

Charles A. Knight CV

California Polytechnic State University
Biological Sciences Department
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Education and Employment:

- 2008- Present Assistant Professor, California Polytechnic State University, San Luis Obispo, California
2003-2008 Assistant Professor, California Polytechnic State University, San Luis Obispo, California
2002 Post-doc Max Planck Institute for Chemical Ecology, Department of Genetics and Evolution. .
1996-2001 Ph.D. Plant Ecology and Evolution, Stanford University (1996-2001), Degree conferral, January 2002.
1991-1996 B.S. Biology (1991-1996), Western Washington University

Fellowships and Awards:

- Postdoctoral Fellowship from the Max Planck Institute of Ecology and Evolution, Germany, January 2002 – February 2003.
NSF-MORPH EVO-DEVO training grant, Summer 2004, 2005.
NSF Dissertation Improvement Grant, \$9,100, 1999- 2001; Jasper Ridge-Mellon Foundation Equipment Grant, \$2,500; Stanford University Benson Grant \$5,000; Travel Grant from the Center for Evolutionary Studies, Stanford University \$1,900.
Stanford University Graduate Research Fellowship, 1996-2000 and a Graduate Research Fellowship, Center for Evolutionary Studies, Stanford University, 2000-2001.

Courses taught:

- BIO 263, Ecology and Evolution
- BIO 326, Plant Ecology
- BIO 435, Plant Physiology
- BIO 414, Evolution,
- BIO 570, Comparative Methods for Evolution Research
- BIO 590, Graduate Seminar

Publications:

* indicates a Cal Poly graduate student collaborator

† indicates a Cal Poly undergraduate collaborator.

- Lomax, B.H., F.I. Woodward¹, I.J. Leitch, C.A. Knight, J.A. Lake. **2008.** Genome size as a predictor of Guard cell length in *Arabidopsis thaliana* L. is independent of environmental conditions. *New Phytologist*. 181(2), 311-314.
Beaulieu, J.*¹, I. Leitch, A. Pendharkar[†], S. Patel[†], C.A. **Knight. 2008.** Genome size is a strong predictor of cell size and stomatal density in angiosperms. *New Phytologist*. 179: 975-986.

- Loarie, S., B. Carter*, K. Hayhoe, R. Moe, C.A. **Knight**, and D.D. Ackerly. Climate change and the fate of California's endemic flora. **2008**. *PLoS ONE*. 3(6)
- Knight**, C.A. and J. Beaulieu* **2008**. Genome size scaling in phenotype space. *Annals of Botany*. 101: 759–766.
- Connolly, J.A.*, C.A. **Knight**, M.J. Oliver, L. Tomanek, J. Beaulieu*, M. Moline. **2008**. Correlated evolution of genome size and cell volume in diatoms (Bacillariophyceae). *Journal of Phycology*. 44 (1): 124-131.
- Beaulieu, J.*, A. Moles, I. Leitch, , M. Bennett, J. Dickie, C.A. **Knight**. **2007**. Correlated evolution of genome size and seed mass. *New Phytologist*. 173(2): 422–437.
- Beaulieu, J.*, I. Leitch, C.A. **Knight**. **2007**. Genome size evolution in relation to leaf strategy and metabolic rates revisited. *Annals of Botany*. 99:495-505.
- Knight**, C.A., H. Vogel, J. Kroymann, A. Shumate, H. Witsenboer, T. Mitchell-Olds. **2006**. Expression profiling and local adaptation of *Boechera holboellii* populations for water use efficiency across a naturally occurring water stress gradient. *Molecular Ecology* 15:1229-1237.
- Robins, I.*, G.C. Kirkpatrick, C.A. **Knight**, M. Moline. **2006** Improved monitoring of HABs using autonomous underwater vehicles (AUVs). *Harmful Algae* 5:749-761.
- Knight**, C.A., N. Molinari* and D. Petrov. **2005**. The large genome constraint hypothesis: Evolution, ecology, and phenotype. *Annals of Botany* 5: 177-190.
- Knight**, C.A. and D.D. Ackerly. **2003**. Evolution and plasticity of photosynthetic thermal tolerance, specific leaf area and leaf size: congeneric species from desert and coastal environments. *New Phytologist* 160(2):337-347.
- Knight**, C.A. and D.D. Ackerly. **2003**. Small heat shock protein responses of a closely related pair of desert and coastal *Encelia*. *International Journal of Plant Sciences* 164(1)53:60
- Mitchell-Olds, T. and C.A. **Knight**. **2002**. Cryptic genetic variation and HSP 90. *Science* 296(5577):2348-2349.
- Knight**, C.A. and D.D. Ackerly. **2002**. An ecological and evolutionary analysis of photosynthetic thermotolerance using the temperature dependent increase in steady-state fluorescence. *Oecologia* 130:505-514
- Knight**, C.A. and D.D. Ackerly. **2002**. Genome size variation across environmental gradients: A quantile regression analysis. *Ecology Letters* 5:66-76.
- D.D. Ackerly, C.A. **Knight**, S.B. Weiss, K. Barton* and K.P. Starmer. **2002**. Leaf size, specific leaf area and microhabitat distribution of woody plants in a California chaparral: Contrasting patterns in species level and community level analyses. *Oecologia* 130:449-457.
- Knight**, C.A. and D.D. Ackerly. **2001**. Correlated evolution of chloroplast heat shock protein expression in closely related plant species. *American Journal of Botany* 88(3):411-418.

Papers in preparation and In Review: * indicates a Cal Poly undergraduate collaborator,

Molinari, N.*, and C.A. **Knight**. Defense, nutrition and endophytic fungi influence herbivore choice: a comparison between exotic and native plant species. **In Review** at *New Phytologist*.

