

Josef C Uyeda

CURRICULUM VITAE

Department of Biological Sciences

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Academic employment

Virginia Polytechnic Institute and State University, Blacksburg, VA (2017-Present)

Assistant Professor, Department of Biological Sciences

University of Idaho, Moscow, ID (2012-2017)

Postdoctoral Fellow, Institute for Bioinformatics and Evolutionary Studies (IBEST)

Supervisor: Prof. Luke J. Harmon

Education

Oregon State University, Corvallis, OR (2006-2012)

Ph.D. in Evolutionary Biology. Dissertation Title: *Connecting microevolutionary processes with macroevolutionary patterns across space and time.*

Advisor: Prof. Stevan J Arnold

Willamette University, Salem, OR (2002-2006)

B.A. with honors, *summa cum laude*, Major: Biology, Minor: Chemistry

Thesis advisors: Susan Kephart & Robert Drewes (California Acad. Of Sci.)

Publications

Hagey, TJ, **Uyeda, JC**, Crandell, KE, Cheney, JA, Autumn, K and LJ Harmon. 2017. Tempo and mode of performance evolution across multiple independent origins of adhesive toe pads in lizards. *Evolution*, 10.1111/evo.13318.

Uyeda, JC, Pennell, MW, Miller, ET, Maia, R and CT McClain. 2017. The evolution of energetic scaling across the vertebrate tree of life. *The American Naturalist*, 190 (2): 185-199.

Uyeda, JC, Harmon, LJ and CE Blank. 2016. A comprehensive study of cyanobacterial morphological and ecological evolutionary dynamics through deep geologic time preserved in the genomes of modern taxa. *PLoS ONE* 11(9): e0162539. doi:10.1371/journal.pone.0162539.

Uyeda, JC. 2016. Quantitative genetics of evolutionary divergence and diversification. *The Encyclopedia of Evolutionary Biology, 1st Edition*, edited by Richard Kliman. Academic Press.

Uyeda, JC, Caetano, DS, and MW Pennell. 2015. Statistical and conceptual challenges to the comparative analysis of principal components. *Systematic Biology*, 64 (4): 677-689.

Uyeda, JC, and LJ Harmon. 2014. A novel Bayesian method for inferring and interpreting the dynamics of adaptive landscapes from phylogenetic comparative data. *Systematic Biology*, 63(6):902-918.

- Pennell, MW, Eastman, JM, Slater, GJ, Brown, JW, **Uyeda, JC**, Fitzjohn, RG, Alfaro, ME and LJ Harmon. 2014. geiger v2.0: an expanded suite of methods for fitting macroevolutionary models to phylogenetic trees. *Bioinformatics*, doi:10.1093/bioinformatics/btu181.
- Pennell, MW, Harmon, LJ and **JC Uyeda**. 2014. Speciation is unlikely to drive divergence rates. *Trends in Ecology and Evolution*, 29(2):72-3.
- Pennell, MW, Harmon, LJ and **JC Uyeda**. 2013. Is there room for punctuated equilibrium in macroevolution? *Trends in Ecology and Evolution*, 29(1):23-32.
- Jones, AG, Bürger, R, Arnold, SJ, Hohenlohe, PA and **JC Uyeda**. 2012. The effects of stochastic and episodic movement of the optimum on the evolution of the G-matrix and the response of the mean to selection. *Journal of Evolutionary Biology*, 25(11):2210-2231.
- Eddy, SL, Kiemnec-Tyburczy, KM, **Uyeda, JC** and LD Houck. 2012. The influence of sequential male courtship behaviors on courtship success and duration in a terrestrial salamander, *Plethodon shermani*. *Ethology*, 118(12):1240-1250.
- Uyeda, JC**, Hansen TF, Arnold SJ and J Pienaar. 2011. The million-year wait for macroevolutionary bursts. *Proceedings of the National Academy of Sciences*, 108(38):15908-15913.
- Westphal, MF, Morey, SR, **Uyeda, JC**, and Morgan, TJ. 2011. Molecular phylogeny of the subfamily Amphistichinae (Teleostei: Embiotocidae) reveals a convergent loss of red pigmentation in two rapidly evolving lineages of sand-dwelling surfperch. *Journal of Fish Biology* 79:313-330.
- Uyeda, JC**, Arnold, SJ, Hohenlohe, PA, and LS Mead. 2009. Drift promotes speciation by sexual selection. *Evolution* 63(3):583-594.
- Uyeda, JC**, Drewes, RC, and BM Zimkus. 2007. The California Academy of Sciences Gulf of Guinea Expeditions (2001, 2006) VI. A new species of *Phrynobatrachus* from the Gulf of Guinea islands and a reanalysis of *Phrynobatrachus dispar* and *P. feae* (Anura: Phrynobatrachidae). *Proceedings of the California Academy of Sciences*, 58(18):367-385.
- Uyeda, JC**, and SR Kephart. 2007. Detecting species boundaries and hybridization in *Camassia quamash* and *C. leichtlinii* (Agavaceae) using allozymes. *Systematic Botany*, 31(4):642-655.

