

CURRICULUM VITAE

Scott Alan Hodges

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Evolution and Marine Biology
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EDUCATION

- 1990 Ph.D. in Botany, University of California, Berkeley
Dissertation Advisor: Dr. Herbert G. Baker
1983 B.A. in Botany and Biology, University of California, Berkeley

PROFESSIONAL EXPERIENCE

- 2006 – present Full Professor, Department of Ecology, Evolution and Marine
Biology, University of California, Santa Barbara, CA
2000 – 2006 Associate Professor, Department of Ecology, Evolution and Marine
Biology, University of California, Santa Barbara, CA
1995 - 2000 Assistant Professor, Department of Ecology, Evolution and Marine
Biology, University of California, Santa Barbara, CA
1993 - 1995 Postdoctoral Associate, Departments of Botany and Genetics,
University of Georgia, Athens, GA
1992 Research Associate, Department of Genetics, University of
Georgia, Athens, GA
1991 Visiting Assistant Professor of Biology, Barnard College, Columbia
University New York, NY
1983-1990 Research Associate, Teaching Associate, Teaching Assistantship at
the University of California, Berkeley

AWARDS, FELLOWSHIPS AND HONORS

- 2004 George Saul Lecturer, Middlebury College
1997 Regents' Junior Faculty Fellowship
1996 Regents' Junior Faculty Fellowship
1996-2000 White Mountain Research Station, Faculty Fellowship
1994 Menzel Award, Genetics Section, Botanical Society of America
1988 Distinguished Instructor, University of California, Berkeley
1987-1988 Regents Fellowship, University of California, Berkeley

PROFESSIONAL ACTIVITIES

Manuscript reviews for:

American Journal of Botany, Evolution, American Naturalist, Molecular Ecology, Molecular Phylogenetics and Evolution, Genetics, Proceedings of the National Academy of Sciences, Trends in Ecology and Evolution, Nature

2002-present Editorial Board, American Journal of Botany

2005-2006 Advisory Committee to the Director, New York Botanical Garden

2005 NSF Advisory Panel 'Frontiers of Evolutionary Biology'

2001-present Scientific Advisory Committee, Deutsche Forschungsgemeinschaft (DFG - German Research Program on Radiations – Origins of Biological Diversity)

2003-present Chair, UC President's Advisory Panel for the White Mountain Research Station

2001-2003 Member, UC President's Advisory Panel for the White Mountain Research Station

1997 NSF Population Biology Grant Panel

INVITED SEMINARS, LECTURES & SYMPOSIA

2008 7th annual *Smithsonian Botanical Symposium* "Coevolution"

2007 BSA/ABPT Symposium "Frontiers in Plant Biology: Emerging Model Systems" July.
Radcliffe Workshop on "Emerging Model Species" May.

2006 Symposium on Plant Reproductive Genomics, Plant Animal Genomics Conference XIV,
San Diego, CA

Symposium on Genetics of Speciation, University of British Columbia, Vancouver,
Canada

Department of Biology, University of Maryland, MD

AIBS/BSCS/NESCent Symposium on Macroevolution, NABT National Conference,
Albuquerque, NM

Department of Ecology, Evolution & Organismal Biology, Iowa State University, Ames,
IA

Section of Integrative Biology, University of Texas, Austin, TX

2005 Department of Biology, Queen's University, Kingston, Ontario, Canada

Department of Botany, University of Toronto, Toronto, Ontario, Canada

Department of Ecology and Evolution, University of Chicago, Chicago, IL

Symposium on Floral genetics of non-model organisms, XVII International Botanical
Congress, Vienna, Austria

Community Genetics and Phylogenetics Symposium, Center for Community Genetics
Symposium, University of Minnesota, Minneapolis, MN

