Justen Bryant Whittall
Associate Professor
Dept. of Biology
Santa Clara University
(Accomplishments since tenure are preceded with an asterisk)

1. Education

a. Institutions of Higher Education
- BS in Biology *cum laude*, Santa Clara University, 9/96.
- MS in Botany, Oregon State University, 6/99.
- PhD in Evolution, University of California Santa Barbara, 6/05.
- Postdoc, Comparative Biology Fellow, UC Davis, 3/05-9/07.

b. Titles of Theses and Dissertations
- MS (Drs. Aaron Liston & Robert Meinke): "A Molecular Phylogeny for the *Mimulus moschatus* Alliance and its Conservation Implications"
- PhD (Dr. Scott Hodges): "Ecological Speciation and Convergent Evolution in the North American Columbine Radiation"

c. Academic Honors
- *Phi Beta Kappa Award for Teaching Excellence (3/16)
- Beta, Beta, Beta Biological Honor's Society (6/95)

2. Teaching and Related Experience

a. Teaching Experience
- Assistant Professor, Department of Biology, Santa Clara University, 9/07-8/12.
- *Associate Professor, Department of Biology, Santa Clara University, 9/13-present.

Courses taught at SCU:

Course Name (#)	**Description**	**# Quarters (since tenure)**
*Information & Evolution (BIOL 1B, with Teresa Ruscetti)[4]	New Intro Bio Experience lecture and ½ lab	3(3)
*Introduction to Ecology & Evolution (BIOL 22, with Janice Edgerly-Rooks)[1]	Lower division, lecture only	9(4)
*Departmental Seminar Series (BIOL 101)[1]	Upper division, meets 1x/2weeks	1(1)
*California Plant Diversity (BIOL 134)[3]	Upper division, lecture and lab	6(3)
Arctic Biology (BIOL 136)[3]	Upper division, lecture and lab	2
*Evolution (BIOL 173, with Katherine Preston)[4]	Upper division, lecture and lab	9(4)
*Technology for Genome Analysis (176, with Craig Stephens)[4]	Upper division, lecture and lab (canceled due to COVID-19 response)	1(1)

*Bioinformatics (BIOL 178)[3]	Upper division, lecture and lab	5(3)
*Directed Research (BIOL 198)[3]	Directed Research: Heidi Cossentine, Juliana Moreno, Leena McCann, *Julie Herman, *Peter Biro, *Sophia Huang, *Michael Turgeon, *Tess Gunnels, Aleezah Salmaan*	9(6)

[1] I helped develop the laboratory/discussion portion for this course.
[2] I developed the laboratory portion for this course.
[3] I developed both the lecture and laboratory portions of these courses.
[4] I helped develop the lecture and laboratory portions of these courses.

Supervised 30 Student Researchers Since Appointment at SCU (9/07); 18 Since Tenure (9/13)

Supervised training and daily work of 5 field & laboratory technicians working 30-35 hrs/wk (all SCU post-bacs; 3 since tenure)

b. Other Academic Experience: none

c. Relevant Non-Academic Professional Experience

- ***Editor,** Frontiers in Plant Biology, Special Issue on Flower Color (11/19-present)
- ***MS Committee Member**, Alex Rinkert, Master's of Science Candidate, San Jose State University (9/19-present)
- ***Editor-in-Chief**, Madroño; A West American Journal of Botany (1/17-present)
- ***Board Member**, California Botanical Society (1/17-present)
- ***Host & PhD Committee Member**, Mercedes Sánchez Cabrera, Ph.D. Candidate, Universidad de Sevilla, Spain (research stay 6/18 – 9/18; committee member 1/18 – present)
- ***Host**, Dr. Eduardo Narbona, Research Stay, Universidad Pablo de Olavide, Sevilla, Spain (6/11-11/11 & 3/17-7/17)
- ***Colloquium Co-Organizer, "**Patterns and Processes of American Amphitropical Plant Disjunctions: New Insights", Botany2016, Savannah, Georgia (8/16)
- ***Host & PhD Committee Member**, Jose del Valle, Ph.D. Candidate, Universidad Pablo de Olavide, Sevilla, Spain (research stays 3/15 – 7/15 & 6/16 – 8/16)
- ***Host**, Javier Jimenez, Ph.D. candidate, University Sevilla, Spain (6/16 – 9/16)
- ***Invited Speaker & Session Participant**, "Genetics101", Northern California Botanists Symposium, Chico, CA (1/16)
- ***Committee Member,** Miranda Melen (SCU ESS '09), Master's of Science Degree, Environmental Studies, San Jose State University, CA (3/12-5/14)
- ***Reader** for SCU Honors theses: *Lexie Smallwood (Biology '17), *Andreas George (ESS, '16), *Julie Herman ('15), Heidi Cossentine ('11)
- **Host,** Ines Soriguer, Ph.D. candidate, Universidad Pablo de Olavide, Sevilla, Spain (6/12 – 12/12)

- **Instructor**, Applied Phylogenetics Workshop, Bodega Bay, CA (3/05-3/11)
- **Host**, Dr. Mohamed Abdelaziz, Ph.D. candidate (at that time), University of Grenada, Spain (1/09 – 5/09)
- **Participant,** Applying Modern Genomic Tools to the Management and Characterization of Plant Genetic Resources, University of British Columbia (7/27/08)
- **Participant**: Agilent's Workgroup/Systems Biology VIP Day (8/09)
- **Coordinator**, qPCR Tutorial Session (12/4/07)
- **Instructor**, Phylogenetic Comparative Methods, CSU Northridge, CA (3/06).

