

# Becca Young: Curriculum Vitae

## Contact Information:

Rebecca Young Brim  
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The University of Texas  
Integrative Biology  
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## Education:

- 2002-2008 University of Arizona, Tucson, AZ – PhD. Ecology and Evolutionary Biology, mentor: Alex Badyaev
- 1997-2001 Miami University, Oxford, OH – B.S. Zoology, Cum Laude, mentor: Doug Meikle

## Appointments:

- Since 2018 University of Texas, Austin, TX – Independent Research Fellow, Integrative Biology
- 2016 University of Texas, Austin TX – Lecturer
- 2014-2018 University of Texas, Austin, TX – Research Associate, Integrative Biology, Center for Computational Biology and Bioinformatics, mentor: Hans Hofmann
- 2008-2012 Yale University, New Haven, CT – Postdoctoral Fellow/Associate, Yale Systems Biology Institute, mentor: Günter Wagner

## Honors, Awards, & Grants:

- \$116,730 – PI, NSF BEACON Center for Evolution in Action: *Developmental Evolution in Action: Testing the Hourglass Model in vivo and in silico*. Collaborators: Arend Hintze & Hans Hofmann
- \$30,000 - American Postdoctoral Fellowship, American Association of University Women, 2009-2010
- Scholar Award, Ecology and Evolutionary Biology Dept recipient, College of Science nominee, University of Arizona, 2008
- \$12,000 - NSF Dissertation Improvement Grant, Population and Evolutionary Processes Panel, 06-8
- Galileo Circle Scholarship, University of Arizona, 2006
- Grant-In-Aid, American Society of Mammalogists, 2005, 2006
- Travel Grant, Graduate and Professional Student Council, University of Arizona, 2004, 2005, 2008
- Ecology and Evolutionary Biology Small Research Grant, University of Arizona, 2003-2006
- Honorable mention, NSF Graduate Research Fellowship Program, 2002, 2004
- Travel Grant, Women in Science and Engineering, University of Arizona, 2003
- Graduate College Fellowship, University of Arizona, 2002
- Outstanding Undergraduate Research, Sigma Xi, Miami University, 2001
- Phi Beta Kappa, Miami University, 2001
- Howard Hughes Medical Institute Fellowship, Miami University, 2000

## Publications:

**Young, R.L.**, M.H. Ferkin, N.F. Ockendon, V.N. Orr, S.M. Phelps, Á. Pogány, C.L. Richards-Zawacki, K. Summers, T. Székely, B.C. Trainor, A.O. Urrutia, G. Zachar, L.A. O’Connell, and H.A. Hofmann. 2018. Conserved transcriptomic profiles underpin monogamy across vertebrates. *Proceeding of the National Academy of Sciences* 116: 1331-1336.

Goldsby H.J., **R. L. Young**, J. Schossau, H.A. Hofmann, and A. Hintze. 2018. Serendipitous scaffolding to improve a genetic algorithm's speed and quality. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion* (GECCO '18). ACM, New York, NY, USA, 959-966.

**Becca Young:  
Curriculum Vitae**

- Goldsby, H.J., **R.L. Young**, H.A. Hofmann, and A. Hintze. 2017. Increasing the complexity of solutions produced by an evolutionary developmental system. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion* (GECCO '17). ACM, New York, NY, USA, 57-58.
- Snell-Rood, E., E. Swanson, and **R.L. Young**. 2015. Life history as a constraint on plasticity: developmental timing is correlated with phenotypic variation in birds. *Heredity* 115: 379-388.
- Young, R.L.** 2013. Linking conceptual mechanisms and transcriptomic evidence of plasticity-driven diversification. *Molecular Ecology* 22: 4363-4365.
- Brandley, M.C., **R.L. Young**, D.L. Warren, M.B. Thompson, and G.P. Wagner. 2012. Uterine gene expression in the live-bearing lizard, *Chalcides ocellatus*, reveals convergence of squamate and mammalian pregnancy mechanisms. *Genome Biology and Evolution* 4: 394-411.
- Wang Z, **R.L. Young**, H. Xue, G.P. Wagner. 2011. Transcriptomic analysis of avian digits reveals conserved and derived digit identities in birds. *Nature* 477:583-586.
- Young, R.L.**, G. Bever, Z. Wang, and G. P. Wagner. 2011. Identity of the avian digits: Problems resolved and unsolved. *Developmental Dynamics* 240: 1042-1053.
- Young, R.L.** and G. P. Wagner. 2011. Why ontogenetic homology criteria can be misleading: Lessons from digit identity transformations. *Journal of Experimental Zoology (Molecular and Developmental Evolution)* 316B: 165-170.
- Wang, Z., D. Dong, Ru, B., **R.L. Young**, N. Han, and S. Zhang. 2010. Digital gene expression tag profiling of bat digits provides robust candidates contributing to wing formation. *BMC Genomics* 11: 619.
- Young, R.L.** and A.V. Badyaev. 2010. Developmental plasticity links local adaptation and diversification in foraging morphology of shrews. *Journal of Experimental Zoology (Molecular and Developmental Evolution)* 314B: 434-444.
- Young, R.L.**, M. J. Sweeney, and A.V. Badyaev. 2010. Morphological diversity and ecological similarity: Versatility of muscular and skeletal morphologies enables ecological convergence in shrews. *Functional Ecology* 24: 556-565.
- Young, R.L.**, T. Kohlsdorf, V. Caputo, M. Giovanotti, A.O. Vargas, G.E. May and G.P. Wagner. 2009. Evolution of digit identity in the three-toed Italian skink *Chalcides chalcides*: a new case of Digit Identity Frame Shift. *Evolution & Development* 11: 647-658.
- \*Recommended Faculty 1000 (Greg Wray): <http://f1000.com/prime/2031956>
- Badyaev, A.V., **R.L. Young**, K.P. Oh, and C. Addison. 2008. Evolution on a local scale: Developmental, functional, and genetic bases of divergence in bill form and associated changes in song structure between adjacent habitats. *Evolution* 62: 1951-1964.
- Badyaev, A.V., **R.L. Young**, G.E. Hill, and R.A. Duckworth. 2008. Evolution of sex-biased maternal effects in birds: IV. Intra-ovarian growth dynamics and sex-specific acquisition of resources. *Journal of Evolutionary Biology* 21: 449-460.

