**KIM HOKE**

**ADDRESS** **CONTACT**

Colorado State University 970-492-4200

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Fort Collins, CO 80523-1878

**EDUCATION**

2002 Ph.D., Neurosciences, Stanford University Medical School

1994 B.S. Physics

1994 B.S. Biology, Stanford University

**ACADEMIC POSITIONS**

2015 – present Associate Professor, Department of Biology, Colorado State University

2009 – 2015 Assistant Professor, Department of Biology, Colorado State University

2002 – 2008 Postdoctoral Fellow, Section of Integrative Biology, University of Texas Austin

**HONORS AND AWARDS**

2017 Monfort Professor, Colorado State University

2017 Hanse-Wissenschaftskolleg Fellow, Institute for Advanced Study, Delmenshorst, Germany. *Sabbatical funding.*

2015 OVPR Research Excellence Award, Colorado State University

2015 Faculty Excellence in Graduate Education and Mentoring, Department of Biology, Colorado State University.

2006 American Fellowship, American Association of University Women, University of Texas, Austin.

2002 Smithsonian Institution Postdoctoral Fellowship, Smithsonian Tropical Research Institute, Gamboa, Panama.

2001 Grass Fellowship in Neuroscience, Marine Biological Lab, Woods Hole, MA.

1997 Gerald J. Lieberman Fellow, Stanford University.

1994 Graduate Research Fellowship, National Science Foundation, Stanford University.

**CONTRACTS & GRANTS**

2019-2021 “OPUS: MCS: The Imprint of Developmental Bias on Morphological Diversification,” **Hoke KL** (PI), National Science Foundation, $272,646.

2016-2017 “Dissertation Research: The relative roles of selection and constraint in convergent ear loss across the true toads (Bufonidae),” **Hoke KL** (PI) -- DDIG to Molly Womack, National Science Foundation, $19,630.

2014–2018 “Collaborative Research: Evolutionary lability and adaptive plasticity in physiological and molecular mechanisms of behavior,” **Hoke KL** (PI) National Science Foundation, $625,000.

2014–2019 “CAREER: Flexibility, constraints, and selection in repeated ear loss and regain in toads,” **Hoke KL** (PI) National Science Foundation, $809,235.

2013-2015 “Dissertation Research: Evolutionary flexibility of hormone systems and behavior,” **Hoke KL** (PI) -- DDIG to Eva Fischer, National Science Foundation, $19,273.

2012–2014 “The evolution of deafness: the causes and consequences of ear loss in frogs,” **Hoke KL** (PI), National Science Foundation, $26,825.

2011 “Environmental influences on sensory-motor integration and behavior,” **Hoke KL** (PI), Soares D (co-PI), Marine Biological Laboratory Whitman Center Research Award, $20,830.

2009 “Sound localization mechanisms and the evolution of complex signals,” **Hoke KL** (PI), Farris HE (co-PI), Marine Biological Laboratory Grass Faculty Award, $22,571.

2008 - 2011 “Evolution of neural substrates mediating reproductive decisions,” **Hoke KL** (PI), National Science Foundation, $300,000.

**PUBLISHED WORKS**

Womack MC, Metz MJ, **Hoke KL** (in revision). Larger genomes linked to slower development and loss of late-developing traits. *American Naturalist*.

Stynoski JL, Trama F, Rizo-Patron F, Tapia E, **Hoke KL** (in press). Reproductive ecology of the Peruvian earless toad Rhinella yunga with descriptions of calls, tadpoles, and female competition. *South American Journal of Herpetology*.

**Hoke KL**, Adkins-Regan E, Bass AH, McCune AR, Wolfner MF (2019). Co-opting Evo-Devo concepts for new insights into mechanisms of behavioural diversity. *Journal of Experimental Biology*, 222, jeb190058.

Ghalambor, CK\*, **Hoke KL**\*, Ruell EW, Fischer EK, Reznick DN, Hughes KA (2018). Ghalambor et al. reply. *Nature*, 555:E23.

**Hoke KL**, Hughes KA, Fischer EK, Ghalambor CK (2018). Untangling the role of selection and drift in population divergence via transcriptional network simulations: Extended analysis of Ghalambor et al.(2015). *bioRxiv*, 277830.

Fischer EK, Westrick SE, Hartsough L, **Hoke KL** (2018). Differences in neural activity, but not behavior, across social contexts in guppies, *Poecilia reticulata*. *Behavioral Ecology and Sociobiology*, 72:131.

Womack MC, Stynoski JL, Voyles MK, Coloma LA, **Hoke KL** (2018). Prolonged middle ear development in *Rhinella horribilis*. *Journal of Morpholog*y, 279:1518-1523.