3. Scholarly and Artistic Work

a. Scholarly Publications (**SCU coauthors in bold followed by graduation year**; publications since tenure are preceded with an asterisk)

Since Appointment at SCU (2007)

- ***Unadkat, Krishna** ('19) and Justen B. Whittall. Unexpected predicted length variation for the coding sequence of the sleep related gene, *BHLHE41* in gorilla amidst strong purifying selection across mammals. *PLoS ONE.* (in press)
- *del Valle, José Carlos, Cristina Alcalde-Eon, M. Teresa Escribano-Bailón, M. Luisa Buide, Justen B. Whittall, Eduardo Narbona. 2020. Stability of petal color polymorphism: the significance of anthocyanin accumulation in photosynthetic tissues. *BMC Plant Biology* 19, 496.
- *del Valle, José Carlos, Inés Casimiro-Soriguer, M. Luisa Buide, Eduardo Narbona, and Justen B. Whittall. 2019. Whole plastome sequencing within *Silene* Section *Psammophilae* reveals mainland hybridization and divergence with the Balearic Island populations. *Frontiers in Plant Science* 10, 1466.
- ***Kelley, Erin Taylor** ('17), Justen B. Whittall, Janice S. Edgerly. 2018. Resolving two *Haploembia* (Embioptera: Oligotomidae) cryptic species: molecular data confirms parthenogenetic females can be distinguished by their antisocial behavior. Zootaxa 4504: 225-242.
- *DEL VALLE, JOSÉ CARLOS, ANTONIO GALLARDO-LÓPEZ, M. LUISA BUIDE, JUSTEN B. WHITTALL, EDUARDO NARBONA. 2018. DIGITAL PHOTOGRAPHY AS A RELIABLE, NON-DESTRUCTIVE METHOD TO ESTIMATE ANTHOCYANIN PIGMENT CONTENT IN VEGETATIVE AND REPRODUCTIVE PLANT ORGANS. *ECOLOGY & EVOLUTION* 1-13.
- *HUANG, SOPHIA ('16) AND JUSTEN B. WHITTALL. 2018. A TREE OF TREES: USING CAMPUS TREE DIVERSITY TO INTEGRATE MOLECULAR, ORGANISMAL AND EVOLUTIONARY BIOLOGY. *AMERICAN BIOLOGY TEACHER*. 80(2): 144-151.
- *MELEN, MIRANDA K. ('09), JULIE A. HERMAN ('14), JESSICA LUCAS, RACHEL E. O'MALLEY, INGRID M. PARKER, AARON M. THOM ('10), JUSTEN B. WHITTALL. 2016. REPRODUCTIVE SUCCESS THROUGH HIGH POLLINATOR VISITATION RATES DESPITE SELF-INCOMPATIBILITY IN AN ENDANGERED WALLFLOWER. *AMERICAN JOURNAL OF BOTANY* 103: 1979-1989.

- *CASIMIRO-SORIGUER, INÉS, JOSÉ CARLOS DEL VALLE, MARISA LUISA BUIDE, EDUARDO NARBONA, JUSTEN B. WHITTALL. 2016. TRANSCRIPTOME AND BIOCHEMICAL ANALYSIS OF A FLOWER COLOR POLYMORPHISM IN *SILENE LITTOREA* (CARYOPHYLLACEAE). *FRONTIERS IN PLANT SCIENCE* 7: 204.
- *DEL VALLE, JOSÉ CARLOS, M. LUISA BUIDE, INÉS CASIMIRO-SORIGUER, JUSTEN B. WHITTALL, EDUARDO NARBONA. 2015. ON FLAVONOID ACCUMULATION IN DIFFERENT PLANT ORGANS: UNRAVELING THE VARIATION AMONG INDIVIDUALS AND POPULATIONS IN THE SHORE CAMPION (*SILENE LITTOREA*). *FRONTIERS IN PLANT SCIENCE* 6: 939.
- *BUTLER, TIMOTHY ('10), DICK, CYNTHIA A. ('08), MATTHEW L. CARLSON, JUSTEN B. WHITTALL. 2014. TRANSCRIPTOME ANALYSIS OF A PETAL ANTHOCYANIN POLYMORPHISM IN THE ARCTIC MUSTARD, *PARRYA NUDICAULIS*. *PLOS ONE* 9(7): E101338.
- ***Dick, Cynthia** ('08), **Julie Herman** ('14), Ryan E. O'Dell, Adriana Lopez-Villalobos, Chris Eckert, Justen B. Whittall. 2013. Cryptic genetic subdivision in the San Benito evening primrose (*Camissonia benitensis*). *Conservation Genetics* 15:165-175.
- FULKERSON, JUSTIN R., JUSTEN B. WHITTALL, MATTHEW L. CARLSON. 2012. REPRODUCTIVE ECOLOGY AND SEVERE POLLEN LIMITATION IN THE POLYCHROMIC TUNDRA PLANT, *PARRYA NUDICAULIS* (BRASSICACEAE). *PLOS ONE* 7(3): E32790.
- Whittall, Justen B. and Scott A. Hodges. 2012. *Aquilegia*. *The Jepson Manual 2*. UC Press, CA.
- Grossenbacher, Dena and Justen B. Whittall. 2011. Increased floral divergence in sympatric monkeyflowers. *Evolution* 65: 2712-2718.
- **Dick, Cynthia A.** ('08), **Jason Buenrostro** ('09), **Timothy Butler** ('10), Daniel J. Kliebenstein, Matthew L. Carlson, Justen B. Whittall. 2011. Arctic mustard flower color polymorphism controlled by petal-specific downregulation at the threshold of the anthocyanin biosynthetic pathway. *PLoS ONE* 6(4): e18230.
- Anacker, Brian[1], Justen B. Whittall[1], Emma Goldberg and Susan Harrison. 2011. Origins and consequences of serpentine endemism in the California flora. *Evolution* 65: 365-376 ([1] both authors contributed equally)
- Whittall, Justen B., John Syring, Matthew Parks, **Jason Buenrostro** ('09), **Cindy Dick** ('08), Aaron Liston, and Richard Cronn. 2010. Finding a (Pine) Needle in a haystack: Chloroplast genome sequence divergence in rare and widespread pines. *Molecular Ecology* 19: 100-114.
- Von Wettberg, Eric J., Maureen L. Stanton, and Justen B. Whittall. 2010. How anthocyanin mutants respond to stress: the need to distinguish between stress tolerance and maximal vigour. *Evolutionary Ecology Research* 12: 457-476.
- Cooper, Elizabeth A., Justen B. Whittall, Scott A. Hodges, and Magnus Nordborg. 2010. Genetic variation at nuclear loci fails to distinguish two morphologically distinct species of *Aquilegia*. *PLoS ONE* 5: e8655.

