

Biographical Sketch

Jeremie Benjamin Fant, Ph.D.

Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, IL 60022

Professional Preparation

PhD in Genetics, The University of Cambridge, UK, 2000; The conservation and maintenance of genetic diversity, both *in situ* and *ex situ*.

B. Ag.Sc. (Hons) in Horticultural Sciences, 1994; University of Adelaide, Australia.

Appointments

Current

Associate Professor, Molecular Ecologist Chicago Botanic Gardens, Glencoe, IL

Adjunct Assistant Professor of Biology, Northwestern University, Evanston, IL

Previous

2001-2002 Post Doctorate, Advisor; Jeff Conner Dept of Plant Biology, Kellogg Biological Station, Michigan State University. "Identifying quantitative traits loci, using AFLP and SSR, which are important in floral biology of Wild Radish (*Raphanus Raphanistrum*)."

2000-2001 Sequencing Facility, Dept of Genetics, University of Cambridge.

1999-2000 Post Doctorate, Advisor Sean Mayes, University of Cambridge, Dept of Genetics.

"Constructing of a genetic map of Oil Palm, using AFLP markers, to identify quantitative traits for oil production."

1994-1995 Scholefield Robinson Horticultural Professional Consultancy Services Pty. Ltd.

Publications

Fant, J.B., A. Banai, K.Havens and P. Vitt, (2010) Morphological and molecular evidence of hybridization between the federally threatened *Lespedeza leptostachya* Englem. and its co-occurring congener *Lespedeza capitata* Michx. Conservation Genetics (online early)

Maschinski J., E. Sirkin and **J.B. Fant** (2010) Using Genetic and Morphological Analysis to distinguish endangered taxa from their hybrids with the cultivated exotic pest plant *Lantana strigocamara* (syn: *Lantana camara*) Conservation Genetics (online early)

Fant, J.B., Holmstrom R.M., Sirkin, E. Etterson, J.R. and Masi, S. (2008) Genetic structure of threatened native populations and propagules used for restoration, in a clonal species, *Ammophila breviligulata* (American beachgrass). Restoration Ecology 16 (4) pp. 594-603.

Fant, J.B., Masi, S. Keller, J.M. and Mann R. (2007) Investigating the reproductive health of Hill's thistle's (*Cirsium hillii*) populations in the Chicago Region. Chicago Wilderness Journal: Volume 5, Number 1, March 2007

Kramer, A.T. and **J.B. Fant**. (2007) Isolation and characterization of microsatellite loci in *Penstemon rostriflorus* (Plantaginaceae) and cross species amplification. Molecular Ecology Notes 7 (6), 998–1001.

Fant, J.B., E. Kamau, and C.D. Preston (2005) Chloroplast evidence for the hybrid origin of *Potamogeton x fluitans*. Aquatic Botany 83 (2) 154-160

Fant J.B. and C.D. Preston (2004) Genetic structure and morphological variation of British populations of the hybrid *Potamogeton x salicifolius* Wulfg. Bot. J. of the Lin. Soc 144 (1): 99-112

Fant, J.B., E. Kamau and C.D. Preston (2003) Chloroplast evidence for the hybrid origin of *Potamogeton x sudermanicus* Hagstr. Aquatic Botany 75 (4): 351-356

Fant, J.B., C.D. Preston and J.A.Barrett (2001) Isozyme evidence of the hybrid origin of *Potamogeton x sudermanicus* as resulting from the cross between *P.berchtoldii* and *P.acutifolius*. Aquatic Botany 71(3): 199-208

Fant, J.B., C.D. Preston and J.A.Barrett (2001) Allozyme evidence of the parental origin and possible fertility of the hybrid *Potamogeton x fluitans*. Plant Systematics and Evolution 229 (1-2): 45-57

Submitted

Kramer, A.T., **J.B. Fant** and M. Ashley (In review) Landscape genetics in the Great Basin: influences of topography, distance and pollinators. *American Journal of Botany*.