Womack MC, Christensen-Dalsgaard J, Coloma LA, **Hoke KL** (2018). Sensitive high-frequency hearing in earless and partially eared harlequin frogs (*Atelopus*). *Journal of Experimental Biology*, 221:jeb169664.

Womack MC, Fiero, TS, **Hoke KL** (2018). Trait independence primes convergent trait loss. *Evolution,* 72:679-687.

**PUBLISHED WORKS, cont.**

Womack MC, Christensen-Dalsgaard J, Coloma LA, Chaparro JC, **Hoke KL** (2017). Earless toads sense low frequencies but miss the high notes. *Proceedings of the Royal Society B*, 284:2017.1617.

**Hoke KL**, Shizuka D, Hebets EA (2017). Viewing social behavior through the lens of neural circuitry for target-action selection. *Integrative and Comparative Biology*. 57:808-819.

Trillo A, Narvaez A, Ron S, **Hoke KL** (2017). Mating patterns and post-mating isolation in three cryptic species of the *Engystomops petersi* species complex. *PLOS ONE*, 12: e0174743.

Womack MC, Christensen-Dalsgaard J, **Hoke KL** (2016). Better late than never: effective tympanic hearing of toads delayed due to late maturation of the middle and outer ear structures. *Journal of Experimental Biology.* 219:3246-3252.

Fischer EK, Ghalambor CK, **Hoke KL** (2016). Can a network approach resolve how adaptive vs nonadaptive plasticity impacts evolutionary trajectories? *Integrative and Comparative Biology.* 56:877-888*.*

Pereyra M, Womack MC, Barrionuevo S, Blotto B, Baldo D, Targino M, Ospina-Sarria J, Guayasamin JM, Coloma L, **Hoke KL**, Grant T, Faivovich J (2016). The complex evolutionary history of the tympanic middle ear in frogs and toads (Anura). *Scientific Reports.* 6.

Hebets EA, Barron AB, Balakrishnan CN, Hauber ME, Mason PH, **Hoke KL** (2016). A systems approach to animal communication. *Proceedings of the Royal Society B* 283:20152889.

Fischer EK, Ghalambor CK, **Hoke KL** (2016). Plasticity and evolution in correlated suites of traits. *Journal of Evolutionary Biology* 29:991-1002.

Funk WC, Murphy MA, **Hoke KL**, Muths E, Amburgey SM, Lemmon EM, Lemmon AR. (2016). Elevational speciation in action? Restricted gene flow associated with adaptive divergence. *Journal of Evolutionary Biology* 29:241-252.

Ghalambor CK, **Hoke KL**, Ruell E, Fischer EK, Reznick DN, Hughes KA (2015). Non-adaptive plasticity potentiates rapid adaptive evolution of gene expression in nature. *Nature* 525:372-375.

*See also:* Ghalambor CK, Hoke KL, Ruell EW, Fischer EK, Reznick DN, Hughes KA (2018). Erratum: Non-adaptive plasticity potentiates rapid adaptive evolution of gene expression in nature. Nature, 555(7698), 688

Fischer EK, Schwartz A, **Hoke KL**, Soares D (2015). Social context modulates predator evasion strategy in guppies. *Ethology* 121:364-371.

Fischer EK, Harris RM, Hofmann HA, **Hoke KL** (2014). Predator exposure alters stress physiology in guppies across timescales and independent evolutionary lineages. *Hormones & Behavior* 65:165-172.

Fischer EK, Soares D, Archer KR, Ghalambor CK, **Hoke KL**. (2013) Genetically and environmentally mediated divergence in lateral line morphology in the Trinidadian guppy (*Poecilia reticulata*). *Journal of Experimental Biology* 216:3132-3142.

Ponnath A, **Hoke KL**, Farris HE. (2013) Stimulus change detection in phasic auditory units in the frog midbrain: frequency and ear specific adaptation. *Journal of Comparative Physiology A* 199:295-313.

Trillo PA, Athanas KA, Goldhill DH, **Hoke KL**, Funk WC. (2013) The influence of geographic heterogeneity in predation pressure on sexual signal divergence in an Amazonian frog species complex. *Journal of Evolutionary Biology* 26:216-222.

**Hoke KL**, Pitts NL. (2012) Modulation of sensory-motor integration as a general mechanism for context-dependence of behavior in vertebrates. *General and Comparative Endocrinology* 176:465-471.

**PUBLISHED WORKS, cont.**

**Hoke KL**, Scwartz A, Soares D. (2012) Evolution of the fast start response in the cavefish *Astyanax mexicanus*. *Behavioral Ecology and Sociobiology* 66:1157-1164.

