

## CARLOS R. INFANTE

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### EDUCATION

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- 2008 Ph.D., Biology, Harvard University, Cambridge, MA  
Dissertation title: "Deiodination and the integration of larval adaptations in the Ceratophryinae (Anura: Leptodactylidae)"  
Advisor: James Hanken
- 1997 B.S., Zoology with Special Honors, The University of Texas at Austin
- 1997 B.A., Plan II Liberal Arts Program with Honors, The University of Texas at Austin

### RESEARCH & PROFESSIONAL EXPERIENCE

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- 2015–pres. Assistant Research Professor, The University of Arizona, Tucson, AZ
- 2014–2015 Senior Research Associate, The University of Georgia, Athens, GA
- 2010–2014 Postdoctoral Research Associate, The University of Georgia, Athens, GA  
Advisor: Douglas B. Menke  
Functional and comparative genomics
- 2008–2010 Postdoctoral Fellow, Harvard University, Cambridge, MA  
Advisor: Jonathan B. Losos  
Ecology, evolution, and development of limb morphology in *Anolis* lizards
- 1999–2000 Collections Assistant, Herpetology Division, Texas Natural History Collections
- 1998–1999 Research Assistant, Division of Medical Genetics, The University of Texas Medical School at Houston, TX

### GRANTS, FELLOWSHIPS & AWARDS

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*Research Grants The asterisk (\*) indicates a grant for which I was not a PI, but provided preliminary data and contributed to design, development, and writing.*

- 2018 National Science Foundation Collaborative Research Grant: Enhancers and the convergent evolution of limb reduction in squamates. PI: Carlos R. Infante. Co-PIs: Brant Faircloth (LSU), Travis Glenn (UGA), Douglas Menke (UGA). (\$1,263,668)
- 2014 \*National Institute of Health Project Grant (NICHD-R01HD081034): Developmental context and the control of appendage *cis*-regulatory networks. PI: Douglas Menke
- 2012 \*National Science Foundation CAREER Award (IOS-1149453): Developmental evolution of limb morphology. PI: Douglas Menke
- 2003 Putnam Expeditionary Grant, Museum of Comparative Zoology, Harvard University, Cambridge, MA (\$9,709)
- 2001 Putnam Expeditionary Grant, Museum of Comparative Zoology, Harvard University, Cambridge, MA (\$4,897)

*Fellowships and Awards*

- 2015 Trainee Travel Award, Society for Developmental Biology and the Pan-American Society for Evolutionary Developmental Biology (\$400)
- 2007 Ford Fund Fellowship, Museum of Comparative Zoology, Harvard University, Cambridge, MA
- 2003 Milton L. Shifman Endowed Scholarship, Marine Biological Laboratory, Woods Hole, MA
- 2002–2005 Graduate Research Fellowship, National Science Foundation, (\$114,000)