- Whittall, Justen B. and Matthew L. Carlson. 2009. Plant defense: A preadapation for pollinator shifts. *New Phytologist* 182: 5-8.
- Hodges, Scott A. and Justen B. Whittall. 2008. One-sided evolution or two? A reply to Ennos. *Heredity* 1-2.

Prior to Appointment at SCU (2007)

- Justen B. and Scott A. Hodges. 2007. Pollinator shifts drive increasingly long nectar spurs in columbine flowers. *Nature* 447: 706-709.
- Burleigh, J. Gordon, Justen B. Whittall, Michael J. Sanderson. 2006. The evolution of organismal complexity in angiosperms as measured by the information content of taxonomic descriptions. Workshop Proceedings of the Tenth International Conference on the Simulation and Synthesis of Living Systems, MIT Press, pp. 87-92.
- 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 Univ. Press, pp.120-138.
- Whittall, Justen B.[1], Claudia Voelckel[1], 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 ([1] both authors contributed equally).
- Kay, Kathleen[1], Justen B. Whittall[1], 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 ([1] 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.
- 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.

b. Artistic Performances and the Like

none

c. Works in Progress

In Review

- *DEL VALLE, JOSE, **JULIE A. HERMAN** ('14) AND JUSTEN B. WHITTALL. MATING SYSTEM TRUMPS ISLAND-LIKE HABITAT IN DETERMINING THE DISTRIBUTION OF GENETIC DIVERSITY IN A RARE SANDHILL ENDEMIC (*ERYSIMUM TERETIFOLIUM*, BRASSICACEAE). *PLOS ONE.*
- WHITTALL, JUSTEN B., **TIMOTHY BUTLER** ('10), AND **CYNTHIA DICK** ('08). TWO CRYPTIC SPECIES OF CALIFORNIA MUSTARD WITHIN *CAULANTHUS LASIOPHYLLUS* (BRASSICACEAE). *AMERICAN JOURNAL OF BOTANY.*
- DEL VALLE, JOSÉ CARLOS, M. LUISA BUIDE, JUSTEN B. WHITTALL, FERNANDO VALLADARES, EDUARDO NARBONA. 2020. UV RADIATION INCREASES FLAVONOID PROTECTION BUT DECREASED REPRODUCTION IN *SILENE LITTOREA*. *PLOS ONE*.
- **GUNNELS, TESS ('19),** MATTHEW CRESWELL, JANIS MCFERRIN, JUSTEN B. WHITTALL. THE ITS REGION PROVIDES A RELIABLE DNA BARCODE FOR IDENTIFYING REISHI (LINGZHI) (*GANODERMA*) FROM HERBAL SUPPLEMENTS. *PLOS ONE*.

IN REVISION: NONE.

IN PREP:

- SÁNCHEZ-CABRERA, MERCEDES, MONTSE ARISTA, EDUARDO NARBONA, JUSTEN B. WHITTALL. TRANSCRIPTOME COMPARISONS OF ORANGE AND BLUE FLOWERS OF *LYSIMACHIA ARVENSIS* (PRIMULACEAE). *FRONTIERS IN PLANT SCIENCE.*
- **NGUYEN, JASON ('18),** MATTHEW L. CARLSON, **CYNTHIA DICK ('08),** JAVIER JIMÉNEZ, EDUARDO NARBONA, JUSTEN B. WHITTALL. EFFECT OF FLOWER COLOR ON THE TRANSCRIPTOME RESPONSE TO COLD STRESS IN AN ARCTIC MUSTARD (*PARRYA NUDICAULIS*). *FRONTIERS IN PLANT SCIENCE.*
- DEL VALLE, JOSÉ, **AARON THOM ('10), KYLE NADEL ('15),** INÉS CASIMIRO-SORIGUER, JUSTEN B. WHITTALL. ECOLOGY, EVOLUTION AND GENETICS OF FLOWER COLOR VARIATION IN THE *STREPTANTHUS GLANDULOSUS* COMPLEX (BRASSICACEAE).
- RINKERT, ALEX AND JUSTEN B. WHITTALL. BIRD NESTS AS BOTANICAL TIMECAPSULES. *MOLECULAR ECOLOGY.*

- WHITTALL, JUSTEN B., BRODY SANDEL, E. TAYLOR KELLY ('17), PISIT POOLPRASERT, JANICE S. EDGERLY. EVALUATION OF EMBIOPTERAN GENOME SIZES. *SYSTEMATICS AND DIVERSITY.*
- JUSTEN B. WHITTALL AND BIRO, PETER ('14). THE AGE OF AMPHITROPIC DISJUNCT PLANTS COINCIDES WITH THE GREAT AMERICAN BIOTIC INTERCHANGE. *AMERICAN JOURNAL OF BOTANY.*

d. Presentations

Invited Seminars Since Appointment at SCU (2007)