Baugh AT, **Hoke KL**, Ryan MJ. (2012). Development of communication behaviour: receiver ontogeny in túngara frogs and a prospectus for a behavioural evolutionary development. *The Science World Journal* Article ID 680632*.*

**Hoke KL**, Wilczynski W (2011). Multifunctional neural systems and plasticity in their sensory-motor transformations. In: *Reciprocal Interactions Among Primary Sensory and Motor Cortical Areas and Higher Cognitive Processes.* (ed. L. Hermer) Research Signpost Press.

**Hoke KL**, Ryan MJ, Wilczynski W *(*2010*).* Sexually dimorphic sensory gating drives behavioral differences. *Journal of Experimental Biology* 213:3463-3472.

**Hoke KL**, Ryan MJ, Wilczynski W *(*2008*).* Candidate neural locus for sex differences in reproductive decisions. *Biology Letters* 4:518-521.

**Hoke KL**, Ryan MJ, Wilczynski W (2007). Functional coupling between substantia nigra and striatal homologs in amphibians. *Behavioral Neuroscience* 121:1393-1399.

**Hoke KL**, Ryan MJ, Wilczynski W (2007). Integration of sensory and motor processing underlying social behaviour in túngara frogs. *Proceedings of the Royal Society B* 274:641-649.

**Hoke KL**, Evans BI, Fernald RD (2006). Remodeling of the cone photoreceptor mosaic during metamorphosis of flounder (*Pseudopleuronectes americanus*). *Brain Behavior and Evolution* 68:241-254.

**Hoke KL**, Ryan MJ, Wilczynski W (2005). Acoustic social cues modify functional connectivity in the hypothalamus. *Proceedings of the National Academy of Sciences USA* 102:10712-10717*.*

**Hoke KL**, Burmeister SS, Fernald RD, Rand AS, Ryan MJ, Wilczynski W (2004). Functional mapping of the auditory midbrain during mate call reception. *Journal of Neuroscience* 24:11264-11272.

**Hoke KL**, Fernald RD (1998) Cell death precedes rod neurogenesis in embryonic teleost retinal development. *Developmental Brain Research* 111:143-146.

**Hoke KL**, Fernald RD (1997) Retinal rod neurogenesis. *Progress in Retinal and Eye Research* 16:31-49.

**INVITED SYMPOSIUM PRESENTATIONS (PROFESSIONAL MEETINGS)**

2018 “The epigenetics of fear in tropical guppies", Spring symposium in brain, behavior and evolution, University of Texas at Austin. Austin, TX.

2017 “Viewing social behavior through the lens of neural circuitry for target-action selection” Society for Integrative and Comparative Biology, New Orleans, LA.

2016 “Flexible associations between transcript abundance and behavior.” Animal Behavior Society, Columbia, MO.

2016 “Plasticity, homeostasis, and evolution across time scales.” Society for Integrative and Comparative Biology, Portland, OR.

2015 "Flexible associations between transcript abundances and behavior." Fourth Annual Brain Behavior and Evolution Symposium, Austin TX.

2014 “Causes and consequences of repeated ear loss and regain in toads,” International Society of Behavioral Ecology, Contemporary Research on Anuran Communication, New York, NY.

2013 “Evolution of gene networks and complex behaviors,” Gordon Conference in Neuroethology, West Dover, VT.

**INVITED SYMPOSIUM PRESENTATIONS (PROFESSIONAL MEETINGS), cont.**

2013 “Consequences of auditory system variability for mate choice in frogs,” Animal Behavior Society, Boulder, CO.

2013 “Modulation of sensory gating during acoustically guided reproduction,” Society for Behavioral Neuroendocrinology, Atlanta, GA.

2013 “Predator exposure alters stress physiology and behavior in guppies,” North American Society for Comparative Endocrinology, Queretaro, Mexico.

2011 “Signal selectivity and sensory-motor gating in the midbrain of frogs,” International Bioacoustics Council La Rochelle, France.

2011 “Sexually dimorphic sensory gating drives behavioral differences in túngara frogs,” International Society for Amphibian and Reptilian Endocrinology and Neurobiology, Ann Arbor, MI.

**INVITED LECTURES AND SEMINARS**

2019 "Causes and consequences of repeated ear loss and regain in toads." IByME- CONICET, Buenos Aires, Argentina.

2019 "Imprint of genetic and developmental mechanisms on guppy evolution." University of Oklahoma, Norman, OK.

2018 "Plasticity and genetic variation in transcriptional networks and behavior." Florida International University, Miami, FL.

2017 "Developmental and lineage differences in middle ear structure and function in toads." University of Oldenburg, Oldenburg, Germany.

2017 "Developmental bias and its contribution to evolutionary trajectories." Leibniz Centre for Tropical Marine Research, Bremen, Germany.

