Z, Chang, M, Pattavina, KA, **Bartlett ME**[§], **Bezanilla, M** (2018). Evolution of a fusion between the exocyst and formin reveals a connection between exocytosis and actin. *Journal of Cell Biology*. DOI: 10.1083/jcb.201705084

Rodriguez-Leal, D, Lemmon, ZH, Man, J**, **Bartlett, ME**[§], **Lippman, ZB** (2017) Engineering quantitative trait variation for crop improvement by genome editing. *Cell*. DOI:10.1016/j.cell.2017.08.030

- Featured in Journal of Experimental Botany's 'Flowering Highlights' (<https://bit.ly/2zUNMRr>), ASPB Plantae's 'What We're Reading' (<https://bit.ly/2RT3inU>)

Schrager-Lavelle, A**, Klein, H**, Fisher, A, **Bartlett ME**[§] (2017). Grass Flowers: An Untapped Resource for Floral Evo-Devo. *Journal of Systematics and Evolution*. DOI: 10.1111/jse.12251

Bartlett, ME[§] (2017). Changing MADS-box transcription factor protein-protein interactions as a mechanism for generating floral morphological diversity. *Journal of Integrative and Comparative Biology*. DOI: 10.1093/icb/ix067

Yang, CJ, Kursel, LE, Studer, AJ, **Bartlett, ME**[§], Whipple, CJ, and **Doebley, JF** (2016). A gene for genetic background: fine-mapping *enhancer of teosinte branched1.2 (etb1.2)* to a YABBY class transcription factor. *Genetics* 204:1573-1585. doi: 10.1534/genetics.116.194928

Bartlett, ME[§], Thompson, B, Brabazon, H, Del Gizzi, R**, Zhang, T*, and **Whipple, CJ** (2016). Evolutionary dynamics of floral homeotic transcription factor protein-protein interactions. *Molecular Biology and Evolution* 33:1486-1501.

- Featured in Journal of Experimental Botany's 'Flowering Highlights' (<https://bit.ly/2zavw6V>)

Je, BI, Gruel, J, Eveland, AL, Lee, YK, Bommert, P, Meeley, R, **Bartlett, ME**[§], Komatsu, M, Sakai, H, Jonsson, H, and Jackson, DP (2016). Signaling from maize organ primordia via FASCIATED EAR3 regulates stem cell proliferation and yield traits. *Nature Genetics* 48:785-791
doi:10.1038/ng.3567

- Faculty of 1,000 pick

Bartlett, ME[§], Williams, SK¹, Taylor, Z, Deblasio, S, Goldshmidt, A, Hall, DH, Schmidt, RJ, Jackson, DP, and Whipple, CJ (2015). The Maize *PI/GLO* Ortholog *Zmm16/sterile tassel silky ear1* Interacts with the Zygomorphy and Sex Determination Pathways in Flower Development. *The Plant Cell* 27:3081-3098.

Bartlett ME[§], Thompson B (2014). Meristem identity and phyllotaxis in inflorescence development. *Frontiers in Plant Science* 5. (Invited Review)

Peer reviewed manuscripts published prior to arriving at UMass:

Bartlett ME, Whipple CJ (2013). Protein change in plant evolution: tracing one thread connecting molecular and phenotypic diversity. *Frontiers in Plant Science* 4.

Cron G¹, Pirone C¹, **Bartlett ME**, Kress J, and Specht CD (2012). A phylogeny of the Strelitziaceae. *Systematic Botany* 37:606-619.