Invited Seminars at National and International Meetings:

- 2007** Kew Royal Botanical Gardens, London. *Genome Size scaling in phenotype space*. Presentation at the Genome Vistas and Visions meeting at RBG, Kew.
- 2006** Western Washington University, Bellingham, Washington. *Expression profiling and phenotypic evolution*.
Uppsala University, Uppsala, Sweden. *Plant genome size research, a research agenda*.
Kew Royal Botanical Gardens, London. *Correlated evolution of genome size and seed mass*.
- 2005** International Botanical Congress, Vienna, Austria. *The large genome constraint hypothesis: evolution, ecology, and phenotype*.
Kew Royal Botanical Gardens, London. *Genome size, photosynthesis, and specific leaf area*.
Shihezi University, Shihezi City, Xinjiang Province, China. *Comparative approaches for the study of plant evolution: heat shock proteins, LMA and genome size*.
Xinjiang University, Urumqi, Xinjiang Province, China. *Comparative approaches for the study of plant evolution: heat shock proteins, LMA and genome size*.
The Systems Ecology Lab of the Chinese Academy of Sciences, Beijing, China. *Modeling the effects of climate change in the California Floristic Province*.
- 2004** Knight, C.A. and N.J. Sanders. *Quantile regression for macroecology and other complex bivariate distributions*. Ecological Society of America, Annual Meeting, Portland, Oregon.
University of Ljubjana, Slovenia. *Information overload: is extra DNA bad for plants and if so, why?*
Kew Royal Botanical Gardens, London. *Information overload: is extra DNA bad for plants and if so, why?*
Portland State University, Portland, Oregon. *Plants and high temperature stress: comparative analyses of convergent evolution.*
- 2003** Kew Royal Botanical Gardens, London, *Ecology and the evolution of genome size*. An invited seminar at the plant genome size meetings.
University of Vienna, Austria. *The ecology and evolution of genome size variation in Angiosperms*.
Max Planck Institute of Chemical Ecology, Germany. *The evolution of drought tolerance in Arabis*,
- 2002** Idaho State University, *Ecological and evolutionary aspects of plant high temperature tolerance*.
Chinese Academy of Sciences, Kunming, China, *Genome size variation across environmental gradients*. Sino-German Exchange for Research in Biocomplexity.
California Polytechnic State University, San Luis Obispo. *The ecological and evolutionary physiology of plant thermal tolerance*.
- 2001** Max Planck Institute of Chemical Ecology, Germany. *The evolution of photosynthetic thermotolerance and the heat shock protein response*.

- 2000** Knight, C.A., and D.D. Ackerly. *Chloroplast heat shock protein expression is correlated with microclimate leaf temperatures*. Ecological Society of America annual meeting, Snowbird, Utah.
NATO Advanced Study Institute, Roscoff, France, *The evolutionary and ecological significance of heat shock protein expression in plants*.
- 1999** Knight, C.A., and D.D. Ackerly. *Interspecific variation in heat shock protein expression in relation to specific leaf area and phylogeny in eight Ceanothus species*, Ecological Society of America, Annual Meeting, Spokane, Washington.

Poster Presentations

* indicates a Cal Poly undergraduate collaborator

† indicates a Cal Poly undergraduate collaborator

- 2007** Pendharkar[†], A., S. Patel[†], J. Beaulieu, and C.A. Knight. The genome size cell size correlation in 102 species of Angiosperms. College of Science and Mathematics annual undergraduate and graduate student science symposium.
- 2006** S. Loarie, Carter, B.*, K. Hayhoe, R. Moe, C.A. Knight, and D.D. Ackerly. *Climate change and the fate of California's endemic flora*. The California Energy Commission's Public Interest Energy Research (PIER) 3rd Annual Climate Change Research Conference. Sacramento, CA., September 13-15.
- 2005** Carter, B.*, S. Loarie, C.A. Knight, K. Hayhoe, P. Thornton and D.D. Ackerly. *Modeling the effects of climate change in the California Floristic Province*. Chicago Botanical Garden Symposium on Plant Conservation and Global Climate Change, October 15th.
- 2004** Carter, B.*, S. Loarie, C.A. Knight, and D.D. Ackerly. *Current and future patterns of species richness in the California flora*. Ecological Society of America, Annual Meeting, Portland, Oregon..
Molinari, N.*, J. Mello*, C.A. Knight. *Self-reliant and symbiotic anti-herbivore defenses in the chaparral*. Ecological Society of America, Annual Meeting, Portland, Oregon, August 2nd-7th
Loarie, S., B. Carter*, C.A. Knight, D. Ackerly. *Extinction sinks in the California flora*. Ecological Society of America, Annual Meeting, Portland, Oregon. August 2nd-7th
Work below this line was done before arriving at Cal Poly
- 2002** Knight, C.A., and D.D. Ackerly. *Genome size variation across environmental gradients: evidence from the California flora*. Evolution, genomics, and bioinformatics - A Joint meeting of the Society for Molecular Biology and Evolution and the International Society for Molecular Evolution. Sorrento, Italy, June 13 – 16.
- 2001** Nyfeller, R., C.A. Knight, and D.D. Ackerly. *The phylogenetic F-test for rates of trait diversification in sister taxa: an example using seed size in the California flora*. Society for the Study of Evolution Annual Meeting, Knoxville TN.

Reviewer for:

New Phytologist

Oecologia

Evolution

Current Biology

Canadian Journal of Botany

American J. of Botany

Annals of Botany

Australian J. of Botany

Biochemical Systematics & Ecology