Recent Invited Presentations

- 10th Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ (2009): "The role of reproductive ecology and conservation genetics of plant species on ecosystem restoration"
- University of Madison Botany Colloquium (2008): Local Adaptation, Gene Flow and Inbreeding in *Cirsium pitcheri* and consequences for Restorations
- Field Museum A. Watson Armour Seminar Series (2008): Genetics and Restoration of a locally Extirpated Species (*Cirsium pitcheri*): Or is Wisconsin really better than Indiana?
- Lake Forest College Biology Department Fall seminar series (2007): "Penstemon pollinators and local adaptation"
- Associated Colleges of the Chicago Area Biology Seminar series "Biogeography" (2007): "Biogeographic variation in pollinator-plant interactions, a Penstemon case study".
- ICEP Colloquium, Northwestern PBC (2007): "Floral syndromes within Penstemon species: Intraspecific variation in flower shape and pollinator community"

Grants

Current

- Co-PI with Havens, Vitt, Bowles and Bell: Integrating Long Term Demographic Data and Repeated Genetic Sampling for Viability Analysis of Natural and Restored Populations of Pitcher's Thistle (2005-2010) NSF LTREB: (\$300,000)
- Co-PI with Larkin, Skogen and Yates: Testing restoration effectiveness under a changing climate (2010) National Fish and Wildlife Foundation – Native Plant Conservation Initiative: (\$45,000)
- Co-PI with Zaya (UIC): "Investigating the role of genetic diversity and pollination biology as potential causes for reproductive failure in *Asclepias lanuginosa* Proposal to Illinois Endangered Species Protection Board (\$7,000)
- Co-PI with Larkin: Ecological genetics of *Phragmites australis* invasion in southern Lake Michigan coastal habitats (Seed) The Illinois-Indiana Sea Grant proposal (\$10,000)

Previous

- Co-PI with Vitt, Havens, Larkin and Skogen: NSF- MRI: Acquisition of Conservation Geographic Information Systems (GIS) Instrumentation (\$363,547)
- Co-PI with Andrea Kramer and Havens. *Genetic diversity in seed collections* (\$20,000). Use of genetic analyses to compare bulked common garden samples against wild collection sites, with the aim of guiding seed production practices to maximize genetic diversity. (2005 – 2007) Bureau of Land Management (\$20,000)
- Co-PI with Kramer: Development of species-specific markers for 18 threatened or endangered *Eriogonum* and *Penstemon* species (2005-2006) National Fish and Wildlife Funded grant: (\$15,000).
- Co-PI with Havens, Vitt, Wagenius and Ault: NSF MRI: Acquisition of a Seed Biology Laboratory (2006) (\$284,066)
- Co-PI with Havens and Kramer: Investigating effect of cheatgrass on pollinator communities (2006). Center for Invasive Plant Management (\$5,000)
- Map genetic diversity of *Cirsium hillii* in the Chicago region to determine the contribution of inbreeding depression to poor reproductive success (2005-2006). Chicago Wilderness grant (\$15,000)
- Potential hybridization between rare endemic and Invasive species of Lantana. (2005-2006) Fairchild Tropical Botanic Garden (\$12,000)

Pending

- Co-PI with Larkin: REU Site: Plant Biology & Conservation Research Experiences for Undergraduates - From Genes to Ecosystems (\$513,997)
- Co-PI with Vitt Optimal Monitoring of Plant Populations to Detect Responses to Environmental Disturbance and Management (\$449,262)

Synergistic Activities

- Working with Bureau of Land Management on a molecular genetic analysis and common garden studies to delineate seed transfer zones in the intermountain West (Great Basin) and Colorado Plateau. Most of the work focus on the genera used in post wildfire restoration, including *Penstemon* and *Eriogonum* species (2003 - present)
- In a long-term ecological research project we at Chicago Botanic Garden, along with scientists at the Morton Arboretum and Chicago State University are using more than 10 years genetic and demographic data to study “population persistence” by comparing long-term dynamics of natural and experimentally restored plant populations of *Cirsium pitcheri* (pitcher’s thistle) a Federally listed Endangered species (2005-present).
- Working with Scientist at the Morton Arboretum and Chicago State University to monitor fragmented populations of a once common prairie species, *Cirsium hillii*, showing evidence of inbreeding. We will be continuing to take demographic data and be incorporating a genetic study to determine potential reason for the decline of the population (2005-Present)
- Working with a number of collaborators, we are investigating the potential threat of hybridization to populations of rare species. Including *Lantana depressa* in Florida (Joyce Machinski at Fairchild Botanic Gardens and *Lespedeza leptostachya* in Minnesota.