## PUBLICATIONS

- Ching, ST, **CR Infante**, W Du, A Sharir, S Park, DB Menke, and OD Klein. 2018. Isl1 mediates expansion of mesenchymal cells in the developing external genitalia via regulation of *Bmp4*, *Fgf10*, and *Wnt5a*. *Human Molecular Genetics* 27(1):107–119. DOI:10.1093/hmg/ddx388 PMID:29126155
- Infante, CR**, AM Rasys, and DB Menke. 2018. Appendages and gene regulatory networks: Lessons from the limbless. *Genesis* 56(1) e23078. DOI:10.1002/dvg.23078 PMID: 29076617
- Tollis, M, ED Hutchins, J Stapley, SM Rupp, WL Eckalbar, I Maayan, E Lasku, **CR Infante**, SR Dennis, JA Robertson, CM May, MR Crusoe, E Bermingham, DF DeNardo, ST Hsieh, RJ Kulathinal, MJ Huentelman, WO McMillan, DB Menke, SC Pratt, JA Rawls, O Sanjur, J Wilson-Rawls, MA Wilson Sayres, RE Fisher, and K Kusumi. 2018. Comparative genomics reveals accelerated evolution in conserved pathways during the diversification of anole lizards. *Genome Biology and Evolution*. DOI:10.1093/gbe/evy013 PMID:29360978
- Wang, JS, **CR Infante**, S Park, and DB Menke. 2018. PITX1 promotes chondrogenesis and myogenesis in mouse hindlimbs through conserved regulatory targets. *Developmental Biology* 434(1):186–195. DOI:10.1016/j.ydbio.2017.12.013 PMID:29273440
- Domyan, ET, Z Kronenberg, **CR Infante**, AI Vickery, SA Stringham, R Bruders, MW Guernsey, S Park, J Payne, RB Beckstead, G Kardon, DB Menke, M Yandell, and MD Shapiro. 2016. Molecular shifts in limb identity underlie development of feathered feet in two domestic avian species. *Elife* 2016(5): e12115. DOI:10.7554/eLife.12115 PMID:26977633
- Infante, CR**, AG Mihala, S Park, JS Wang, KK Johnson, JD Lauderdale, and DB Menke. 2015. Shared *cis*-regulatory activity in the limbs and phallus and functional divergence of a limb-genital enhancer in snakes. *Developmental Cell* 35: 107–119. DOI:10.1016/j.devcel.2015.09.003 PMID: 26439399 Covered by National Public Radio's "Science Friday" and National Geographic's "Not Exactly Rocket Science" blog.
- Park, S\*, **CR Infante\***, LC Rivera-Davila†, and DB Menke. 2014. Conserved regulation of *hoxc11* by *pitx1* in *Anolis* lizards. *Journal of Experimental Zoology. Part B, Molecular and Developmental Evolution* 322(3):156–165. DOI:10.1002/jez.b.22554 PMID: 24376195
- Infante, CR\***, S Park\*, AG Mihala, DM Kingsley, and DB Menke. 2013. *Pitx1* broadly associates with limb enhancers and is enriched on hindlimb *cis*-regulatory elements. *Developmental Biology* 374(1):234–244. DOI:10.1016/j.ydbio.2012.11.017 PMID:23201014
- Bloom, S, C Ledon-Rettig, **CR Infante**, A Everly, J Hanken, and N Nascone-Yoder. 2013. Developmental origins of a novel gut morphology in frogs. *Evolution & Development* 15(3): 213–223.
- Zimmerman, JM, **CR Infante**, J Hanken, and L Olsson. 2013. Morphology of the cranial skeleton and musculature in the obligate carnivorous tadpole of *Lepidobatrachus laevis* (Anura, Ceratophryidae). *Acta Zoologica* 94(1):101–112.

- Eckalbar, WL, E Lasku, **CR Infante**, RM Elsey, GJ Markov, AN Allen, JJ Corneveaux, JB Losos, DF DeNardo, MR Huentelman, J Wilson-Rawls, A Rawls, and K Kusumi. 2012. Somitogenesis in the anole lizard and alligator reveals evolutionary convergence and divergence in the amniote segmentation clock. *Developmental Biology* 363(1):308–319.
- Siler, CD, LJ Welton, RM Brown, **CR Infante**, and AC Diesmos. 2011. *Ophiophagus hannah* (King Cobra). Diet. *Herpetological Review* 42(2):297.
- LaDuc, TJ, and **CR Infante**. 2001. New Texas county records of amphibians and reptiles. *Herpetological Review* 32(4):284–285.

### *In Preparation*

- Infante, CR**, S Park, JS Wang, S Paut†, J Sanders, S Poe, S Pierce, RE Glor, L Mahler, JB Losos, DM Kingsley, and DB Menke. Functional divergence of a *Tbx4* enhancer and the adaptive radiation of *Anolis* lizards. To be submitted to *Nature*.