- *Experimental reintroduction of the Ben Lomond wallflower (*Erysimum teretifolium*) at the Bonny Doon Ecological Reserve, invited speaker at regional meeting of the Northern California Botanists Symposium (1/20; featured on The Resonant Restoration Podcast)
- *Juggling Jewelflowers – The role of flower color in determining taxonomic boundaries, conservation status and restoration priorities for Coyote Ridge *Streptanthus*, invited speaker at regional meeting of the Northern California Botanists Symposium (1/20) also schedule with the California Native Plant Society, Santa Clara County Chapter Meeting (3/20 – cancelled due to COVID-19 response)
- *A Tree of Trees: Using campus tree diversity to integrate molecular, organismal, and evolutionary biology, invited speaker for an organized oral session entitled, "Integrating Ecosystem Resilience and Care of the Whole Campus", Ecological Society of America, New Orleans (8/18)
- *Sierra LaMar Botanicals, Bring Sierra Home: Data Sharing Meeting, Santa Clara County Crime Lab, Santa Clara, CA (2/18)
- *American Amphitropical Plant Disjunctions Coincide with the Great American Biotic Interchange, Biology Department, San Francisco State University (9/17)
- *SCU's Tree of Trees: Teaching Evolution & Bioinformatics with Trees, STEM Circle, SCU (1/17)
- *The Birds & the Beasts: How California wildflowers got to South America, Biology Department, San Jose State University (8/16)
- *Numerous Plant Amphitropic Disjuncts Coincide with the Great American Biotic Interchange, Botany 2016, Savannah, Georgia (8/16)
- *Genomic Skimming for Wallflower Chloroplast Genomes and its Utility for Phylogenetics of Very Recent and Rapid Adaptive Radiations. Northern California Botanists Symposium (1/16).
- *Flower Color, Pollinators, Soils and Genetics in the Metcalf Canyon Jewelflower and its Closest Relatives. California Native Plant Society, San Jose, CA (1/15).
- *Wallflowers Keep Good Company: Adaptive Radiation in *Erysimum*, California Academy of Sciences (2/14), Botanical Society of America (7/14), and University of San Francisco (10/14).
- *Reintroduction Potential of the Metcalf Canyon Jewelflower, Department of Environmental Sciences, San Jose State University (2/13)
- *Messages from the Arctic: Transcriptome Analysis of an Arctic Mustard Flower Color Polymorphism, Plant Biology Departmental Seminar, UC Davis (10/12)

- *On the Measurement of Flower Color: Examples from the Brassicaceae, Ecological Society of America, Portland OR (8/12)
- *The Evolutionary Ecology of Three Local Serpentine Endemics, California Native Plant Society, Los Altos, CA (3/12)
- Floral Anthocyanins: A Metamodel for Ecological Pleiotropy in the Brassicaceae, Biology Departmental Seminar, Washington State University, Pullman (10/11)
- New Perspectives on Cryptic Divergence & Ecological Pleiotropy: Lessons from Pine Plastomes and Arctic Mustard Transcriptomes, Symposium on Next-Gen Sequencing in Phylogenetics & Phylogeography, Evolution 2011, Norman, OK (7/11)
- Messages from the Arctic: Ecological, Metabolomic & Molecular Analysis of a Flower Color Polymorphism in Arctic Mustard, Carnegie Institute Dept. Seminar, Stanford (10/10)
- Past, Present, and Future: Applications of Next-Gen Sequencing in Ecology & Evolution, Centrillion Biosciences, Mountain View (9/10)
- Adaptive Radiation in the California Wallflowers. "Botany Lunch", UC & Jepson Herbarium, UC Berkeley (4/10)
- The Metcalf Jewelflower (*Streptanthus albidus* ssp. *albidus*) - Still a Mystery… Northern California Botanists Annual Symposium, Chico, CA (1/10)
- Cryptic Diversity in the California Flora: Lessons from Mustards, Columbines and Pines. California Native Plant Society Annual Meeting (12/09).
- Flower Color Evolution: Messages from the Arctic. Biology Dept., Humboldt State University (9/09) & Department of Integrative Biology, UC Berkeley (10/09)
- Flower Color Evolution and the Primacy of Pollinators. Rancho Santa Ana Botanical Garden, Claremont Colleges (1/09)
- Finding the Pine Needle in a Haystack: Using Genomic Tools to Reveal the Evolutionary History of Torrey Pine. 2nd Annual Torrey Pine Symposium, La Jolla, CA (9/08)
- Pollinator Shifts Drive Increasingly Long Nectar Spurs in Columbine Flowers. Biology Dept., Chico State University (9/07)

Selected Contributions Since Appointment at SCU (2007)
(SCU undergraduate coauthors in bold followed by graduation year)

- *Rinkert, Alex and Justen B. Whittall. Bird nests as botanical time capsules. Northern California Botanists Symposium, Chico, CA (1/19 & 1/20, posters)
- ***Rocereto, Shelby K ('20),** Justen B. Whittall, Chris W Wheat, Nathan E. Rank, Elizabeth P Dahlhoff. Non-synonymous variation at a metabolic enzyme locus (Pgi) under purifying selection. Society for Integrative & Comparative Biology, Austin, TX (1/20, poster).
- ***Harper, J René ('20),** Neeraja Sripada, Justen B. Whittall, Janice S. Edgerly. From silk fibers to shiny film: A phylogenetic and molecular analysis of the interaction between water and embiopteran silks. Entomology Meetings, St. Louis, MO (11/19, talk)
- ***Gunnels, Tess ('19)**, Justen B. Whittall and Brian Bayless. A bioinformatics-based approach to identify microtubule inner proteins. West Coast Biological Sciences Undergraduate Research Conference, University of San Diego, CA (4/19, talk).

