

JUSTEN B. WHITTALL

Section of Evolution and Ecology

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Assistant Professor, Biology, Santa Clara University (to begin 9/07)

Postdoc, Comparative Biology Fellow, UC Davis, March 2005-present (M. Sanderson & M. Stanton)

PhD in Evolution, University of California Santa Barbara, Sept. 2005. Advisor: Scott Hodges

“Ecological Speciation and Convergent Evolution in the North American Columbine Radiation”

MS in Botany, Oregon State University, 1999. Advisors: Aaron Liston & Robert Meinke.

“A Molecular Phylogeny for the *Mimulus moschatus* Alliance and its Conservation Implications”

BS in Biology *cum laude*, Santa Clara University, 1996.

AWARDS & GRANTS

- NSF, “The contemporary and historical dynamics of serpentine adaptation: Linking analyses at the level of the genome and the population across a species’ range” (PI, in review 5/07)
- Comparative Biology Postdoctoral Fellowship, UC Davis (3/05-pres.)
- Ecological correlates of diversification rate in *Primula* (Co-PI with M. Carlson) (\$3000, 2/05)
- NSF Doctoral Dissertation Improvement Grant, UCSB (\$12,000, 1/03-1/05)
- 1st Place Award, Plant Speciation Meetings, Antigonish, Nova Scotia (6/03)
- American Naturalist Travel Grant Recipient-Evolution Meetings, Chico (6/03)
- Vernon Cheadle Award in Biology-UCSB (3/03)
- Olivia Long Converse Fellowship-UCSB Grad. Div. (totaling \$95,530, 6/02-3/05)
- 1st Place Award, California Botanical Society Grad. Meetings, Chico (2/01)
- Karling Award-Botanical Society of America (6/01-9/01)
- Native Plant Society Travel Grants-Northern Nevada, Colorado, Wyoming (totaling \$5,000, 6/01-9/01)
- EEMB Departmental Fellowship- UCSB (9/99-3/00, 9/00-12/00).
- Pamplin Fellowship for Native Plant Research-Portland Garden Club-OSU (\$5,000, 9/98).
- Grants for Graduate Research-American Society for Plant Taxonomists-OSU (9/98).
- Linus Pauling Graduate Internship, Molecular Clock Research-OSU (6/97-9/97)

TEACHING EXPERIENCE

- Instructor, Population Biology Core, UC Davis (2/07).
- Instructor, Applied Phylogenetics Workshop, Bodega Bay, CA ('05, '06, '07).
- Mentor, Undergraduate Student Research, Bridge Funds, UC Davis (9/06-present)
- Lead Instructor, Comparative Methods Workshop: “Testing Evolutionary Hypotheses in a Phylogenetic Framework: A Maximum Likelihood Approach.” Cal State Northridge, CA (3/06)
- Mentor, Undergraduate Student Projects (Aaron Pan: currently 2nd year graduate student, Southern Methodist University; Jessica Bean: currently 1st year graduate student, University of California Davis; Yael Kisel: accepted to graduate school, Oxford University, UK).
- Guest Lecturer, Restoration Ecology, University of California Santa Barbara, CA (11/02).
- Mentor, Summer Scientist Prog. (Monica Godinez), University of California Santa Barbara, CA (6/02).
- Teaching Assistant, Department of Ecology, Evolution and Marine Biology: Molecular Markers and Evolution, Plant Anatomy, Plant Morphology and Evolution, Introductory Botany, General Biology. University of California Santa Barbara, CA (3/99-6/02).
- Teaching Assistant, Department of Botany and Plant Pathology: Plant Systematics, Introduction to Botany, General Biology. Oregon State University, OR (9/96-6/99).

