

Karen Elizabeth James

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Employment

2013-present Staff scientist, MDI Biological Laboratory, Salsbury Cove, ME, USA
2011-2013 Visiting Staff Scientist, MDI Biological Laboratory, Salsbury Cove, ME, USA
2003-2010 Postdoctoral researcher, Natural History Museum, London, UK
2002 Postdoctoral researcher, Department of Genetics, University of Washington, Seattle, WA, USA

Education

June 2002 PhD, Genetics, University of Washington, Seattle, WA, USA
June 1996 BS (Honors), Biology/Zoology, Colorado State University, Fort Collins, CO, USA

Service and societies

2007-present Co-founder and Director, The HMS Beagle Project, UK, www.hmsbeagleproject.org
2009-present Fellow, Royal Geographical Society, London, UK
2007-present Fellow, Linnean Society of London, London, UK

Grants and Fellowships

2012 Pathway to BioTrails: DNA-assisted Species Identification for Citizen Science. National Science Foundation. DRL-1223210. \$249,849. Principal investigator.
2011 Visiting Staff Scientist Fellowship. MDI Biological Laboratory, USA. Recipient. 1223210
2010 Tree School: engaging schoolchildren to DNA barcode the British flora (Phase II). Cothill Educational Trust, UK. £350,000 GBP. Principal investigator.
2010 Exploring FTA technology at the Natural History Museum, London. GE Healthcare, Life Sciences (R&D), UK. £100,000 GBP. Co-investigator.
2009 Tree School: engaging schoolchildren to DNA barcode the British flora (Phase I). Cothill Educational Trust, UK. £25,400 GBP. Principal investigator.
2008 Discovering Darwin at the Natural History Museum (digitisation of NHM Darwin specimen holdings). Natural History Museum Special Fund, UK. £4,500 GBP. Co-Principal Investigator.
2008 Identifying key collections with potential for climate change research. Natural History Museum Strategic Innovation Fund, UK. £37,000 GBP. Co-investigator.
2008 Exploring FTA technology at the Natural History Museum, London, (Phase I). GE Healthcare, Life Sciences (R&D), UK. £31,000 GBP. Co-investigator.
2007 Comparative epigenomics of non-model organisms using DArT: can pan-genome CpG methylation instability explain rapid floral evolution? Biotechnology and Biological Sciences Research Council Collaborative Scheme for Systematics Research (Co-Syst), UK. £13,400 GBP Co-Principal Investigator.
2007 Discovering Darwin at the NHM. Natural History Museum Special Fund. £4,500. Co-Principal investigator.
2007 Conference Grant. The Royal Society, UK. £1,200 GBP. Recipient.
2006 Barcoding Darwin's meadow. Whatman, International, Inc., UK. £6,000 GBP. Principal investigator.
2006 Developing infrastructure for high throughput DNA sequencing in the Botany laboratories. The Natural History Museum Capital Equipment Fund, UK. £47,000 GBP. Principal investigator.
2005 Piloting Diversity Arrays Technology (DArT), a revolutionary genome comparison method, for barcoding and molecular systematics at the Natural History Museum. The Natural History Museum Research Fund, UK. £17,500 GBP. Principal investigator.
2003 Leaf evolution: evo-devo studies in the iris family (Iridaceae). The Natural History Museum Research Fund, UK. £15,000 GBP. Principal investigator.
1996 Pre-doctoral research training grant. US National Institutes of Health. Recipient.

Teaching and mentoring

- July 2014 Instructor: Colby CAPS: Molecular Biology Research Techniques. An intensive, one-week research-based course for incoming Colby College students from groups that traditionally have been underrepresented in the sciences. <http://bit.ly/1sFjl8Q>
- Jan. 2014 Instructor: Molecular Biology Research Techniques. An intensive, one-week, research-based course for University of Maine undergraduates. <http://bit.ly/ZruYVh>
- 2013-2014 Mentored three high school student interns, MDI Biological Laboratory, Salisbury Cove, ME, USA
- 2003-2010 Trained visitors, students & colleagues in lab techniques, Natural History Museum, London, UK
- 1999 Teaching assistant, GENET 371 Introductory Genetics, Univ. of Washington, Seattle, WA, USA
- 1999-2000 Teaching assistant, GENET 372, Gene Structure and Function, Univ. of Washington, Seattle, WA, USA
- 1996-2002 Training undergraduates and visitors in laboratory research, Univ. of Washington, Seattle, WA, USA

