

# Jonathan Chang

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## EDUCATION

- 2017 Ph.D Biology, University of California, Los Angeles  
“Diversity, disparity, and exploitation in the ray-finned fishes”  
Advisor: Michael E Alfaro
- 2011 B.S. in Biology, University of California, Los Angeles.

## APPOINTMENTS

- 2018 Postdoctoral Researcher, University of Michigan, Ann Arbor

## HONORS & AWARDS

- 2017 A. M. Schechtman Award for distinguished teaching, UCLA.
- 2016 David and Marvalee Wake Award for best student presentation, Society for Integrative and Comparative Biology.

## GRANTS & FELLOWSHIPS

- 2017 George A. Bartholomew Fellowship and Research Award, UCLA. \$9,000.
- 2016–2018 Doctoral Dissertation Improvement Grant (Co-PI), National Science Foundation. \$20,020. Testing macroevolutionary predictions of diversity and disparity in the ray-finned fishes.
- 2013–2015 David M. Rubenstein Fellowship (PI), Encyclopedia of Life. \$52,280. Using massively crowdsourced data to examine morphological impacts of extinction risk in ray-finned fishes.
- 2010 Whitcome Summer Undergraduate Research Fellowship, UCLA. \$3,000. Phylogenomic approaches to resolving evolutionary relationships among ray-finned fishes.

## Travel Awards

- 2017 NSF Travel Stipend, Society of Systematic Biologists. \$500.
- 2017 Conference/Travel Award, UCLA. \$1,500.
- 2016 NSF AVATOL Travel Stipend, University of Maine. \$750.
- 2015 Research and Travel Grant, UCLA. \$1,991.
- 2014 Stephen and Ruth Wainwright Fellowship, University of Washington. \$1,200.
- 2014 Conference and Research Grant, UCLA. \$1,500.
- 2014 Travel Award, National Evolutionary Synthesis Center. \$600.
- 2013 Travel Stipend, Society for the Study of Evolution. \$500.

## PUBLICATIONS

### Peer-reviewed manuscripts

- 394 cites
- h-index: 5, i10-index: 3
- via [Google Scholar](#), July 30, 2018
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9. 2018 DL Rabosky, **J Chang**, PO Title, PF Cowman, L Sallan, M Friedman, K Kaschner, C Garilao, TJ Near, M Coll, ME Alfaro. An inverse latitudinal gradient in speciation rate for marine fishes. *Nature* doi:10.1038/s41586-018-0273-1
8. 2018 G Burin, LRV de Alencar, **J Chang**, ME Alfaro, TB Quental. How well can we estimate diversity dynamics for clades in diversity decline?. *Systematic Biology* doi:10.1093/sysbio/syy037
7. 2018 SV Liu, B Frédérich, S Lavoué, **J Chang**, MV Erdmann, GN Mahardika, PH Barber. Buccal venom gland associates with increased of diversification rate in the fang blenny fish Meiacanthus (Blenniidae; Teleostei). *Molecular Phylogenetics and Evolution* 125:138-146 doi:10.1016/j.ympev.2018.03.027
6. 2018 MGM Lima, J de Sousa e Silva-Júnior, D Černý, JC Buckner, A Aleixo, **J Chang**, J Zheng, ME Alfaro, A Di Fiore, JP Boubli, JW Lynch Alfaro. A phylogenomic perspective on the robust capuchin monkey (*Sapajus*) radiation: First evidence for extensive population admixture across South America. *Molecular Phylogenetics and Evolution* 214:137-150 doi:10.1016/j.ympev.2018.02.023
5. 2017 DL Rabosky, JS Mitchell, **J Chang**. Is BAMM flawed? Theoretical and practical concerns in the analysis of multi-rate diversification models. *Systematic Biology* 66(4):477-498 doi:10.1093/sysbio/syx037
4. 2016 E Gjesfjeld, **J Chang**, D Silvestro, C Kelty, ME Alfaro. Competition and extinction explain the evolution of diversity in American automobiles. *Palgrave Communications* 2:16019 doi:10.1057/palcomms.2016.19
3. 2015 **J Chang**, ME Alfaro. Crowdsourced geometric morphometrics enable rapid large-scale collection and analysis of phenotypic data. *Methods in Ecology and Evolution* 7(4):472-482 doi:10.1111/2041-210x.12508
2. 2015 PS Gilbert, **J Chang**, E Sobel, JS Sinsheimer, BC Faircloth, ME Alfaro. Genome-wide ultraconserved elements exhibit higher phylogenetic informativeness than traditional gene markers for the fish series Percomorpha. *Molecular Phylogenetics and Evolution* 92:140 doi:10.1016/j.ympev.2015.05.027
1. 2013 DL Rabosky, F Santini, JM Eastman, SA Smith, BL Sidlauskas, **J Chang**, ME Alfaro. Rates of speciation and morphological evolution are correlated across the largest vertebrate radiation. *Nature Communications* 4:1958 doi:10.1038/ncomms2958