PUBLICATIONS

- Whittall, Justen B. and Scott A. Hodges. 2007. Pollinator shifts drive increasingly long nectar spurs in columbine flowers. **Nature** 447: 706-709.
- Whittall, Justen B. and Sharon Strauss. 2006. Non-pollinator agents of selection on floral traits. In: **Ecology and Evolution of Flowers** (Eds. L. Harder and S. Barrett) Oxford University Press, pp.120-138.
- Whittall, Justen B.*, Claudia Voelckel*, and Scott A. Hodges. 2006. Convergence, constraint and the role of gene expression during adaptive radiation: Floral anthocyanins in *Aquilegia*. **Molecular Ecology** 15: 4645-4657 (* both authors contributed equally).
- Kay, Kathleen*, Justen B. Whittall*, and Scott A. Hodges. 2006. A survey of nrITS substitution rates across angiosperms reveals an approximate molecular clock with life history effects. **BMC Evolutionary Biology**: 6: 36 (* both authors contributed equally).
- Whittall, Justen B., Andrew Medina-Marino, Elizabeth A. Zimmer, and Scott A. Hodges. 2006. Generating single-copy nuclear gene data for species-level phylogenies: Further evidence for a rapid radiation in *Aquilegia*. **Molecular Phylogenetics and Evolution** 39: 124-134.
- Whittall, Justen B., Matthew Carlson, Paul M. Beardsley, Robert J. Meinke and Aaron Liston. 2006. The *Mimulus moschatus* alliance (Phrymaceae): Molecular and morphological phylogenetics and their conservation implications. **Systematic Botany** 31(2): 380-397.
- Whittall, Justen B., C. Barre Hellequist, Edward Schneider, and Scott A. Hodges. 2004. Cryptic species in an endangered pondweed community (*Potamogeton*, Potamogetonaceae) revealed by AFLP markers. **American Journal of Botany** 91 (12): 2022-2029.
- Beardsley, Paul M., S. E. Schoenig, Justen B. Whittall, and Richard G. Olmstead. 2004. The radiation of *Mimulus* in western North America: Systematics, hybridization, chromosomal evolution, cryptic biodiversity, and patterns of rarity. **American Journal of Botany** 91(3): 474-489.
- Hodges, Scott A., Michelle Fulton, Ji Y. Yang, and Justen Whittall. 2004. Verne Grant and evolutionary studies of *Aquilegia*. **New Phytologist** 161(1): 113-120.
- Whittall, Justen B., C. Barre Hellequist and Edward Schneider. 2004. Monitoring the Little Aguja Pondweed (*Potamogeton clystocarpus*): Distribution, Morphology and Taxonomic Status in a Diverse Pondweed Community. In: **Proceedings from the Texas Rare Plant Symposium** (Eds. C. Delmatier and D. Price) US Fish and Wildlife Service, Austin, TX.
- Hodges, Scott A., Justen B. Whittall, Michelle Fulton and Ji Yang. 2002. Genetics and floral isolation between *Aquilegia formosa* and *A. pubescens*. **American Naturalist** 159: S51-S60.
- Whittall, Justen B., Aaron Liston, Steve D. Gisler, and Robert J. Meinke. 2000. Detecting superimposed nucleotide additivity patterns is a SNAP: an example from *Sidalcea* (Malvaceae). **Plant Biology** 2: 211-217.
- Linderman, Jon K., Justen B. Whittall, Krisin L. Gosselink, Tommy J. Wang, Venkat R. Mukku, Frank W. Booth, and Richard Grindeland. 1995. Stimulation of myofibrillar protein synthesis in hindlimb suspended rats by resistance exercise and growth hormone. **Life Sciences** 57: 755-762.

PRESENTATIONS

Invited

Confessions from an Adaptationist. Bay Area Biosystematists' Panel on Adaptation. CSU Sonoma (4/07).

Ecological Drivers and Molecular Constraints Lead to Directional Evolution in Columbine Flowers. Biology Department, Santa Clara University (1/07) & Dept. of Ecology and Evolutionary Biology, UC Santa Cruz (2/07).

Darwin's "Race" Revisited: Pollinator Shifts Drive Increasingly Long Nectar Spurs in the Columbines (*Aquilegia*: Ranunculaceae). Dept. of Botany and Plant Pathology, Oregon State University (11/06).

Ecological Speciation and the Molecular Basis for Convergent Evolution in the Columbine Adaptive Radiation (*Aquilegia*, Ranunculaceae). Stellenbosch University, South Africa (6/06)

The molecular basis for convergent loss of floral anthocyanins in *Aquilegia* (Ranunculaceae). Biology Dept., San Jose State University (scheduled 4/06).