- *__Gunnels, Tess ('19)__, Matthew Creswell, Janis McFerrin, and Justen B. Whittall. Using molecular phylogenetics to authenticate the active fungal ingredient used in herbal supplements. West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University, CA (4/18, poster)
- ***Nguyen, Jason** ('18), Matthew L. Carlson, Javi Jimenez, Eduardo Narbona, Justen B. Whittall. Effect of flower color on the transcriptome response to cold stress in an arctic mustard (*Parrya nudicaulis*). West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University, CA (4/17, poster)
- ***Horiuchi, Kate** ('17)*, **Megan Kohn** ('18)*, Justen B. Whittall. The threshold for serpentine tolerance in columbine. West Coast Biological Sciences Undergraduate Research Conference, Santa Clara University, CA (4/17) & Sigma Xi, Santa Clara University, CA (5/17) * Both authors contributed equally.
- *del Valle, José Carlos, Inés Casimiro-Soriguer, M. Luisa Buide, Eduardo Narbona, Justen B. Whittall. Phylogeographic Evidence from three genomes and genetic structure in Iberian *Silene*: A special case of speciation by small sea barrier. Talk, Botany2016, Savannah, Georgia (8/16)
- *del Valle, José Carlos, Inés Casimiro-Soriguer, M. Luisa Buide, Eduardo Narbona, Justen B. Whittall. Flavonoids accumulation under Mediterranean stressing environmental conditions: Dissecting the cause of a latitudinal gradient in floral and vegetative secondary metabolites. Talk, XIV MEDECOS (International Society of Mediterranean Ecology) (2/17; Best Student Oral Presentation to JDV)
- ***Huang, Sophia** ('16) and Justen B. Whittall. Santa Clara University's Tree of Trees: Using campus tree diversity to integrate molecular, organismal and evolutionary biology. Poster, Botany2016, Savannah (8/16) & West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene, CA (4/16)
- *del Valle, José Carlos, Inés Casimiro-Soriguer, M. Luisa Buide, Eduardo Narbona, Justen B. Whittall. Phylogeographic Evidence from Three Genomes and Genetic Structure in Iberian *Silene*: A Special Case of Speciation by Small Sea Barrier. Talk, Botany2016, Savannah, Georgia (8/16)
- *del Valle, José Carlos, M. Luisa Buide, Justen B. Whittall, Eduardo Narbona. Effects of UV Radiation and Shading on Anthocyanin Accumulation and Flower Production in the Shore Campion. Poster, Botany2016, Savannah, Georgia (8/16)
- ***Horiuchi, Kate** ('17)*, **Megan Kohn** ('18)*, **Andrea Che** ('18), Justen B. Whittall. Columbine vs. Serpentine: Who Will Win? West Coast Biological Sciences Undergraduate Research Conference, Point Loma Nazarene, CA (4/16) * Both authors contributed equally.
- ***Turgeon, Michael** ('18) and Justen B. Whittall. Mission Tobacco: A Molecular Examination of Tobacco Seeds from Mission Santa Clara. Talk, Archaeology Meetings, Santa Clara University (4/16)
- *del Valle, José Carlos, M. Luisa Buide, Inés Casimiro-Soriguer, Eduardo Narbona, Justen B. Whittall. The Good, the Bad and the Ugly: Phylogeographic Evidence from Three Genomes in Iberian *Silene*. Talk, Caryophyllales 2015, Berlin, Germany (9/15)
- ***Thom, Aaron** ('10), Christal Niederer, Stuart Weiss, Justen B. Whittall. The Ecological and Environmental Factors that Promote Survival, Growth, and Reproduction in the Metcalf Canyon Jewelflower, *Streptanthus albidus* ssp. *albidus* (Brassicaceae). Poster, California Native Plant Society Meetings, San Jose, CA (1/15)

- ***Cindy Dick** ('08), Ryan O'Dell and Justen B. Whittall. Genetic Diversity and Population Differentiation in the Rare Serpentine Endemic, San Benito Evening Primrose (*Camissonia benitensis*). Poster, Ecological Society of America, Portland, OR (8/12) & presented by **Julie Herman** ('14) at West Coast Bio, LMU (8/12)
- ***McCann, Leena** ('12), **Juliana Moreno** ('13), **Cynthia Dick** ('08), Stephanie Saffouri and Justen B. Whittall. The Role of Adaptation During Columbine Speciation. Student Poster, West Coast Bio, LMU (4/12; *1st Place Poster Award*)
- **Cossentine, Heidi** ('12), **Cindy Dick** ('08) and Justen Whittall. Chemical Defense, Flower Color and Phylogeography in the Arctic Mustard, *Parrya nudicaulis*. Student Poster, Sigma Xi, SCU (5/11)
- **Butler, Timothy** ('10), **Cynthia Dick** ('08) and Justen B. Whittall. Transcriptome-level Comparisons of Purple- and White-flowered Arctic Mustards (*Parrya nudicaulis*) using Next-Gen Sequencing Technologies. Student Poster, West Coast Undergraduate Biological Science Research Conference, SCU, CA (4/10); Sigma Xi, SCU, CA (4/10); Evolution 2010, Portland, OR (6/10); Society for Molecular Biology & Evolution, Lyon, France (7/10)
- Carlson, Matthew L., Mohamed Abdelaziz, Josh Barsis, **Tim Butler** ('10), **Cindy Dick** ('08), Justin Fulkerson, Savannah Hamilton, Cara Hesselbach, **Rachel Munsen** ('09), **Mimi Portilla** ('10), Keith Schneider, Laura Schneller, **Beth Storelli** ('09), Dan Kliebenstein, Justen B. Whittall. Exceptional floral diversity in the Arctic: The roles of pollinator and non-pollinator agents of selection in *Parrya nudicaulis*. Poster, Botanical Society of America, Snowbird, UT (7/09)
- **Cindy Dick** ('08), **Jason Buenrostro** ('09), **Tim Butler** ('10), **Heidi Cossentine** ('12), Savannah Hamilton, **Rachel Munsen** ('09), **Mimi Portilla** ('10), Keith Schneider, **Beth Storelli** ('09), Dan Kliebenstein, Matthew L. Carlson, Justen B. Whittall. The metabolomic and molecular basis of flower color diversity in the Arctic mustard *Parrya nudicaulis*. Poster, Botanical Society of America, Snowbird, UT (7/09)
- Richard C. Cronn, Aaron Liston, Matthew Parks, John Syring, Justen B. Whittall and Jason Buenrostro ('09). Chloroplast population genomics in narrowly-endemic and widespread species of *Pinus*. Poster. Plant Animal Genome, San Diego, CA (10/08).
- Justen B. Whittall, **Jason Buenrostro** ('09), Matthew Parks, Richard Cronn and Aaron Liston. Finding a Pine Needle in a Haystack: Using Microread Sequencing of the Chloroplast Genome to Locate Cryptic Genetic Diversity in the Narrow Endemic *Pinus torreyana.* Poster. Botanical Society of America, University of British Columbia, Canada (7/08)
- Dena Grossenbacher, Samuel Veloz, Jason Sexton and Justen B. Whittall. Niche evolution is initially related to speciation: A test within the genus *Mimulus*. Poster. Ecological Society of America Meetings (7/08)
- Brian Anacker[1], Justen Whittall[1] and Susan Harrison. A predictable evolutionary pathway to serpentine endemism and its consequences in the California flora. The 6th International Conference on Serpentine Ecology (6/08) ([1] both authors contributed equally to this work)
- Jessica Wright and Justen B. Whittall. Serpentinomics – An Exciting New Field of Study. The 6th International Conference on Serpentine Ecology (6/08)