2004 George Saul Lectures, Middlebury College, Middlebury VT

2003 Plant Speciation Symposium, Plant Canada, Antigonish, Nova Scotia, Canada

L.H. Bailey Hortorium/Plant Biology, Cornell University, Ithaca, NY

2002 Institute of Systematic Botany, University of Zurich, Switzerland

- Conference on “Molecular genetics and ecology of plant adaptation” University of British Columbia, Vancouver, Canada
- 2001 Plant Biology Graduate Group, University of California, Davis, CA
 Department of Biology, Willamette University, Salem, OR
 Georgia Genetics Symposium: "The Genetics of Adaptation." University of Georgia, Athens, GA
- 2000 Vice President’s Symposium for the American Naturalists: “Genetics of Speciation”.
 Joint meeting with the Society for the Study of Evolution, Bloomington, ID
 Interdisciplinary Research Training Group on Mechanisms of Plant Evolution, University of Georgia, Athens, GA
 Department of Biology, California State University, Humbolt, CA
- 1999 Keynote Symposium on Plant Speciation, XVI International Botanical Congress, St. Louis, MO
 14th Annual Southwestern Botanical Systematics Symposium, "The Evolution of Ecological Adaptation", Rancho Santa Ana Botanical Garden, Claremont, CA
- 1998 Department of Botany, University of British Columbia, Canada
 Department of Botany, University of Washington, Seattle, WA
 Laboratory of Molecular Systematics, Smithsonian Institution, Washington, DC
- 1997 Keystone Symposium on Evolution of Plant Development, Taos, NM
 Evolution and Morphology Group, University of Chicago, Chicago, IL
- 1996 University Herbarium, Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA
 Symposium on the Morphology and Evolution of Flowers, Annual meeting of the American Institute of Biological Sciences, Seattle, WA
 Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ
 Department of Ecology and Evolutionary Biology, University of Arizona, Tuscon, AZ
 Department of Biology, University of California, San Diego, San Diego, CA
 Department of Biology, California State University, Northridge, CA
 Department of Ecology and Evolutionary Biology, University of California, Irvine, CA
- 1995 Department of Ecology and Evolutionary Biology, Brown University, Providence, RI
 Department of Biology, Washington University, St. Louis, MO and Department of Biology, University of Missouri, St. Louis, MO
 Symposium on Molecular Evolution and Adaptive Radiation, Montreal, Canada
 Department of Biological Sciences, Clemson University, Clemson, SC
- 1994 Department of Botany, University of Tennessee, Knoxville, TN
- 1993 Department of Botany, University of Georgia, Athens, GA
- 1992 Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, CT
 Plant Biology Group, Rutgers University, New Brunswick, NJ

RESEARCH GRANTS

Current:

- 2006-2007 Joint Genome Institute’s Community Sequencing Program. “Proposal to sequence the genome of *Aquilegia formosa*: a model system for both ancient and recent

evolutionary genomic studies. Scott A. Hodges, Proposer, Co-authors: Justin Borevitz, Elena Kramer, Magnus Nordborg, Jeff Tomkins.

2004-2009 National Science Foundation. "Genomics of adaptation to the biotic and abiotic environment in *Aquilegia*" Scott A. Hodges, PI, Elena Kramer, Magnus Nordborg, Justin Borevitz and Jeff Tomkins, Co-PIs. (\$1,999,992).

Previous

- 2005-2006 Genetic Resources Conservation Program. "Preservation of a *Lyonothamnus floribundus* DNA collection from the California Channel Islands by whole-genome amplification" (\$2,000).
- 2000-2005 MMS-UC Coastal Marine Institute. "Advancing marine biotechnology: use of OCS oil platforms as sustainable sources of marine natural products." (\$500,000). Russell J. Schmitt, PI, Jenifer E. Dugan, Steve Gaines, Scott A. Hodges, Robert S. Jacobs, H. Mark Page, Leslie Wilson, co-PIs.
- 2003-2005 National Science Foundation. "Doctoral Dissertation Improvement Grant - The Molecular Basis for Convergent Adaptations: Floral Color Evolution in Columbines" (\$12,000) Scott A. Hodges, PI, Justen Whittall, Co-PI.
- 2002-2004 National Science Foundation. "Analysis of Speciation Mechanisms in an Adaptive Radiation" (\$45,000). Scott A. Hodges, PI
- 2003-2004 UCSB Faculty Research Grant. "Development of a BAC library for *Aquilegia*." (\$15,065)
- 2002-2003 UCSB Faculty Research Grant. "Development of Microsatellite markers for *Aquilegia*" (\$7,000). Scott A. Hodges, PI
- 2000-2003 MMS-UC Coastal Marine Institute. "Population genetics of surfgrass (*Phyllospadix torreyi*) for use in restoration." (\$128,979). Scott A. Hodges, PI, Douglas S. Bush, Sally Holbrook and Daniel C. Reed co-PIs.
- 1998-2002 National Science Foundation. "The genetic basis of reproductive isolation: QTL mapping and hybrid zone analysis between *Aquilegia formosa* and *A. pubescens*." (\$275,000). Scott A. Hodges, PI.
- 2000-2001 National Science Foundation. QTL Mapping for Sex Allocation Traits in *Clarkia unguiculata*. Research Opportunity Award. (\$19,230). Scott A. Hodges, PI.
- 1996-2001 White Mountain Research Station UC Faculty Research Grant. "Reproductive Isolation between *Aquilegia formosa* and *A. pubescens* in the eastern Sierra Nevada Mountains." (\$60,000). Scott A. Hodges, PI.
- 1999-2001 Genetic Resources Conservation Program. "Genetic diversity in the California Channel Island Ironwoods, *Lyonothamnus floribundus*" (\$1,800) Scott A. Hodges, PI.
- 1999-2000 Minerals Management Service. "Analysis of the mating system, sex ratio and genetic diversity of the surfgrass *Phyllospadix torreyi*." (\$75,000) Scott A. Hodges, PI, Douglas S. Bush and Daniel C. Reed co-PIs.
- 1999-2000 UCSB Faculty Research Grant. "Development of co-dominant genetic markers for applications in ecology and evolution." (\$3,000) Scott A. Hodges, PI.
- 1998-1999 UCSB Faculty Research Grant. "Assessing the phylogenetic history of *Aquilegia* using DNA sequencing of nuclear intron regions." (\$5,000). Scott A. Hodges, PI.