Bartlett ME and Specht CD (2011) Changes in expression pattern of the *TEOSINTE BRANCHED1*-like genes in the Zingiberales provide a mechanism for evolutionary shifts in symmetry across the order. *American Journal of Botany* 98:227-243

Bartlett ME and Specht CD (2010). Evidence for the involvement of *GLOBOSA*-like gene duplications and expression divergence in the evolution of floral morphology in the Zingiberales. *New Phytologist*. 187: 521-541

Specht CD and **Bartlett ME** (2009). Flower Evolution. *Annual Review of Ecology, Evolution and Systematics* 40: 217-43

Kirchoff BK, Lagomarsino LP, Newman WH, **Bartlett ME** and Specht CD (2009). Early floral development of *Heliconia latispatha* (Heliconiaceae), a key taxon for understanding the evolution of flower development in the Zingiberales. *American Journal of Botany* 96: 580-593.

Bartlett ME, Kirchoff B and Specht CD (2008). Epi-illumination microscopy linked to *in situ* hybridization and its utility in the study of evolution and development in non-model species. *Development, Genes and Evolution* 218: 273-279

Manuscripts in preparation:

Schrager-Lavelle, A**, Abraham Juarez, MJ**, Handakumbura, P**, Babbitt, C, Bartlett, ME[§]. Evolutionary shifts in homeotic transcription factor protein-protein interactions drive transcriptomic and proteomic change. *To be submitted in the spring.*

GRANT FUNDING

Current Research Support:

National Science Foundation (IOS-1652380). *CAREER: Protein-Protein Interactions Driving the Evolution of Gene Regulation*. Total Budget: \$837,011. 5/14/2017 – 5/13/2022

National Science Foundation (IOS-1546837). *PGRP: Dissecting the genomic architecture of functional redundancy to modulate meristem homeostasis and crop yields*. PI: David Jackson; Co-PIs: Madelaine Bartlett, Zachary Lippman, Zachary Nimchuk. Total Budget: \$4,614,864. To Co-PI Bartlett: \$801,316. 9/1/2016 – 8/31/2020.

USDA Hatch (MAS00501). *Programmed cell death in grass flower development and evolution: leveraging basic research into rational crop design*. Budget allocated yearly. 3/31/2016-9/30/2020

Department of Energy Community Science Program. *Regulatory genomics of plant biomass accumulation*. PI: Samuel P. Hazen; Co-PIs: Madelaine Bartlett, Siobhan Brady, Ana Caicedo, Christer Jansson, Ludmila Tyler, Bo Zhu. Total Budget: None, the award from this national user facility will provide 10 Tb of sequencing using various NGS methods. 9/1/2018 – 8/31/2020

UMass Center for Teaching Excellence and Faculty Development. Mutual Mentoring Grant: Developing a Support Network in 21st Century Plant Evo-Devo. Total Budget: \$1,500

Previous grants and awards funding research (prior to UMass):

- 2011 **MicroMORPH** NSF Research Co-ordination Network. Cross-Disciplinary Training and Research Grant (\$1,800)
- 2008 **National Science Foundation DDIG:** *Dissertation Research: Evolution of floral symmetry in the petaloid monocot order Zingiberales*. To Co-PI Bartlett: \$12,000.
- 2008 **Heliconia Society International** Graduate Student Research Grant (\$500)

Previous grants and awards funding travel (prior to UMass):

- 2010 **Botanical Society of America** Women in Science award for travel to Botany meetings
- 2009 **Botanical Society of America** Graduate Student Research Grant (\$500)
- 2009 **MORPH** NSF Research Co-ordination Network (USA). Garden grant (\$2,500)
- 2009 **National Tropical Botanical Garden** Travel Scholarship.
- 2009, 2007 **Botanical Society of America** Vernon I Cheadle award for travel to Botany 2009, 2007