Teaching

2010	Plant Interactions with their Biotic Environment (BIOL SCI 333/PBC 410), Undergraduate and Master Students Northwestern University
2009	Co-taught – Reproductive Biology and Genetics, Field and Lab Methods in Plant Biology and Conservation (PBC 450) , Master Students Northwestern University
2008	Molecular Ecology (PBC 425) , Master Students Northwestern University
2000-2001	Population and Plant Genetics, final year undergraduates; University of Cambridge.
2001	Population Genetics, 3 rd year student, University of Leeds.
1996-2001	Bridge classes for Quantitative Biology, 1 st year Students, University of Cambridge
1886-2001	Elementary Biology for Biologist courses, 1 st year Students, University of Cambridge
1997-2000	Bridge classes for the Organisms courses, 1 st year Students, University of Cambridge

Students advised

Graduate

Principal advisor: Benjamin Staehlin (MA 2009, NU), Mary Stupen (UIUC), Rebecca Tonietto (MA 2009, NU), Kelly Ksiazek (Current, NU)

Committee member: Alona Banai (MA 2008, NU), Becky Barak (Current, NU), Emily Booth (Current, NU), Melissa Gray (Current, NU) Andrea Kramer (PhD 2008, UIC), Tracy Misiewicz (NU), Rachel Olson (NU), Amy Price (Current, NU), David Zaya (Current PhD, UIC)

Undergraduates

Internship (Semester) :Elina Dilmukhametova (Lake Forest College), Charlie Flower (LFC), Keith Hartley (LFC), Cory Querubin (LFC), Grace Schlafly (LFC), Jesse Urhe (LFC)

REU-NSF: Sohier Dane (Northwestern University), Jillian Clark (Howard University), Laura Cronin (John Carroll University), Joslyn Mink (University of Wisconsin, Madison), Noah Sokol (University of Guelph), Elina Dilmukhametova (Lake Forest College), Sahar Haghghat (Monmouth College)

High School

Octavio Brindis (St. Martin de Porres High School), Nikita Saladi (New Trier High School)

Professional Services**Professional Affiliations**

Botanical Society of America, Ecological Society of America, America Society of Botanical Illustrators.

Manuscript reviewer

American Journal of Botany, Annals of Botany, Applied Vegetation Science, Aquatic Botany, Botanical Bulletin of Academia Sinica., Folia Geobotanica, Molecular Ecology, Preslia, Genome

Proposal Reviewer

National Science Foundation reviewer for *Population and Evolutionary Processes*

Policy reviewer

Recovery criteria for endangered plants (CPC)

Ecotype literature review (CPC)

Collaborators and other affiliations

Collaborators within the past 48 months

Mary Ashley (UIC), Alona Banai (Loyola University), Tim Bell (Chicago State University), Justin Borevitz (Univ. of Chicago), Marlin Bowles (Morton Arboretum), Jeffrey Conner (Michigan State University), Christopher Dunn (Lyon Arboretum), Julie Etterson (University of Minnesota, Duluth), Kay Havens (Chicago Botanic Gardens), Andrea Kramer (BGCI), Tiffany Knight (Washington University in St Louis), Joyce Maschinski (Fairchild Tropical Botanic Gardens), Geoff Morris (University of Chicago), Peggy Olwell (BLM), , Krissa Skogen (Chicago Botanic Garden) Pati Vitt (Chicago Botanic Gardens), Stuart Wagenius (Chicago Botanic Gardens)

Graduate Advisor

John Barrett (U. of Cambridge)

Christopher Preston (Centre of Ecology and Hydrology)

Post-Doc Advisor

Sean Mayes (U. of Nottingham)

Jeff Conner (Mich State Uni)