e. Grants

External Funding Secured (Total $1,672,945)

- *NSF, "INCUBATOR RCN-UBE: Urban Ecosystems as Laboratories for Improving Quantitative Undergraduate Investigative Literacy" (participant), Division of Biological Infrastructure, Undergraduate Biology Education ($47,737, under consideration).
- *"Molecular Barcodes for Ash Tree Identification", Valley Water, Santa Clara, CA ($30,000, 12/19)
- *Natural Community Conservation Planning, Local Assistance Grant Program (LAG), "Name That Jewelflower: Using genetics and field surveys to determine taxonomic boundaries and define occurrences for the most beautiful jewelflower and Metcalf Canyon jewelflower on Coyote Ridge" (subcontractor), California Department of Fish and Wildlife ($195,264, not funded, anticipated resubmission 8/20; Santa Clara Valley Habitat Authority provided $11,922 interim funding to continue the research until LAG funds arrive).
- *Mid-Peninsula Open Space District, "Restoring Transitional Habitats with Bird Nests", co-PI with San Francisco Bay Bird Observatory, funded summer REAL student & lab supplies ($28,404, funded 5/19)
- *Northern California Botanists, "Bird Nests as Botanical Time Capsules", co-PI with SJSU graduate student Alex Rinkert ($1,500, funded 11/18)
- *California Fish and Wildlife, "Reintroduction of Ben Lomond Wallflower (*Erysimum teretifolium*) at the Bonny Doon Ecological Reserve: Experimental Examination of Habitat and Genetic Treatments Developed to Establish Persisting Populations", Section VI Grant in collaboration with Dr. Jodi McGraw (as subcontractor) ($357,079, funded 8/17)
- *Spanish Ministry of Science, "The importance of flower color polymorphism in the plant speciation process" in collaboration with Dr. Montse Arista and Dr. Pedro Luis Ortis ($175,400 Euros = $195,920; funded 2/16).
- *PhiBetaKappa Award for Teaching Excellence ($1,000; 3/16)
- *Creekside Center for Earth Observation, "Culture and host preference in *Castilleja affinis* var. *neglecta*" in collaboration with Christal Niederer (subcontract $2,000; funded 11/14).
- *California Native Plant Society, "The Perks of Being a Ben Lomond Wallflower" Graduate Research Scholarship awarded to Miranda Melen ('09) for her Masters Thesis Research Project ($1,500; funded Winter 2013).
- Department of the Interior, "Reintroduction of the Metcalf Canyon Jewelflower (*Streptanthus albidus* ssp. *albidus*) at Tulare Hill in Southern Santa Clara County" ($272,968; 4/12)
- Spanish Ministry of Science in collaboration with Drs. Eduardo Narbona & Marisa Buide, "Ecological and evolutionary significance of anthocyanins in *Silene* (Caryophyllaceae)" ($115,791 Euros = $148,815 US; 8/12)
- Northern California Botanists with students Juliana Moreno & Leena McCann, "Sympatric Speciation in Northern California Columbines" ($1,680; 7/12)
- California Department of Fish and Game, "Managing reproduction and genetic diversity in the Ben Lomond and Contra Costa wallflowers (*Erysimum teretifolium* and *E. capitatum* var. *angustatum*)" ($156,199; 9/11)

- Bureau of Land Management, "Identifying reservoirs of genetic diversity and reproductive mode in the San Benito Evening Primrose (*Camissonia benitensis*)*"* ($40,000; 5/11)
- NSF, "Research Experience for Undergraduates: Linking Ecology & Genomics to Understand Flower Color Evolution in the Arctic" ($6,000; 4/09)
- NSF, "Flower Color Evolution in the Arctic: Integrating Genomic Research and Undergraduate Education in Polar Environments" ($352,493; with Co-PI Matt Carlson, separate budget, 3/08)
- Santa Barbara Botanical Garden, "Torrey Pines: From Conservation to Genomics" ($19,344; 3/08)
- US Dept. of Interior, "Determining the optimal conditions for propagation and reproduction of the endangered serpentine endemic Metcalf Jewelflower (*Streptanthus albidus* ssp. *albidus*) of Santa Clara County and genetic assessment of its taxonomic status" ($74,721; with Sharon Strauss, 9/07)