INVITED SEMINARS

- 2019 University of Vermont Marvin Seminar Series, Burlington, Vermont.
- 2019 University of Delaware, Delaware
- 2019 Wesleyan University, Connecticut
- 2018 Donald Danforth Plant Science Center, St Louis, Missouri
- 2018 Cornell University, Ithaca, New York
- 2018 University of Connecticut, Storrs, Connecticut
- 2017 University of California, Riverside, California
- 2017 Rancho Santa Ana Botanic Garden, Claremont, California
- 2017 Amherst College, Amherst, Massachusetts.
- 2016 Arnold Arboretum of Harvard University, Boston, Massachusetts.
- 2015 Iowa State University GDCB Departmental Seminar Series, Ames, Iowa.
- 2015 University of Vermont Marvin Seminar Series, Burlington, Vermont.
- 2015 UMass MCB Graduate Program Retreat, Amherst, Massachusetts.
- 2014 Syracuse University Biology Department Seminar Series, Syracuse, New York.
- 2014 UMass Stockbridge School of Agriculture, Amherst, Massachusetts.
- 2014 Harvard University Herbarium Seminar Series, Cambridge, Massachusetts.

Invited seminars prior to UMass:

- 2013 The College of William and Mary, Williamsburg, Virginia.
- 2013 Florida International University, Miami, Florida.
- 2013 East Carolina University, Greenville, North Carolina.
- 2012 Rancho Santa Ana Botanic Garden, Claremont, California.
- 2010 University of St Louis Missouri, St Louis, Missouri.
- 2010 Stellenbosch University, South Africa.
- 2010 National Tropical Botanical Garden, Kauai, Hawaii.
- 2010 Santa Rosa Community College Biology Forum, Santa Rosa, California.

INVITED TALKS AT CONFERENCES

- 2019 *Botanical Society of America Annual Meeting, Arizona, USA*
 2019 *Northeast Society for Developmental Biology Annual Meeting, Massachusetts, USA*
 2018 *Monocots VI, Natal, Brazil.*
 2018 *International Plant Molecular Biology, Montpellier, France.*
 2018 *European Evo-Devo Conference, Galway, Ireland.* Selected from abstracts.
 2017 *Cold Spring Harbor Laboratory Plant Genomes and Biotechnology, New York, USA.*
 2017 *Botanical Society of America Annual Meeting, Texas, USA.*
 2017 *Society of Integrative and Comparative Biology Annual Meeting, New Orleans, USA.*
 2016 *Botanical Society of America Annual Meeting, Georgia, USA.*
 2016 *New Phytologist Symposium on Plant Developmental Evolution, Beijing, China.*
 2016 *Northeast Society for Developmental Biology Annual Meeting, Massachusetts, USA.*
 2015 *FASEB Mechanisms in Plant Development, Vermont, USA.*
 2014 *Frontiers in Plant Research, Norwich, United Kingdom.* Selected from abstracts.
 2014 *56th Annual Maize Genetics Conference, Beijing, China.* Selected from abstracts.

Invited talks prior to UMass:

- 2013 *Dynamic Networks in Plant Biology Symposium, Sainsbury Laboratory, Cambridge, United Kingdom.*
 2013 *FASEB Mechanisms in Plant Development, Vermont, USA.* Selected from abstracts.
 2009 *Investigating the Evolution of Plant Form 2009: UC Riverside 25th Symposium in Plant Biology. Riverside, USA.* Selected from abstracts.
 2007 *MORPH workshop: Investigating the Evolution of Plant Form. Boulder, USA.* Selected from abstracts.

SPECIALIZED TRAINING

Workshops:

- Teaching for Understanding in Science: Designing learner-centered instruction, Sep 2011
- Jepson Herbarium Public Programs: Brassicaceae, May 2010; Poaceae, March 2012

Harvard University Summer School: 'Biodiversity of Tropical Plants', a field and laboratory class in tropical botany taught by Dr P. Barry Tomlinson. June 2009.