1987-1989 National Science Foundation. Dissertation Research: Selection on floral parameters in *Mirabilis multiflora*. (\$3,695). Herbert G. Baker, PI. Scott A. Hodges, Co-PI.

STUDENTS

Postdoctoral Associates:

Dr. D. Lee Taylor, Ph.D., UC Berkeley. UC President Postdoctoral Fellow. 1997-1999.

Current position: Assistant Professor, University of Alaska, Fairbanks

Dr. Kathleen Kay, Ph.D. Michigan State University, National Parks Ecological Research Fellow, 2004-2006.

Dr. Claudia Voelckel, Ph.D. Max Planck Institute for Chemical Ecology, 2005-2006

Graduate Students:

Ph.D.:

Justen Whittall, 2005, Current position: Postdoctoral Fellow, UC Davis

Ji Yong Yang, MS University of British Columbia, Expected completion, Fall 2006

MS:

Michelle Fulton, MA, 2001; BA University of California, Santa Barbara

PUBLICATIONS:

1. Hodges, SA 1987. Some preliminary observations on hawkmoth pollination of *Oenothera caespitosa* and *Mirabilis multiflora*. pages. 244-249 In: C. A. Hall and V. Doyle- Jones, eds., Plant Biology of Eastern California. Natural History of the White-Inyo Range Symposium, Vol. 2. University of California, White Mountain Research Station, Los Angeles, California
2. Hodges, SA 1993. Consistent interplant variation in nectar characteristics of *Mirabilis multiflora*. Ecology 74:542-548.
3. Hodges, SA and ML Arnold. 1994. Floral and ecological isolation between *Aquilegia formosa* and *A. pubescens*. Proceedings of the National Academy of Sciences, USA 91:2493-2496.
4. Hodges, SA and ML Arnold 1994. Columbines: a geographically wide-spread species flock. Proceedings of the National Academy of Sciences, USA 91:5129-5132.
5. Hodges, SA 1995. The influence of nectar production on hawkmoth behavior, self pollination and seed production in *Mirabilis multiflora* (Nyctaginaceae). American Journal of Botany 82:197-229.
6. Arnold, ML and SA Hodges. 1995. Are natural hybrids fit or unfit relative to their parents? Trends in Ecology and Evolution 10: 67-70. (cover photo).