Grants and Fellowships

- 2017** Does a complex performance landscape drive adaptive diversification? (Co-PI). *Full invited proposal submitted to NSF-BSF Integrative Organismal Systems*.
- 2016** Enabling machine actionable semantics for comparative analyses of trait evolution (Co-PI). *Full proposal submitted to NSF Advancing Biological Infrastructure (Recommended, \$172,356)*.
- 2011** Outreach Grant (Co-PI S. Eddy, \$800) Darwin's Legacy Workshop
Society for the Study of Evolution
- 2011** Outreach Grant (Co-PI S. Eddy, \$800) Darwin's Legacy Workshop
Precollege Programs, Oregon State University
- 2010** Doctoral Dissertation Improvement Grant (\$14,961, Co-PI S.J. Arnold)
National Science Foundation (Award No. 1011352)
- 2010** Outreach Grant (\$1000; Co-PI S. Eddy), Darwin's Legacy Workshop
Precollege Programs, Oregon State University
- 2009** Nordic research supplement (~\$20,000; Co-Sponsors T.F. Hansen and T. Schweder)
NSF/ Research Council of Norway (Project No. 194945/V11)
- 2009** Zoology Research Fund, Oregon State University (\$500)

2007 Predoctoral Fellowship, National Science Foundation (\$130,500)

Teaching Experience

2011-2017 Instructor, Evolutionary Quantitative Genetics Workshop, NESCENT, NIMBioS & Friday Harbor Labs (Workshop with SJ Arnold & J Felsenstein)
2017 Workshop leader, *bayou* tutorial, SSB standalone meeting, Baton Rouge, LA
2016 Invited Instructor, Next Generation Phenomics Tools, Portland, Maine
2016 Invited Lecturer, Biology 102: Biology & Society, University of Idaho
2013-2016 Invited Lecturer, Biology 489: Herpetology, University of Idaho
2015 SSB Model Based Molecular Systematics Workshop, Guaruja, Brazil
2011 Lecturer, Biology 445/545: Evolution, Oregon State University
2011, 2012 Lecturer, Biology 211: Principles of Biology, Oregon State University
2010-2011 Teaching Assistant, Biology 211, 212 & 213, Oregon State University
2006-2007 Teaching Assistant, Biology 211, 212 & 213, Oregon State University
2009-2012 Undergraduate Research Mentor, Zoology 401, Oregon State University
2012 Invited Lecturer, Biology 445: Evolution, Oregon State University
2009 Invited Lecturer, Biology 370: Ecology, Oregon State University
2006 Teaching Assistant, Biology 352: Plant Sys & Evol, Willamette University
2005 Teaching Assistant, Biology 355: Vertebrate Zoology, Willamette University
2004-2005 Teaching Assistant, Biology 125: Ecology, Evol & Diversity, Willamette University

University Service

2016 Postdoc mentoring program, University of Idaho
2010 Co-Founder of BIO-GradS: Broader Impacts and Outreach by Graduate Students organization, Oregon State University.

Expert Reviewer Service

Proceedings of the National Academy of Sciences, Evolution, The American Naturalist, Molecular Ecology (Top reviewer 2015), *Systematic Biology, Methods in Ecology and Evolution, Scientific Reports, Proceedings Royal Society B, Axios*

Community Outreach

March 2-5, 2015 Darwin Day Roadshow, Craigmont & Moscow, ID (~200 students, 2 schools)
April 21, 2013 Palouse Discovery Science Center, Pullman, WA (60 students)
October 24, 2011 "Evolution and Ecology Workshop", Corvallis, OR (80 students, 4 teachers)
July 22, 2011 "GEAR UP" Latino student outreach panel, Corvallis, OR (30 students)
December 2, 2010 "Discovery Nights" -Wilson Elementary School, Corvallis, OR (50 students)
November 10, 2010 Philomath High School presentation, Philomath, OR (30 students)
September 20, 2010 "Darwin's Legacy Workshop", OSU (65 students, 7 teachers)
July 2, 2010 Evolution Teacher workshop, OSU (14 high school teachers)

May 18, 2010	West Albany High School visit to OSU (35 students)
April 15, 2010	Illinois Valley High School visit to OSU (35 students)
2010-2011	Dallas High School, (2 visits to 3 classes, ~60 students)
March 7, 2009	Science Potpourri, OSU (20 students)
January 22, 2009	Mountain View Elementary School, Corvallis, OR (23 students)
Spring, 2008	Fir Grove Elementary School (30 students)
2007-2011	Myers Elementary, Salem, OR (annual visits, 300 students)
2007 & 2008	SMILE tours, OSU (3 tours to middle school classes)
2007-2009	Avery House Volunteer, Corvallis, OR (3 events, 60 participants)
2005	Earthwatch assistant (helped lead ~15 volunteers), Salem, OR