Citizen science events

- Sep. 2013 Marine BioTrails: a five-day event spread across two weekends engaging 13 adult volunteers in DNA-assisted marine restoration ecology. MDI Biological Laboratory, Salisbury Cove, ME. Project lead.
- June 2014 Kayak and Collect: a 1½-day event engaging seven adult volunteers in DNA-assisted marine restoration ecology (field-work accessed via kayak). Stave Island and MDI Biological Laboratory, Salisbury Cove, ME. Project lead.
- July 2014 Play with DNA: a ½-day event engaging ~25 adult volunteers in a DNA-assisted BioBlitz. Schoodic Education and Research Center, Winter Harbor, ME. Project lead.
- 2009-present Tree School: an ongoing program of five-day residential events that has engaged hundreds of ~11-14-year-olds to date in generating DNA barcode reference libraries for British trees on the Dorset coast. Principal investigator (2009-2010).

Peer-reviewed publications

- Johnson KG, Brooks SJ, Fenberg PB, Glover AG, James KE, Lister AM, Michel E, Spencer M, Todd JA, Valsami-Jones E, Young JR and Stewart JR (2011). Climate change and biosphere response: unlocking the collections vault. *BioScience* 61(2): 147-153. <http://bit.ly/w1JAZ8>
- AM Lister, Brooks SJ, Fenberg PB, Glover AG, James KE, Johnson KG, Michel E, Okamura B, Spencer M, Stewart JR, Todd JA, Valsami-Jones E, Young J (2011). Natural history collections as sources of long-term datasets. *Trends in Ecology & Evolution* 26(4): 153-154. <http://bit.ly/yOGVIS>
- Hoeck PEA, Beaumont MA, James KE, Grant RB, Grant PR and Keller LF (2010). Saving Darwin's muse: evolutionary genetics for the recovery of the Floreana mockingbird. *Biology Letters* 6(2): 212-215. <http://bit.ly/zHyC2f>
- Hopkins D and James KE (2010). Tree School - A new innovation for science and education. In: Nimis PL and Vignes Lebbe R, eds. *Tools for Identifying Biodiversity: Progress and Problems*. 395-400. <http://bit.ly/AF0YgP>
- Bateman RM, James KE, Luo Y-B, Lauri RK, Fulcher T, Cribb PJ and Chase MW (2009). Molecular phylogenetics and morphological reappraisal of the *Platanthera* clade (Orchidaceae: Orchidinae) prompts expansion of the generic limits of *Galearis* and *Platanthera*. *Annals of Botany* 104(3): 431-445. <http://bit.ly/xm8CFT>
- Hollingsworth PM, Forrest LL, Spouge JL, Hajibabaei M, Ratnasingham S, van der Bank M, Chase MW, Cowan RS, Erickson DL, Fazekas AJ, Graham SW, James KE, Kim K-J, Kress WJ, Schneider H, et al. and Little, DP (2009). A DNA barcode for land plants. *Proceedings of the National Academy of Sciences* 106(31): 12794-12797. <http://bit.ly/xAgB8t>
- James, KE (2009). The new *Beagle*: a flagship for science in a new age of sail. *Zoologica Scripta* 38,6(11): 667-667. <http://bit.ly/wBYp7H>
- James KE, Schneider H, Ansell SW, Evers M, Robba L, Uszynski G, Pedersen N, Newton AE, Russell SJ, Vogel JC and Kilian A (2008). Diversity arrays technology (DArT) for pan-genomic evolutionary studies of non-model organisms. *PLoS ONE* 3(2), e1682. <http://bit.ly/zknSPG>
- Bateman RM, Rudall PJ and James KE (2006). Phylogenetic context, generic affinities and evolutionary origin of the enigmatic Balkan orchid *Gymnadenia frivaldii* Hampe ex Griseb. *Taxon* 55:107-118. <http://bit.ly/wJMveh>