*The asterisk (\*) denotes equal contribution; † denotes undergraduate mentee.*

### RESEARCH PRESENTATIONS

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#### *Invited Seminars*

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| 2017 | Department of Biological Sciences, Columbia University, New York, NY                                     |
| 2016 | School of Life Sciences, Arizona State University, Tempe, AZ   |
| 2015 | Department of Molecular and Cellular Biology Joint Seminar Series, The University of Arizona, Tucson, AZ |
| 2014 | The University of Georgia Institute of Bioinformatics, Athens, GA  |
| 2009 | Western Mindanao State University, Zamboanga City, Philippines   |

#### *Contributed Talks*

- Infante, CR**. 2017. Enhancers and the convergent evolution of limb reduction in squamates. Genome 10K and Genome Sciences Conference, Norwich, UK.
- Infante, CR**, AG Mihala, S Park, JS Wang, and DB Menke. 2015. Disentangling the regulatory network contributing to limb evolution in *Anolis* ecomorphs. The Pan-American Society for Evolutionary Developmental Biology, Berkeley, CA.
- Infante, CR**, JS Wang, S Park, SH Pau, AG Mihala, and DB Menke. 2015. Disentangling the regulatory network contributing to limb evolution in reptiles. International Meeting on Limb Development and Regeneration, St. Petersburg, FL.
- Infante, CR**, S Park, and DB Menke. 2014. The evolution of limb enhancers in lizards and snakes. Joint Meeting of Ichthyologists and Herpetologists, Chattanooga, TN.
- Infante, CR**, S Park, and DB Menke. 2014. The evolution of the regulatory control of development in vertebrate appendages. Southeastern Regional Meeting of the Society for Developmental Biology, Callaway Gardens, GA.
- Infante, CR**, S Park, AG Mihala, and DB Menke. 2014. Using ChIP-Seq to identify limb enhancers in the lizard genus *Anolis*. Annual Meeting of the Society for Integrative and Comparative Biology, Austin, TX.
- Infante, CR**, JB Losos, and DB Menke. 2012. The developmental basis of an adaptive radiation: the evolution of limb diversity in *Anolis* lizards. Annual Meeting of the Society for Integrative and Comparative Biology, Charleston, SC.

- Infante, CR**, RE Glor, JB Losos, DM Kingsley, and DB Menke. 2011. The developmental basis of an adaptive radiation: the evolution of limb diversity in *Anolis* lizards. Southeastern Regional Meeting of the Society for Developmental Biology, Gainesville, FL.
- Infante, CR**. 2009. The developmental basis of limb diversity in *Anolis* lizards. Sixth *Anolis* Symposium, Cambridge, MA.
- Infante, CR**. 2008. Deiodination and the control of metamorphosis in anuran amphibians. Annual Meeting of the Society for Integrative and Comparative Biology, San Antonio, TX.
- Infante, CR**. 2007. Metamorphic remodeling and the evolution of larval morphology in the carnivorous tadpole *Lepidobatrachus laevis*. Annual Meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- Infante, CR**. 2006. Jaws! Heterochrony and the control of metamorphosis in the carnivorous tadpole *Lepidobatrachus laevis*. Annual Meeting of the American Society of Ichthyologists and Herpetologists, New Orleans, LA.
- Infante, CR**. 2006. Deiodinases and the control of metamorphosis in the carnivorous larvae of the anuran *Lepidobatrachus laevis*. Annual Meeting of the Society for Integrative and Comparative Biology, Orlando, FL.
- Infante, CR**, and J Hanken. 2004. Thyroid hormone receptor expression and the metamorphosis and evolution of anuran jaws. Annual Meeting of the Society for Integrative and Comparative Biology, New Orleans, LA.

#### Posters

- Infante, CR**, S Park, J Wang, S Pau, and DB Menke. 2016. Functional divergence of a *Tbx4* enhancer and the evolution of hindlimb reduction in reptiles. Society for Developmental Biology. Boston, MA.
- Infante, CR**, AG Mihala, S Park, and DB Menke. 2015. Limb loss and the evolution of appendage enhancers in snake genomes. The Biology of Genomes. Cold Spring Harbor Laboratory, NY.
- Infante, CR**, S Park, JB Losos, DM Kingsley, and DB Menke. 2012. *Cis*-regulatory evolution and the control of limb development in *Anolis* lizards. Sixth International Meeting of the Latin American Society for Developmental Biology. Montevideo, Uruguay.
- Infante, CR**, JB Losos, and DB Menke. 2010. The evolution of limb length in the lizard genus *Anolis*. Eleventh International Conference on Limb Development and Regeneration, Williamsburg, VA.
- Infante, CR**, and J Hanken. 2005. Metamorphosis and the evolution of jaw morphology in the carnivorous anuran tadpole *Lepidobatrachus laevis*. Fifteenth International Congress of Comparative Endocrinology, Boston, MA.