### Other manuscripts

- 2014 **J Chang**. Why are there so many flatfishes? Jaw asymmetry, diet, and diversification in the Pleuronectiformes.
- 2012 preprint BC Faircloth, **J Chang**, ME Alfaro. TAPIR enables high-throughput estimation and comparison of phylogenetic informativeness incorporating locus-specific substitution models.

## PRESENTATIONS

### Invited conference presentations

- 2017 **J Chang**. Innovation, growth and stability in biology and other systems. Gruter Institute for Law and Behavioral Research, May 21–25, Olympic Valley, CA

### Contributed conference presentations

- 2018 JW Lynch Alfaro, MG Lima, D Černý, **J Chang**, J Zheng, JC Buckner, ME Alfaro, A Martins, J de Sousa e Silva-Júnior, A Aleixo. Phylogenomics and population genomic analyses for the Neotropical robust capuchin monkey radiation: UCEs reveal extensive population admixture within Sapajus. International Primatological Society, August 19–25, Nairobi, Kenya
- 2018 **J Chang**, DL Rabosky, ME Alfaro. Incomplete sampling in phylogenies: when likelihoods go flat. Systematic Biology, June 1–4, Columbus, OH
- 2018 **J Chang**, ME Alfaro. Building the complete ray-finned fish tree of life. Integrative and Comparative Biology, January 3–7, San Francisco, CA
- 2017 JA Sime, **J Chang**, ME Alfaro, L Sallan. Does the ecology of clade imbalance explain the “living fossil” phenomenon within a mega-phylogeny of ray-finned (actinopterygian) fishes?. Geological Society of America, October 22–25, Seattle, WA
- 2017 JA Sime, **J Chang**, ME Alfaro, L Sallan. Pervasive diversity imbalance among sister clades of ray-fin fishes. Evolution, June 23–27, Portland, OR
- 2017 **J Chang**, ME Alfaro. A complete ray-finned fish phylogeny using taxonomy and birth-death models. Evolution, June 23–27, Portland, OR (Poster)
- 2017 **J Chang**, PF Cowman, M Friedman, LC Sallan, JT Clarke, ME Alfaro. A complete ray-finned fish phylogeny using taxonomy and birth-death models. Systematic Biology, January 8–10, Baton Rouge, LA
- 2017 **J Chang**, K Roy, JK Baum, PF Cowman, M Friedman, LC Sallan, JT Clarke, ME Alfaro. Size-selective harvesting and the macroevolutionary implications of an “anthropogenic filter” in ray-finned fishes. Integrative and Comparative Biology, January 4–8, New Orleans, LA
- 2016 **J Chang**, K Roy, JK Baum, ME Alfaro. Size-selective harvesting and the macroevolutionary impacts of the “anthropogenic filter” in ray-finned fishes. Southwest Organismal Biologists, November 19, Fullerton, CA (Poster)
- 2016 **J Chang**, K Roy, JK Baum, ME Alfaro. Size-selective harvesting and the macroevolutionary impacts of the “anthropogenic filter” in ray-finned fishes. Luskin Inaugural Symposium, October 19, Los Angeles, CA (Poster)
- 2016 EJ Gjesfjeld, **J Chang**, D Silvestro, ME Alfaro. Modeling diversification dynamics in the pharmaceutical industry. Human Behavior and Evolution, June 28–July 2, Vancouver, BC (Poster)
- 2016 **J Chang**, K Roy, JK Baum, PF Cowman, M Friedman, LC Sallan, JT Clarke, ME Alfaro. Eating away the fish tree of life: the phylogenetic distribution of human exploitation. Evolution, June 17–21, Austin, TX
- 2016 ME Alfaro, **J Chang**, PF Cowman, M Friedman, LC Sallan, JT Clarke, DL Rabosky, TJ Near. An evolutionary timescale for the diversification of ray-finned fishes. Evolution, June 17–21, Austin, TX