Dorman JB, James KE, Fraser SE, Kiehart DP and Berg CA (2004). Bullwinkle is required for epithelial morphogenesis during *Drosophila* oogenesis. *Developmental biology* 267 (2), 320-341.
<http://bit.ly/yw8eeu>

James KE and Berg CA (2003). Temporal comparison of Broad-Complex expression during eggshell-appendage patterning and morphogenesis in two *Drosophila* species with different eggshell-appendage numbers. *Gene Expression Patterns* 3(5): 629-634. <http://bit.ly/zhfqFR>

James KE, Dorman JB and Berg CA (2002). Mosaic analyses reveal the function of *Drosophila* Ras in embryonic dorsoventral patterning and dorsal follicle cell morphogenesis. *Development* 129(9): 2209-2222.
<http://bit.ly/wWxk6h>

Non-peer-reviewed publications

James, KE. In press. DNA Barcoding Darwin's Meadow: A 21st Century Botanical Inventory at Historic Down House. In: Boulter, C, Reiss, M, Sanders, D, Eds. Darwin-Inspired Learning. Sense Publishers.

James, KE. 2013. Why do zebras have stripes? In: Harris, GE, Ed. Does My Goldfish Know Who I Am?: and hundreds more Big Questions from Little People answered by experts. Faber & Faber.

James, KE. 2012. Where did the first seed come from? In: Harris, GE, Ed. Big Questions from Little People: and Simple Answers from Great Minds. Ecco.

Recent invited talks

DNA Barcoding and Citizen Science: "Bio-Trails" in Acadia National Park. October 28, 2013. Southern Maine Community College. South Portland, ME.

Adventures with Charles Darwin. July 22, 2013. Winchester Science Festival, Winchester, UK.

Power to the People: Can DNA barcoding boost the research and learning outcomes of citizen science? July 19, 2013. Natural History Museum, London, UK.

Adventures with Charles Darwin and the Beagle Project. May 1, 2013. SERC Institute. Winter Harbor, ME.

Darwin, Diversity, and DNA. March 1, 2012. Annual Women in Genome Sciences Alumni Seminar. University of Washington, Seattle, WA.

Recent talks and posters at conferences and symposia

Marion, M. and James, K. 2014. Poster: Barcoding Acadia's Plants: Building a DNA reference library for the plants of Acadia National Park. Acadia Science Symposium, October 1, 2014.

James, K., Buaas, F. 2014. Poster: Can Acadia become the first national park in the world with a comprehensive DNA-assisted species ID capability? Acadia Science Symposium, October 1, 2014.

James, K., Zoellick, W., and Miller-Rushing, A. 2014. Poster: BioTrails: DNA-assisted Species Identification for Citizen Science. NSF Advancing Informal STEM Learning (AISL) program Principal Investigator (PI) Meeting, Washington, D.C., August 20-22, 2014.

James Pappas, J., Disney, J., and James, K. 2014. Poster: Protocol development for DNA-based identification of marine invertebrates in Frenchman Bay. Acadia Science Symposium, April 16, 2014.

Zoellick, B., Webber, H., James, K., Disney, J., and Miller-Rushing, A. 2014. Poster: Public Participation in Biotrails: Learning to Support Learning. Acadia Science Symposium, April 16, 2014.

James, K and Shipman, M. 2013. Helping Scientists 'Do' Outreach. ScienceOnline2013. Attended and co-moderated session.

James, K. 2011. Fourth International Barcode of Life Conference. Education and Engagement. Session chair and presenter.

Selected blog posts

James, KE. Pseudonymity, privilege, and me. <http://bit.ly/1w7u6C9/>. Posted January 27, 2014.

James, KE. What I learned from #ripplesofdoubt. Chronicle Vitae. Chronicle of Higher Education. <http://bit.ly/1g4svGB>. Posted November 13, 2013.

James, KE. What counts as citizen science? <http://bit.ly/1eNbfSH>. Posted February 24, 2013.

James, KE. 'Biodiversity' and 'DNA barcoding' explained using only the thousand most common words. <http://bit.ly/1beCiFy> Posted January 19, 2013.