Internal Funding

- "Flower color as a metamodel for understanding the evolution of biochemical pathways" WAVE Grant with Dr. Katherine Aoki (Art & Art History; $8,803, 6/19-present)
- **"**Computational Research and Advanced Visualization - Santa Clara University" (Co-PI) W.M. Keck Foundation, Undergraduate Education Program Proposal ($300,000 , not funded, program canceled)
- LEAD Summer Fellowship for Aleezah Salmaan (SCU, 6/19-9/19)
- LEAD Summer Fellowship for Elias Mendoza (SCU, summer 2018 & 2019)
- LEAD Summer Fellowship for Jason Nguyen (SCU, 6/16-9/16)
- SCU URI Travel Grants for Sophia Huang, Kate Horiuchi, Megan Kohn, Andrea Che and Michael Turgeon to present their research at West Coast Bio (Point Loma Nazarene 4/16).
- "Developing an introductory biology toolkit - a collaborative approach" funded by Santa Clara University's Collaborative for Teaching Innovation grant ($10,000; funded 10/15). Primary Author: Christelle Sabatier; Participating Faculty: Janice Edgerly-Rooks, Jim Grainger, Dawn Hart, David McMillan, and Justen Whittall.
- ALZA Scholarship (to Julie Herman), "Genetic diversity profile for the Ben Lomond Wallflower (*Erysimum teretifolium)*" ($13,000; 6/12)
- SCU URI Travel Grants for Peter Biro and Julie Herman to present their research at West Coast Bio (Azusa Pacific University 4/14).
- SCU URI Travel Grants for Peter Biro, Kyle Hohu, Julie Herman and Devin Wakefield to present their research at West Coast Bio (Point Loma Nazarene 4/13)
- SCU URI Travel Grants for Juliana Moreno, Leena McCann & Julie Herman to present their research posters at West Coast Bio, LMU ($1,400; 4/12)
- SCU FSRAP, "Bridging Disparate Disciplines: The Metabolomics of Flower Color and Herbivore Defense in Arctic Mustards" ($1,000, 5/10)
- SCU Undergraduate Research Initiative, "Applying Next-Gen Sequencing Technologies in Ecology & Evolution with Tim Butler (Biology, '10)" ($2,000, 9/09)

- Santa Clara University Technology Grant, "Improved DNA Visualization Capabilities for Undergraduate Education and Research" ($12,523, 12/08)
- Santa Clara University Technology Grant, "Real Time PCR Instrument to Enhance Instruction and Research in Evolution and Ecology" ($18,255, with Elizabeth Dahlhoff, 1/08)

Grants & Awards Prior to Appointment at SCU (<9/07)

- Comparative Biology Postdoctoral Fellowship, UC Davis (3/05-3/07)
- NSF Doctoral Dissertation Improvement Grant, UCSB ($12,000, 1/03-1/05)
- 1st Place Award, Plant Speciation Meetings, Antigonish, Nova Scotia (6/03)
- 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)
- Pamplin Fellowship for Native Plant Res., Portland Gard. Club, OSU ($5,000, 9/98)
- Linus Pauling Graduate Internship, Molecular Clock Research, OSU (6/97-9/97)

f. Non-Scholarly Publications

- *Whittall, Justen B. and Matt Ritter. Annual Editors' Report. Madroño; A West American Journal of Botany 64(4), 65(4), 66(4), 67(4) (2017-2020).
- *Tina Vossugh. Interviewed for the article "Superbloom! The explosion of color in California's wild places" Santa Clara Magazine (6/17).
- *Whittall, Justen B. 2017. Report on the Identification of Biological (and non-biological) Samples. Submitted to the Santa Clara County District Attorney. Used during my appearance as an expert witness for the prosecution in the Sierra Lamar homicide case (*People vs. Antolin Garcia-Torres)* (submitted 3/17).
- *Ruscetti, Tracy, Justen B. Whittall and Leilani Miller. Program & abstracts for the West Coast Biological Sciences Undergraduate Research Conference (4/17).
- *Niederer, Christal and Justen B. Whittall. Final Report & Adaptive Plan for: Reintroduction of the Metcalf Canyon Jewelflower (*Streptanthus albidus* ssp. *albidus*) at Tulare Hill in southern Santa Clara County. Submitted to the Department of the Interior, Bureau of Reclamation (11/16).

4. Service to the University, the Profession, and the Community

a. Service to University

1. Department of Biology

- *Faculty Co-Advisor, Tribeta Biological Honor's Society (9/17-present): organized field trips, panel discussions, etc. (during '19-'20 activities included Coronavirus Panel, field trips to Body Worlds Decoded, Año Nuevo elephant seals, and Mushrooms of Henry Cowell (in collaboration with Into the Wild student adventure club), coordinated and trained science fair judges for Synopsys Science Fair.
- *Chair, Genetics/Cell Biologist Tenure Track Search Committee (6/17-3/18)
- *Co-organizer, West Coast Biological Sciences Undergraduate Research Conference (4/17)

- *Committee Chair, BIOL1B Course Design for new Introductory Biology Experience (12/16)
- *Member, FAR Review Committee (3 Lecturers) (11/16)
- *Helped with Open House (10/16, 10/17, 10/18, 10/19)
- *Chair, Ecologist Tenure Track Search Committee (9/15-2/16)
- *Faculty Advisor, Tri-Beta Biological Honors Society & Club Bio (9/15-9/17)
- *Biology Representative, Preview Day (4/15)
- *Member, Intro Bio Series Working Group (9/07-12/15)
- Chair, Plant Biologist Tenure Track Search Committee (5/11-2/12)
- Hot Topics Contributor, Dept. of Biology (2/08, 2/09, 2/10, 4/11)
- Member, Ecology & Evolution AYL Search - 2 hires (4/10)
- Member, Genetics QPT Search Committee (11/09)
- Co-author, Proposal for an Endowed Chair in Medical Genomics submitted to the Dean of Arts & Sciences w/ Janice Edgerly-Rooks (11/09)
- Volunteer, Biology Representative, Major/Minor Fair, Benson Center, SCU (2/08 & 2/09)
- Host, Seminar Speakers (1/08, 1/10, 2/11)
- Member, Molecular Biologist Tenure Track Search Committee (9/08 – 3/09)
- Member, Ecology AYL Search Committee (9/08)
- Member, Academic Year Planning Committee (9/07-6/08)