- 2016 EJ Gjesfjeld, **J Chang**, D Silvestro, C Kelty, ME Alfaro. A quantitative macroevolutionary approach to exploring the pharmaceutical drug innovation crisis. *Evolution*, June 17–21, Austin, TX
- 2016 **J Chang**, ME Alfaro. The tempo of body shape evolution in ray-finned fishes: bringing morphology into the “phenomic era” with crowdsourced morphometrics. *Integrative and Comparative Biology*, January 3–7, Portland, OR (Won David and Marvalee Wake Award for Best Student Presentation)
- 2016 ME Alfaro, DL Rabosky, **J Chang**, P Title, M Venzon. Global patterns of diversification across the ray-finned fish tree of life. *Integrative and Comparative Biology*, January 3–7, Portland, OR
- 2016 MB Balisi, **J Chang**. Hypercarnivory and extinction risk in North American fossil dogs. *Integrative and Comparative Biology*, January 3–7, Portland, OR (Poster)
- 2015 EJ Gjesfjeld, **J Chang**, D Silvestro, C Kelty, ME Alfaro. Investigating the diversification of car models using macroevolutionary methods. *Evolution*, June 26–30, Guarujá, Brazil
- 2015 **J Chang**, ME Alfaro. Patterns of shape diversity across ray-finned fishes with crowdsourced morphometrics. *Evolution*, June 26–30, Guarujá, Brazil (Ernst Mayr Symposium)
- 2015 EJ Gjesfjeld, **J Chang**, D Silvestro, ME Alfaro. Investigating the diversification of car models using macroevolutionary methods. *Human Behavior and Evolution*, May 27–30, Columbia, MO (Poster)
- 2015 **J Chang**, ME Alfaro. Crowdsourced morphometrics for large-scale analysis of phenotypic data. *Systematic Biology*, May 20–22, Ann Arbor, MI
- 2015 **J Chang**, ME Alfaro. Crowdsourced morphometric data are as accurate as traditionally collected data in 7 ray-finned fish families. *Integrative and Comparative Biology*, January 3–7, West Palm Beach, FL
- 2015 MD McGee, SR Borstein, **J Chang**, ME Alfaro, PC Wainwright. Progressive functional innovation in cichlid adaptive radiations. *Integrative and Comparative Biology*, January 3–7, West Palm Beach, FL
- 2014 J Zheng, **J Chang**, ME Alfaro. Novel approach measures the topological accuracy of large phylogenetic reconstruction. *UCLA Biology Research Symposium.*, May 17, Los Angeles, CA (Jimmy won Best Student Presentation)
- 2014 **J Chang**, DL Rabosky, ME Alfaro. Crowdsourced morphometrics: a method to overcome bottlenecks in collecting phenotype data. *Integrative and Comparative Biology*, January 3–7, Austin, TX
- 2013 **J Chang**, DL Rabosky, ME Alfaro. Morphology and exploitation in ray-finned fishes using crowdsourced data. *Evolution*, June 21–25, Snowbird, UT
- 2013 **J Chang**, JM Eastman, ME Alfaro. Family-level analysis of exploited and at-risk ray-finned fish species shows high potential loss of biodiversity. *Integrative and Comparative Biology*, January 3–7, San Francisco, CA
- 2012 **J Chang**, K Roy, JM Eastman, SA Smith, F Santini, JK Baum, PA Hastings, BL Sidlauskas, ME Alfaro. Phylogenetic clustering of commercially exploited fish species. *Integrative and Comparative Biology*, January 3–7, Charleston, SC