TEACHING

- 2014 – present: **Assistant Professor.** UMass Amherst
- *Developmental Biology* (BIO580). An upper-division team-based learning class for 50 students that I developed. Spring 2015, Fall 2015, 2016, 2017, 2018.
 - *Dimensions of Plant Diversity* (BIO597PD). An upper-division lab and lecture class for 20 students, developed and taught with T. Seidler. Spring 2016, 2017.
 - *Plant Biology Grad Core Course.* I developed one module (plant diversity) for incoming Plant Biology graduate students. Fall 2014, 2015, 2016, 2017, 2018.
 - *Junior Fellows in the Life Sciences* (BIO597K). I co-taught (one other instructor) this year-long class on careers and the practice of science for 15 high-achieving life science majors. 2014/15, 2015/16.
 - *Evolutionary Genomics and the Evolution of Development* (BIO791G), *Mechanisms in Plant Development* (BIO791D). Ongoing journal clubs for grad students and advanced undergrads.
 - *Biology of Social Issues* (BIO105). I developed and taught one third of this class for 400 non-majors. Spring 2014.

2008 - 2010: **Instructor.** Mathematics. San Quentin Prison University Project.

2007 - 2010: **Graduate Student Instructor.** UC Berkeley

- *Plant Molecular Genetics.* Discussion. Spring 2010
- *Principles of Plant Morphology.* Laboratory. Spring 2007, Fall 2008.
- *Plant and Animal Microtechnique.* Laboratory. Summer 2007, 2008.

2004: **Teaching Assistant.** *Basic Molecular Biosciences.* University of the Witwatersrand.

2004: **High School Teacher.** *GCSE Chemistry and Physics.* British International College, South Africa.

2001 – 2004: **Tutor.** *Mathematics, Chemistry, Physics.* Genius 1on1 Tuition, South Africa.

MENTORSHIP

Primary Advisor:

Postdoctoral, Advisor:

Joseph Gallagher (08/17 – present)

USDA NIFA Postdoctoral Fellow.

Jamie Kostyun (07/19 – present)

Maria Jazmin Abraham Juarez (02/18 – 01/19)

Currently: CONNICYT Fellow, Instituto Potosino de Investigación Científica y Tecnológica, San Luis Potosi, SLP, Mexico

Amanda Schrager-Lavelle (09/16 – 07/18)

USDA NIFA Postdoctoral Fellow.

Currently: Assistant Professor, Colorado Mesa University

Pubudu Handakumbura (09/14 – 08/15)

Currently: Scientist, PNNL, Pullman, WA

Doctoral, Major Advisor:

Harry Klein (Plant Biology) – The development and evolution of unisexual flowers in the grasses.

Jarrett Man (Plant Biology) – The evolution of the CLV-network genes

Erin Patterson (Plant Biology) – The development and evolution of awns

Masters, Major Advisor:

Thompson Zhang (Plant Biology)

Graduated, Summer 2017

Currently: Xenobiotic Laboratories

Undergraduate Research, Current:

Diego Arroyo

Jessica Brass

Adriana Chiaramida

Michelle Heeney (*CAFE summer scholar, Commonwealth Honors College Fellowship Recipient, Nutting Award Winner*)

Chloe Li

Mondonna Mojahed

Jennifer Pereira Badji

Morgan Powell (*CAFE summer scholar*)

Katie Tumang (*Commonwealth Honors College Fellowship Recipient*)

Undergraduate Research, Past:

Mackenzie Barber

Commonwealth Honors College Fellowship Recipient

Currently: Anokion Laboratories

Kenechi Chiemelu

Currently: UMass Medical School

Ryan Desrochers

Commonwealth Honors College Thesis: 'Sex determination in grasses'

Currently: Brown Medical School

Rebecca Goldberg	<i>Currently: UMass MSc program in Public Health</i>
Jeffrey Heithmar	<i>CAFE Summer Scholar, CHC Fellowship Recipient</i>
Tiffany Ma	<i>Currently: Pfizer</i>
Jessica Mazzola	
Jamie Richards	
Grace Pisano	<i>Biology Department Research Fellowship Recipient</i>
	<i>Currently: Harvard OEB Graduate Student</i>
Julianna Rushdi	<i>Currently: Massachusetts General Hospital</i>
Kevin White	<i>Currently: UMass Medical School</i>
Maya Watanabe	