Ecological Speciation in the Columbines (*Aquilegia*, Ranunculaceae). CSU Northridge (3/06)

Applied Molecular Systematics: From Cryptic Species to Adaptive Radiations. Univ. of Alabama (2/06)

Dollo's Law and Testing for Directional Evolution using Comparative Phylogenetics. UC Berkeley (2/06)

How Repeatable is Evolution: Insights from the Columbine Adaptive Radiation. Center for Population Biology, University of California, Davis, CA (10/05)

Adaptive radiation in the columbines. Brigham Young University, UT (4/04).

Gene flow in an endangered west Texas pondweed community. Ladybird Wildflr. Ctr., TX (9/02).

New insights on hybridization and polyploidy in Oregon Checkermallows: *Sidalcea* (Malvaceae). Oregon Native Plant Society, Corvallis, OR (12/98).

Selected Contributions

Darwin's Race Revisited: Pollinator Shifts Drive Increasingly Long Nectar Spurs in Columbines. Genetics of Speciation Meetings, University of British Columbia, Canada (6/06).

The molecular basis for convergent loss of floral anthocyanins in *Aquilegia* (Ranunculaceae). International Botanical Congress, Vienna (7/05).

The molecular basis of convergent evolution: Loss of floral anthocyanins in *Aquilegia*. Molecular Biology and Evolution Meetings, New Zealand (6/05).

Columbines don't grow on trees (or do they?). Evolution Meetings, Colorado Springs, CO (6/04).

Rapid radiation in the columbines: Evidence from multiple nuclear loci. Plant Speciation Meeting, Antigonish, Nova Scotia (6/03).

Rapid radiation in the columbines: Evidence from multiple nuclear loci. Evolution, Chico, CA.

Paradox in the forest: Flower color evolution in western North American coniferous forests. Graduate Student Meetings, California Botanical Society, San Diego, CA (2/03).

Rapid radiation in the columbines: Additional evidence. California Population and Evolutionary Genetics Meetings, Santa Barbara, CA (12/01).

Rapid radiation in the columbines: Evidence from nuclear introns. Graduate Student Meetings, California Botanical Society, Chico, CA (2/01).

A molecular phylogeny of the *Mimulus washingtonensis* complex (Scrophulariaceae). Graduate Student Meetings, California Botanical Society, Berkeley, CA (2/99).

A molecular phylogeny for the *Mimulus moschatus* alliance (Scrophulariaceae) and its conservation implications. Society for Conservation Biology, Sydney, Australia (7/98).

PROFESSIONAL ACTIVITIES

- Bay Area Biosystematists, Panel on Adaptation, CSU Sonoma (Panelist 4/07)
- Contributor, **The Jepson Manual 2**, *Aquilegia* Treatment (expected completion 12/07).
- Applied Phylogenetics Workshop, Bodega Bay-UC Davis (Instructor '05,'06,'07; Participant '03)
- Judge, California Botanical Society Meetings-Chico & San Diego (2/01 & 2/03)
- Faculty Search Committee (EEMB Macroevolutionary Biologist)-UCSB (12/00-3/01)
- Systematics and Ecology Curriculum Committee-OSU (10/98-6/99)
- Environmental Leadership Coordinator-SCU (9/95-6/06)
- Marine Biogeochemistry Assistant-UC Santa Cruz (Dr. Bess Ward) (6/94-9/94, 6/95-9/95)
- Nasa Ames Research Assistant-Moffett Field, CA (6/90-9/90, 6/93-9/93)
- Reviewer for: **International Journal of Plant Sciences, Systematic Biology, Molecular Phylogenetics and Evolution**

FIELD EXPERIENCE

- Predictable Patterns of Pollinator Shifts in the Cape Region of South Africa (1 trip; 6/06).
- Ecological Speciation and Flower Color Evolution in *Aquilegia*: All states west of the Continental Divide including Alaska, British Columbia, Chihuahua, and Sonora (1999-present).
- Hybridization, Heterostyly and Conservation Genetics in Arctic Primroses: Seward Peninsula, Alaska (1 trip; 6/05).
- Cryptic Species, Hybridization and Clonality in *Potamogeton*: west Texas (3 trips; 2001-03)
- Systematics, Phylogeography and the Evolution of Selfing in *Mimulus*: CA, OR, WA, ID (1996-99).
- Marine Microbial Ecology: Southern California & Baja Mexico with Dr. Bess Ward, UCSC (7/95).

REFERENCES

Dr. Scott A. Hodges (Dissertation Advisor)
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