- 2012 ME Alfaro, BC Faircloth, L Sorenson, **J Chang**, F Santini. A 500-locus phylogenomic study of ray-finned fishes. *Integrative and Comparative Biology*, January 3–7, Charleston, SC
- 2012 PS Gilbert, **J Chang**, BC Faircloth, ME Alfaro. Genome-wide ultraconserved elements exhibit higher phylogenetic informativeness than traditional fish markers. *Integrative and Comparative Biology*, January 3–7, Charleston, SC (Poster)
- 2011 ME Alfaro, K Roy, **J Chang**, JM Eastman, SA Smith, F Santini, JK Baum, PA Hastings, BL Sidlauskas. Phylogenetic distribution of commercially exploited fish species: How many times has ‘tastiness’ evolved?. *Evolution*, June 17–21, Norman, OK

## TEACHING

### Courses

- 2018 Instructor (50%). Genetics, Evolution, and Ecology.
- 2016–2017 TA Consultant (100%). Preparation for Teaching Biology in Higher Education. 3x

### Courses (as TA)

- 2017 TA. Genetics, Evolution, and Ecology.
- 2011–2015 TA/Head TA. Ecology, Evolution, and Biodiversity. 11x
- 2015 TA. Practical Computing for Ecologists and Evolutionary Biologists.
- 2013 TA. Ecology.
- 2013 TA. Comparative Biology and Macroevolution.

### Workshops

- 2017 Panelist. UCLA Office of Instructional Development, Experienced STEM TAs.
- 2017 Organizer. UCLA Psychology and EEB, Success in Science Bootcamp.
- 2017 Instructor. UCLA Graduate Writing Center, Writing Successful Grant and Fellowship Applications (Science and Engineering Focus).
- 2010–2017 Assistant. UCLA, Introduction to R for Ecologists and Evolutionary Biologists. 8x
- 2017 Consultant. UCLA Career Center, Academic Job Market Summer Intensive Workshop for Graduate Students and Postdoctoral Scholars in STEM.
- 2017 Instructor. Oregon State University, Analysis of Diversification Rates from Phylogenies.
- 2016–2017 Instructor. UCLA Office of Instructional Development, Teaching Scientific Writing. 2x
- 2016 Instructor. UCLA Ecology and Evolutionary Biology, NSF Doctoral Dissertation Improvement Grant Workshop.
- 2016 Instructor. UCLA Office of Instructional Development, Time Management for TAs.
- 2013–2015 Instructor. UCLA La Kretz Center, Workshop in Conservation Genomics. 3x

### Other

- 2016–2017 Writing Consultant. UCLA, Graduate Writing Center.

## MENTORING

Chris Rice (2015–2018, UCLA), Binal Patel (2015, UCLA), Jimmy Zheng (2014, UCLA), Zack Herbst (2012–2014, Chadwick School, Palos Verdes Peninsula, CA)

## SERVICE

### Professional

- 2018— Reviewer for: *Systematic Biology* (2016–2018), *BMC Evolutionary Biology* (2017), *Ecography* (2017), *Journal of Evolutionary Biology* (2018), *Journal of Biogeography* (2018) ([Publons profile](#))
- 2018— Society for Integrative and Comparative Biology, Broadening Participation Mentorship Program
- 2017–2020 Society for Integrative and Comparative Biology, Student/Postdoctoral Affairs Committee

### University

- 2016–2017 UCLA EEB Faculty–Grad Liason
- 2014–2015 UCLA EEB Seminar and EcoEvoPub Committee

### Outreach

- 2014–2017 Los Angeles County Science Fair
- 2016 UCLA Art/Sci LASER Symposium
- 2013–2015 Exploring Your Universe

### Other

- 2016— Maintainer for Homebrew, Linuxbrew and Brewsci package managers

## SCIENTIFIC AFFILIATIONS

- 2011— Society for Integrative and Comparative Biology
- 2013— Society of Systematic Biologists
- 2013— Society for the Study of Evolution (life member)

## COMPUTER SKILLS

Computer programming (Python, R, JavaScript, Perl, C++, Ruby); System administration (macOS, Linux); Document markup (CSS,  $\LaTeX$ , HTML, Pandoc); Database administration (MySQL, SQLite)

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Last updated: August 14, 2018