7. Arnold, ML and SA Hodges. 1995. The fitness of Hybrids - A response to Day and Schluter. *Trends in Ecology and Evolution* 10: 289.
8. Hodges, SA and ML Arnold. 1995. Spurring plant diversification: Are floral nectar spurs a key evolutionary innovation? *Proceedings of the Royal Society of London, Series B.*, 262:343-348.
9. Carney, SE, SA Hodges and ML Arnold. 1996. Effects of differential pollen-tube growth on hybridization in the Louisiana irises. *Evolution* 50:1871-1878.
10. Emms, SK, SA Hodges, and ML Arnold. 1996. Pollen-tube competition, siring success and consistent asymmetric hybridization in the Louisiana irises. *Evolution* 50: 2201-2206.
11. Hodges, SA, J Burke and ML Arnold. 1996. Natural formation of iris hybrids: experimental evidence on the establishment of hybrid zones. *Evolution* 50:2504-2509
12. Hodges, SA. 1997. A rapid adaptive radiation via a key innovation in *Aquilegia*. In: *Molecular evolution and adaptive radiations*. pg. 391-405. Eds. T. Givinish and K. Sytsma. Cambridge University Press, Cambridge.
13. Hodges, SA. 1997. Floral nectar spurs and diversification. *International Journal of Plant Sciences*. 158(6): S81-S88.
14. Baker, HG, I. Baker, and SA Hodges. 1998. Sugar composition of nectars and fruits consumed by birds and bats in the tropics and subtropics. *Biotropica* 30(4): 559-586.
15. Bushakra, JM, SA Hodges, JB Cooper and DD Kaska. 1999. The extent of clonality and genetic diversity in the Santa Cruz Island Ironwood *Lyonothamnus floribundus*. *Molecular Ecology* 8(3): 471-476 (cover photo).
16. Fulton, M. and SA Hodges. 1999. Floral isolation between *Aquilegia formosa* and *A. pubescens*. *Proceedings of the Royal Society of London, Series B*. 266: 2247-2252.
17. Hodges, SA, JB Whittall, M Fulton, and JY Yang. 2002. Genetics of floral traits influencing reproductive isolation between *Aquilegia formosa* and *A. pubescens*. *American Naturalist* 159: S51-S60.
18. Taylor, DL, TD Bruns, TM Szaro, and SA Hodges. 2003. Divergence in mycorrhizal specialization within *Hexaletris spicata* (Orchidaceae), a non-photosynthetic desert orchid. *American Journal of Botany* 90:1168-1179.
19. Hodges, SA, M Fulton, JY Yang and JB Whittall 2004. Verne Grant and evolutionary studies of *Aquilegia*. *New Phytologist* 161: 113-120.
20. Taylor, DL, TD Bruns, and SA Hodges. 2004. Evidence for mycorrhizal races in a cheating orchid. *Proceedings of the Royal Society of London, Series B*. 271: 35-43.

21. Whittall, JB, CB Hellquist, EL Schneider and SA Hodges. 2004. Cryptic species in an endangered pondweed community (*Potamogeton*-Potamogetonaceae) revealed by AFLP markers. *American Journal of Botany* 91:2022-2029.
 22. Yang, JY, BA Counterman, CG Eckert and SA Hodges 2005. Microsatellite markers for evolutionary studies in *Aquilegia*. *Molecular Ecology Notes* 5:317-320
 23. Hodges, SA. 2005. One begets two. Review of *Speciation*, by J. A. Coyne and H. A. Orr. *American Journal of Botany*. 92 (7): 1215-1218.
 24. Tucker, SC and SA Hodges 2005. Floral ontogeny of *Aquilegia*, *Semiaquilegia* and *Enemion* (Ranunculaceae). *International Journal of Plant Sciences*. 166 (4): 557-574.
 25. Whittall, JB, A. Medina-Marino, EA Zimmer and SA Hodges. 2006. Generating single-copy nuclear gene data in a recent adaptive radiation. *Molecular Phylogenetics and Evolution* 39:124-134.
 26. Kay, KM, C Voelckel, JY Yang, KM Hufford, DD Kaska and SA Hodges. 2006. Floral characters and species diversification. In: *Ecology and evolution of flowers*. Harder, LD and SCH Barrett, eds. Oxford University Press, pp. 311-325, in press.
 27. Kay, KM, JB Whittall and SA Hodges. 2006. A survey of nrITS substitution rates across angiosperms supports an approximate molecular clock with life history effects. *BMC Evolutionary Biology* 6:36, doi:10.1186/1471-2148-6-36.
 28. Whittall, JB, C Voelckel, D Kliebenstein, and SA Hodges. 2006. Convergence, constraint and the role of regulatory genes during adaptive radiation: Floral anthocyanins in *Aquilegia*. *Molecular Ecology*, 15: 4645-4658. Editor's Choice, *Science* 314:1842.
- Whittall, JB and SA Hodges. Darwin's "race" revisited: Pollinator shifts drive increasingly long nectar spurs. In revision, *Nature*.
- Hawkins, A, DD Kaska and SA Hodges. Genetic differentiation within and among islands in paleo-endemic California Island Ironwood, *Lyonothamnus floribundus*. In preparation