*Committee Membership:***Current, Doctoral Thesis Committee:**

Alex Barr (OEB)
 Joshua Coomey (PB)
 Stavroula Fili (PB)
 Rakesh Kumar (PB)
 Kirk MacKinnon (MCB)
 Sandra Romero Gamboa (PB)
 Miriam Hernandez-Romero (PB)
 Ian McCahill (PB)

Past, Masters Thesis Committee:

Celina Abundis (PB)
 Altynay Zhanayeva (PB)

DEPARTMENTAL AND UNIVERSITY SERVICE

Biology Department:

2019 – present	Departmental Personnel Committee
2018 - present	Hiring Priorities Committee
2017/18	Cell Biology faculty search committee (member)
2014/15	Greenhouse Committee, member and interim chair
2014/15, 2015/16	Junior Fellows in the Life Sciences, program faculty leader
2014/15	Personnel Committee, member
2014/15	Biology Chair Search Committee, member

College of Natural Sciences:

2019 – present	Director of the UMass Natural History Collections
2016 – present	Plant Biology Graduate Program Seminar Co-Organizer
2015 – present	Plant Biology Graduate Program Admissions Committee, member
2014 – present	Curator of the UMass Natural History Collections Living Plant Collection. I run a student curators program geared at updating and improving the living plant collections. I also am engaged in fundraising, led the redesign of UMass Natural History Collections website, and designed a plant diversity class (Bio597PD) based on the collection.
2019 – present	Search committee for NHC admin assistant replacement
2014 – 2016	Genetics, Genomics, and Epigenetics Models to Medicine Research Cluster Steering Committee.
2014	Organizer, UMass Plant Biology Symposium.

PROFESSIONAL SERVICE

Panel Service: National Science Foundation (2015, 2017)

Ad Hoc Reviewer: National Science Foundation, National Research Foundation (South Africa), Deutschen Forschungsgemeinschaft (Germany), Israeli Science Foundation, Netherlands Organisation for Scientific Research

Member: Botanical Society of America Graduate Student Research Award Committee (2016, 2017, 2018)

Member: *Brachypodium* Meeting organizing committee (2015)

Invited Member: Maize Editorial Board, maizegdb.org (2014)

Associate Editor: Frontiers in Plant Evolution and Development (2016 - present)

Invited Research Topic Co-Ordinator: Frontiers in Plant Evolution and Development (2013)

Reviewer: African Journal of Botany, American Journal of Botany, Annals of Botany, BMC Plant Biology, The Botanical Journal of the Linnean Society, Communications Biology, Current Biology, Development, EvoDevo, FEBS letters, Frontiers in Plant Science, Genome Biology and Evolution, International Journal of Plant Sciences, Molecular Plant, Molecular Phylogenetics and Evolution, Nature Plants, Nature Scientific Reports, New Phytologist, PeerJ, The Plant Cell, Plant Cell and Physiology, Plant Physiology, PLoS ONE, PNAS, Trends in Genetics, Trends in Plant Science.

OUTREACH

- 2018 UMass Research Farm Twilight Event – lab presentation on domestication
- 2018 Hosted four high school students in the lab through Mass Life Sciences Center
- 2018 UMass Open Classrooms host
- 2017 Member of scientific panel on CRISPR/Cas9 genome editing at Baypath Women's college
- 2017 OEB Graduate Program Science Café on flowers.
- 2017 STEM Girls Science camp
- 2017 Hosted high school student in the lab.
- 2015 Organized and ran a one-day workshop on plant diversity for 15 high school girls as part of the Girls Inc. Eureka! program.
- 2015 Participated in the UMass Center for Agriculture, Food and the Environment Field Day. This event showcases ongoing research at the UMass farm for local growers.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society of Plant Biologists; Botanical Society of America; Society for Developmental Biology; Society for the Study of Evolution