Professional Seminars/Talks

June 2017	Evolution 2017, Portland, OR. <i>Tracking continuously-varying adaptive landscapes through macroevolutionary time.</i> (Contributed talk).
June 2017	<i>Trees, traits and functions: Semantics for Comparative Biology</i> (SSB workshop), Portland, OR. <i>Can ontologies help us understand trait evolution? (and vice versa?).</i> (invited lecture).
August 2016	Evolutionary Quantitative Genetics, NIMBIOS, Knoxville, TN. Multiple invited lectures.
June 2016	Next Generation Phenomics, Tools for the Tree of Life. <i>Analyzing 'phenomic' data on phylogenies.</i> (invited lecture)
June 2016	Evolution 2016, Austin, Texas. <i>Using synthetic databases to construct time-calibrated phylogenies for comparative analyses.</i> (contributed talk)
June 2015	Evolution 2015, Guarujá, Brazil. <i>The evolution of energetic scaling relationships across the vertebrate tree of life.</i> (contributed talk)
Nov 2014	Modern Phylogenetic Comparative Methods, Seville, Spain. <i>A novel Bayesian method for identifying adaptive shifts on phylogenies.</i> (contributed talk)
August 2014	Evolutionary Quantitative Genetics, NIMBIOS, Knoxville, TN. <i>From micro- to macroevolution: Waiting for evolutionary bursts</i> (invited lecture)
June 2014	Evolution 2014, <u>Raleigh</u> , NC. <i>Detecting billion year old rate shifts in microbial evolution.</i> (contributed talk, co-authors Carrine Blank, Lisa Moore and Luke Harmon)
April 2014	EVO-WIBO, Port Townsend, WA. <i>Bayesian modeling of adaptive evolution on phylogenies.</i>
August 2013	Evolutionary Quantitative Genetics, NESCENT, Durham, NC. <i>From micro- to macroevolution: Waiting for evolutionary bursts</i> (invited lecture)
July 2013	Evolution 2013, Snowbird, UT. <i>Better interpretation of patterns of trait evolution using a novel reversible-jump method of detecting adaptive regimes from phylogenetic comparative data</i> (contributed talk)
July 2012	Evolution 2012, Ottawa, ON. <i>A classic example of stasis? Macroevolutionary patterns of body temperature evolution in mammals</i> (poster, co-authors TF Hansen, G. Bloom and J Pienaar)
March 2012	Invited Lecture, Willamette University, Salem, OR. <i>The Evolutionary Blunderbuss: Connecting micro and macroevolution</i>
August 2011	Evolutionary Quantitative Genetics, NESCENT, Durham, NC. <i>From micro- to macroevolution</i> (invited lecture)

- July 2011** Evolution 2011, Norman, OK. *How can evolutionary process models simultaneously explain micro- and macroevolutionary patterns? And How to study big evolutionary divergence databases* (contributed talk, co-authors TF Hansen, SJ Arnold and J Pienaar)
- July 2010** Evolution 2010, Portland, OR. (contributed talk, co-authors TF Hansen, SJ Arnold and J Pienaar)
- April 2010** EVO-WIBO, Port Townsend, WA. (Poster- **Top Poster Award**)
- Sept 2009** CEES annual conference, Holmen Fjordhotell, Norway. (contributed talk)
- July 2009** Joint Meetings of Ichthyology and Herpetology, Portland, OR. (Poster)
- June 2009** Evolution 2009, Moscow, ID. (Poster)
- June 2008** Evolution 2008, Minneapolis, MN. *Speciation by drift in female mating preferences* (contributed talk, co-authors SJ Arnold, PA Hohenlohe and LS Mead)
- April 2008** EVO-WIBO, Port Townsend, WA. (contributed talk, co-authors SJ Arnold, PA Hohenlohe and LS Mead)

Working groups

- Feb 2016** Phenotypic Research Coordination Network, Biosphere 2, Tucson, AZ
- Aug 2015** Evolution of lifespan, Tri-CEM working group, Duke University, Durham, NC
- May 2015** Tempo and Mode of Plant Trait Evolution, NESCENT working group, Durham, NC
- Sept 2014** OpenTree Hackathon Tree-For-All, AVATOL working group, Ann Arbor, MI

Software

- bayou*** Bayesian fitting of Ornstein-Uhlenbeck models to phylogenies (author, R package), <http://cran.r-project.org/package=bayou>
- treeplyr*** *'dplyr'* functionality for matched tree and data objects (author, R package), <http://cran.r-project.org/package=treeplyr>
- treetimer*** Time-calibrating phylogenies from the OpenTree of life (author, R package), <https://github.com/uyedaj/treetimer/>
- geiger v2.0*** Investigating evolutionary radiations (contributor, R package), <http://cran.r-project.org/package=geiger>
- Arbor*** Workflow software for comparative methods (contributor), www.arborworkflows.com