#### TEACHING EXPERIENCE & MENTORSHIP

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##### Teaching

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|------|--|
| 2018 | Co-Instructor, "Genetic and Molecular Networks", University of Arizona     |
| 2006 | Teaching Fellow, "Foundations of Biological Diversity", Harvard University |
| 2005 | Teaching Fellow, "Integrative Biology of Organisms", Harvard University    |
| 2001 | Teaching Fellow, "Genetics and Genomics", Harvard University               |
| 2000 | Teaching Fellow, "Integrative Biology of Organisms", Harvard University    |

##### Mentorship

- 2017-pres. Emma Baker (University of Arizona undergraduate researcher)

- 2012 Laura Rivera-Davila (University of Puerto Rico/University of Georgia undergraduate SUNFIG program)  
2011–2015 Shana Pau (University of Georgia undergraduate researcher)  
2011–2013 Tyler Haeffs (University of Georgia undergraduate researcher)  
2011–2013 Anuj Dhir (University of Georgia undergraduate researcher)

#### ACADEMIC SERVICE & PUBLIC OUTREACH

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- 2017–pres. Committee Member, Vertebrate Genomes Project  
2012–2014 President, The University of Georgia Postdoctoral Association  
2011–2014 Planning Committee, Researcher Orientation and Ongoing Training Seminar, The University of Georgia  
2011–2012 Board Member, The University of Georgia Postdoctoral Association  
2009 Invited lecture, “Exploring Biodiversity”, Harvard Museum of Natural History Professional Development Series for Continuing Education

#### PROFESSIONAL TRAINING

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- 2012 “A Systems Biology Approach to Understanding Mechanisms of Organismal Evolution”, Pan-American Advanced Studies Institute, Montevideo, Uruguay  
2003 “Embryology: Concepts and Techniques in Modern Developmental Biology”, Marine Biological Laboratory, Woods Hole, MA  
2001 “Workshop in Applied Phylogenetics”, The University of California at Davis, Bodega Bay, CA

#### PROFESSIONAL ASSOCIATIONS

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Society for Developmental Biology  
Pan-American Society for Evolutionary Developmental Biology  
Society for the Study of Evolution  
American Society of Ichthyologists and Herpetologists  
Society for Integrative and Comparative Biology  
Sigma Xi

#### SELECT FIELD EXPERIENCE

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- 2012 Expedition Co-Leader, Museum of Comparative Zoology (Cuba)  
2010 Expedition Member, Museum of Comparative Zoology (Cuba)  
2009 Expedition Member, University of Kansas Biodiversity Institute (Philippines)  
2004 Dissertation Research, Museum of Comparative Zoology (Argentina)  
2002 Dissertation Research, Museum of Comparative Zoology (Argentina)  
2001 Expedition Member, University of Kansas Biodiversity Institute (Philippines)

## REFERENCES

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**Douglas B. Menke** (Postdoctoral mentor)

Associate Professor of Genetics

The University of Georgia

Paul D. Coverdell Center for Biomedical and Health Sciences

500 D.W. Brooks Drive

Athens, GA 30602

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**Jonathan B. Losos** (Postdoctoral mentor)

Professor of Biology

Washington University

Campus Box 1137

Saint Louis, MO 63130

Tel: (314) 295-8666

Email: losos@wustl.edu

**James D. Lauderdale** (Collaborator)

Associate Professor of Cellular Biology

The University of Georgia

Paul D. Coverdell Center for Biomedical and Health Sciences

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