2017 "How the frog lost its ears." Hanse-Wissenschaftskolleg Institute for Advanced Study, Delmenhorst, Germany.

2017 "Interplay of developmental plasticity and phenotypic integration in shaping evolutionary trajectories." Ludwig Maximilians University of Munich, Munich, Germany.

2017 "Viewing social behavior through the lens of neural circuitry for target-action selection." Technical University of Munich, Munich, Germany.

2016 "Causes and consequences of repeated ear loss and regain in toads." Hoke KL. Instituto de Ciencias Biomedicas, Universidad de Chile, Santiago, Chile.

2016 “Evolutionary and developmental flexibility in brain, hormones, and behavior.” Hoke KL. Department of Integrative Biology, University of Colorado Denver, Denver, CO.

2016 “Midbrain, hypothalamic, and striatal circuits integrate stimulus salience and behavioral responses to conspecific vocalizations.” Hoke KL. Biowissenschaftliches Zentrum der Universitaet zu Koeln, Koeln, Germany.

2016 “Causes and consequences of ear loss in toads.” Hoke KL. Molecular, Cellular and Integrative Neurosciences, Colorado State University, Fort Collins, CO.

2016 “Toads tolerate repeated loss of ear structures.” Hoke KL. Winter Animal Behavior Conference, Steamboat Springs, CO.

2015 "Causes and consequences of repeated ear loss and regain in toads." Hoke KL. Division of Biological Sciences, University of Missouri, Columbia, MO.

2014 “Flexibility vs. constraint in the evolution of gene expression in guppies.” Hoke KL. Ecology, Evolutionary Biology and Behavior Program at Michigan State University, East Lansing, MI.

**INVITED LECTURES AND SEMINARS, cont.**

2014 “Causes and consequences of repeated ear loss and regain in toads.” Hoke KL. BEACON Center for the Study of Evolution in Action at Michigan State University, East Lansing, MI.

2014 “Flexibility vs. constraint in the evolution of gene expression and behavior.” Hoke KL. Department of Biology, Colorado State University, Fort Collins, CO.

2014 “Genética, morfología y comportamiento de anfibios.” Hoke KL. Facultad de Ciencias Médicas, Universidad Central del Ecuador, Quito, Ecuador.

2014 “Causes and consequences of repeated ear loss and regain in toads.” Hoke KL. University of Denver Department of Biological Sciences, Denver, CO.

2014 “Plasticity and evolution lability in gene expression, hormones, and behavior.“ Hoke KL. Molecular Biology Program Symposium on Molecular Evolution, Denver, CO.

2013 “Evolution of stress physiology, metabolism, and behavior in guppies,” Hoke KL. University of the Pacific, Stockton, CA.

2013 “Evolution of stress physiology, metabolism, and behavior in guppies,” Hoke KL. Colorado State University Cellular and Molecular Biology Seminar Series, Fort Collins, CO.

2013 “Evolution of stress physiology, metabolism, and behavior in guppies,” Hoke KL. Oklahoma State University Department of Zoology, Whitewater, OK.

2011 “How not to be eaten,” Hoke KL, Soares D. Whitman Center Research Colloquium, Woods Hole, MA.

2011 “Why the frog lost its squawk,” Hoke KL, Christensen-Dalsgaard J. Lecture for visiting students and faculty from Johns Hopkins University, Quito, Ecuador

2010 “Physiological correlates of variation in mate choice in a neotropical frog - or why the frog lost its squawk,” Hoke KL. Behavior, Ecology, Evolution, and Systematics seminar series, University of Maryland, College Park, MD

2010 “Are you even listening? The male/female auditory divide in frogs,” Hoke KL. Biology Department seminar series, University of Northern Colorado, Greeley, CO.

2008 “Are you even listening? The male/female auditory divide in frogs,” Hoke KL. Biology Department seminar series, Salisbury University, Salisbury, MD

**PROFESSIONAL AFFILIATIONS, ACTIVITIES, AND SERVICE**

Chair of the Division of Developmental Evolutionary Biology of the Society for Integrative and Comparative Biology, 2018 - present

Vice Chair of the Gordon Conference in Neuroethology 2019 and chair of the Gordon Conference in Neuroethology 2021

Symposium organizer at the International Congress of Neuroethology, 2016 and 2018

NESCent working group on the Evolution of Decision Making, 2012-2014

Organizing board for meeting of neuroethologists studying amphibians, satellite meeting to International Congress in Neuroethology 2012-2018

Review/editorial boards

Editorial board of a 3-volume Animal Behavior set, Praeger publishers, 2014.

Frontiers in Ecology and Evolution, review editor, 2015 - present

Organizing Committee, Northern Colorado Expanding Your Horizons, 2015 – present, helping coordinate STEM event for middle school girls