2. College of Arts & Sciences
   - *Greenhouse Coordinator (9/08-present)
   - *Contributor, Computation and Visualization, Wiegand Grant Proposal (9/17)
   - *Contributor, Beckman Scholars Program, Grant Proposal (6/16, 6/17)
   - *Contributor, Center for Computational Research and Immersive Visualization, Keck Grant Proposal (10/16)
   - *Member, Integrated Science Center Committee (5/12-12/13)
   - Volunteer, West Coast Undergraduate Biological Science Research Conference, SCU, CA (4/10)
   - "Flora and Fauna…" Exhibit Contributor, de Saisset Museum, SCU (2008)
3. University
   - *WAVE Computational Facility Advisor (3/19 – present)
   - *Member, Natural Sciences & Social Sciences Grievance Committee (6/16-present)
   - *Member, Voluntary Retirement Support Program Task Force (1/16-present)

     "In early 2016, the Voluntary Faculty Retirement Support Program Task Force was charged with recommending to the University a program that would address the current and future retirement-related needs of its current and retired faculty." I have been meeting with the Task Force

weekly since its inception. Our numerous meetings and discussions with University organizations identified an underserved population of potential retirees. We made recommendations relating to money, education and leadership/coordination in our draft report in June 2016 (see Retirement Task Force.Report.June2016.pdf in Non-Scholarly Works).

- *Biology Representative, Faculty Senate (9/11-6/15)
- Judge, Environment Panel, SCU Tech Awards (6/12-8/12)
- New Faculty Retreat, Nature Walk Leader (10/09, 10/11, 10/12)
- Speaker, On the Origin of Species: A Darwin Anniversary Lunch, Literary Cuisine, SCU (11/09)
- Volunteer, Preview Days, SCU (4/08 & 4/09)
- Contributor, Article for President's Report, SCU (9/07-6/08)
- Contributor, SCU Public Relations

b. Service to Profession

- *Symposium Co-Coordinator, "Patterns and Processes of American Amphitropical Plant Disjunctions: New Insights" (2/17-present)
- *Judge, California Botanical Society's Graduate Student Meetings, Santa Barbara Botanic Garden (3/17) & Cal Poly San Luis Obispo (3/19)
- *Editor-in-Chief, Madroño; A West American Journal of Botany (1/17-present); Handled >90 manuscripts.
- *Judge, West Coast Biological Sciences Undergraduate Research Conference, LMU (4/12) & Point Loma (4/16)
- *Member, Abstract Committee, California Native Plant Society Meeting (1/15)
- *Letter writer for tenure applications for Dr. Jeremiah Busch (Washington State University, 11/13) and Dr. Carrie Wu (University of Richmond, 9/15).
- Guest Lecturer, Plant Systematics, UC Santa Cruz (4/10 & 4/11)
- Panelist, Doctoral Dissertation Improvement Grants, Division of Environmental Biology, National Science Foundation, Washington DC (2/10)
- Host, Bay Area Biosystematists Panel on Coevolution, SCU (4/10)
- Undergraduate Textbook Reviewer, *Evolution: Making Sense of Life* by Ellen & Zimmer (Two Chapters, Roberts and Company Publishers)
- Reviewer for numerous academic journals and granting organizations averaging approximately 7 reviews per year since appointment at SCU including: *American Journal of Botany, American Naturalist, Annals of Botany, Applications in Plant Sciences, Bioinformatics, BMC Ecology, BMC Genomics, Evolution, French Science Foundation, Frontiers in Plant Sciences, International Journal of Molecular Sciences, International Journal of Plant Sciences, Israel Science Foundation (Israel Academy of Sciences & Humanities), Journal of Evolutionary Biology, Journal of Heredity, Madroño, Molecular Biology & Evolution, Molecular Ecology, Molecular Phylogenetics & Evolution, Molecules, New Phytologist, Northeastern Naturalist, NSF, PeerJ, Plant Science Center (Plant Fellows Postdoc, Zurich), Plant Systematics and Evolution, PLoS ONE, Proceedings of the National Academy of Sciences, Science Reports (a Nature journal), Systematic Biology, Science, Systematic Biology,*

The Austrian Fund (Austrian National Funding Agency), and *Trends in Ecology and Evolution.*

- Panelist, Bay Area Biosystematists Panel on Adaptation, CSU Sonoma (4/07)
- 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)

c. Community Service

- *Judge & Special Award Presenter, Best-Plant Projects, Middle & High School Agre Groups, Santa Clara Valley Science Fair (SYNOPSYS) and Santa Cruz County Science and Engineering Fair (2/18, 2/19, 2/20). Awarded over $1500 over the three years.
- *Judge, Graduate Student Poster Session, Northern California Botanists Symposium (1/20).
- *Botanical Consultant for Santa Clara County District Attorney's Office (5/10 – present including Expert Testimony in Sierra Lamar Homicide Case 4/17 & Opium Poppy Identification 3/17)
- *Hosted two high school summer interns through Katy Korsemeyer's STEM Intern program (Amol Singh won an award for his poster at the SYNOPSIS Science Fair describing his summer research project; now an undergraduate at Stanford University)
- *Co-organizer and judge, Brook Knoll Elementary Science Fair, Scotts Valley (2/11 – present)
- *Coordinated multiple seed cleaning events at SCU including SCU bioscience undergrads and California Native Plant Society volunteers to prepare Metcalf Jewelflower seeds for reintroduction (2014 & 2015)
- *Organized Biology Faculty, Staff and Student Volunteers for Monthly Service at the 2nd Harvest Foodbank, San Jose CA (9/11 – 9/13)
- Science Fair Judge, Vine Hill Elementary, Scotts Valley (1/09 & 1/10)
- Discussion Leader on Evolution & Religion, Opus Dei Meeting, Mountain View (5/11)
- Science Fair Advisor for Elizabeth Bernal, Presentation High School (4/11)
- Instructor, Elementary School Lessons in Ecology & Evolution, Brook Knoll Elementary, Scotts Valley CA (9/07-6/06; anticipated starting 9/18)
- Girl Scouts Field Trip Leader (Feb, April & May, 2011)
- Educational Seminars, Oak Tree Villa Retirement Community, Scotts Valley (12/09 & 7/10)
- Field Trip Leader, "Pollinators of De Laveaga County Park", Santa Cruz Chapter, California Native Plant Society (5/10 & 5/11).