Happy Birthday, Charles Darwin! Guardian Science Blog. February 12, 2012. <http://bit.ly/wCfqoS>

Space shuttle's last voyage is not the end of human space exploration. Guardian Science Blog. July 21, 2011. <http://bit.ly/pBdzxu>

Space shuttle launch: 'I feel the percussive roar on the skin of my face'. Guardian Science Blogs. July 11, 2011 (selected for inclusion in Open Laboratory, an anthology of the best science writing online) <http://bit.ly/nuzhYb>

Evolution isn't easy, even in Galapagos. Scientific American Guest Blog. February 12, 2011. <http://bit.ly/xWvid9>

The Beagle, the astronaut and a party in Brazil put the awe back into science. Guardian Science Blogs. September 15, 2010 <http://bit.ly/cfR9cw>

On Origin's anniversary, it's time for some legacy-thinking. The Beagle Project Blog. November 24, 2009. <http://bit.ly/xfdv1v>

Gene angst: finding a DNA barcode for plants. Data Not Shown. August 3, 2009. <http://bit.ly/16zrw8>

Detecting natural selection: a pika's tale. The Beagle Project Blog. February 3, 2008. <http://bit.ly/yCAuCa> (selected for inclusion in Open Laboratory, an anthology of the best science writing online)



"This must be the best account of any launch I have ever read. It even beats the sort of language used by science fiction greats such as Clarke, Cambell, Heinlein, et al." – comment on Guardian Science Blog post recounting the experience of a space shuttle launch (Photo: Gary Hershorn/Reuters)

Selected recent public and educational outreach activities

We met at the Crossroads of Art, Science & Writing: Worked with Island Readers and Writers to implement hands-on laboratory experiences for 40+ middle-school students in May, 2014. <http://bit.ly/1beCiFy>.

Literary links to science: Visited over 100 K-2 students in five underserved, Downeast Maine elementary schools in 2012 and 2013 in collaboration with Island Readers and Writers. <http://bit.ly/1sjsAq0>.

"Why do zebras have stripes? and "Where did the first seed come from?": Contributed chapters to children's books *Big Questions from Little People*, and *Does My Goldfish Know Who I Am?* in 2013 and 2012, respectively, published by Ecco.

"Code of the wild: DNA barcoding for research and conservation". MDI Science Café. June 17, 2013. <http://bit.ly/1rtjkei>.

"How We Know Evolution is Real". MDI Science Café. February 12, 2012. <http://bit.ly/1Cjb37P>.

"Do we need DNA Barcoding for Conservation?": Selected to serve as a panelist in a televised public debate hosted by the Royal Institution of Australia in Adelaide, Australia. December, 2011.



Exposing K-2 students to science – and a scientist! – in underserved Downeast Maine schools with Island Readers and Writers. (Photo: Island Readers and Writers)

ISSwave: Co-founded a round-the-world "wave" to the humans aboard the International Space Station by their fellow humans on Earth, choreographed by a grassroots Twitter campaign in December, 2010.
www.isswave.org.

Galapagos Live: Selected to serve as scientist guide to four high school students and their teachers on a Wellcome Trust trip to the Galapagos Islands in October, 2010. <http://bit.ly/1sIsKxE>.

Darwin and the Adventure: As part of a two-day event promoting The HMS Beagle Project in Paraty, Brazil, organized and implemented a live link-up between over 60 schoolchildren and an astronaut aboard the International Space Station via ham radio in September, 2009.

"Who do you really think you are?": Wrote and presented pieces to camera for the Natural History Museum, London's award-winning interactive film about evolution starring David Attenborough.
<http://bit.ly/1DaNpwo>

"Peer review": Wrote and presented to camera a short piece about peer review for the permanent exhibition at the Natural History Museum, London. <http://bit.ly/1r6BSWG>.

"Darwin's mockingbirds knock finches off perch": Wrote and presented a piece to camera about experience extracting DNA from specimens collected by Charles Darwin in Galapagos. <http://bit.ly/ZD0G29>.

Darwin's mockingbirds: Advised on the development of a special exhibition about Darwin's mockingbird specimens as part of the Natural History Museum, London's *Darwin* exhibition. 2009.

Evolution 101: Presented a refresher course on the evidence for evolution to Natural History Museum, London's public engagement staff in advance of the Museum's 2009 *Darwin* exhibition. 2009.