## Becca Young: Curriculum Vitae

- Young, R.L., T.S. Haselkorn, and A.V. Badyaev. 2007. Functional equivalence of morphologies enables morphological and ecological diversity. *Evolution* 61: 2480-2492.
- Young, R.L. and A.V. Badyaev. 2007. Evolution of ontogeny: linking epigenetic remodeling and genetic adaptation in skeletal structures. *Integrative and Comparative Biology* 47: 234-244.
- Young, R.L. and A.V. Badyaev. 2006. Evolutionary persistence of phenotypic integration: Influence of developmental and functional relationships on complex trait evolution. *Evolution* 60: 1291-1299.
- Badyaev, A.V., H. Schwabl, R.L. Young, R.A. Duckworth, K. Navara, and A.F. Parlow. 2005. Adaptive sex differences in growth of pre-ovulation oocytes in a passerine bird. *Proceedings of Royal Society of London, Biological Sciences*: 2156-2172.
- Badyaev, A.V., K.R. Foresman, and R.L. Young. 2005. Evolution of morphological integration: II. Developmental accommodation of stress-induced variation. *American Naturalist* 166: 382-395.
- Young, R.L. and A.V. Badyaev. 2004. Evolution of sex-biased maternal effects in birds. I. Sex-biased resolution of resource allocation among simultaneously maturing follicles. *Journal of Evolutionary Biology* 17: 1355-1366.
- Badyaev, A.V. and R.L. Young. 2004. Complexity and integration in sexual ornamentation: an example with carotenoid and melanin plumage pigmentation. *Journal of Evolutionary Biology* 17: 1317-1327.

### Teaching Experience:

#### Instructor, University of Texas (*number of students*)

- BIO 361t: Comparative Animal Physiology, Spring 2016 (42)
- NSC 115: Women in Natural Sciences, Fall 2014 (59)

#### Teaching Assistant, University of Arizona (*number of students*)

- Ecol 330: Animal Form and Function, Fall 2005 (34), 2007 (37)
- Ecol 320: Genetics, Spring 2003 (156), Fall 2004 (256), Spring 2005 (142)
- Ecol 335: Evolutionary Biology, Spring 2007 (49)
- Ecol 485/585: Mammalogy Lab, Fall 2003 (9), 2006 (18)
- Zool 202: Developmental Biology Lab, Undergraduate Teaching Assistant, Miami University, Spring 1999

#### Guest Lecturer

- Bio377: Big Data in Biology, Topic: *Leveraging Big Data to test longstanding hypotheses in EvoDevo*, Fall 2017
- Bio 384K / Neu 385L: Biological Foundations in Decision Making, Topic: *The evolution of social decisions: discoveries and challenges from comparative 'omics'*, Fall 2014
- Bio 384K / Neu 385L: Brains, Behavior, and Evolution, Topic: *Evolution of Developmental Mechanisms*, Fall 2013
- Ecol 330: Animal Form and Function, Topic: *Evolution and Behavior of Horses*, Fall 2003-05, 07
- Ecol 330: Animal Form and Function, Topic: *Feeding in Mammals*, Fall 2003, 2004, 2007
- Ecol 485/585: Mammalogy, Topic: *Feeding and Digestive Systems*, Fall 2006
- Ecol 485/585: Mammalogy, Topic: *Community Ecology*, Fall 2006

#### Mentoring (*number of students*)

## Becca Young: Curriculum Vitae

Undergraduate research project: *Comparative transcriptomics of cooperation in Wrasse*, 2018-present (1)

Undergraduate research project: *Transcriptomic response to mite infestation in house finch embryos*, 2017 – 2018 (1)

Undergraduate research project: *Examining co-regulation of “Hourglass” genes using the SARKS motif discovery tool*, fall 2017 (1)

Undergraduate research project: *Robustness of neuromolecular variation across experimental contexts*, 2016 – 2018 (1)

High School research project: *An automated tool for calibrating the embryonic clock across vertebrates*, summer 2016 (1)

Undergraduate research project: *Testing the hourglass: Gene Regulatory Networks and Developmental Constraint*, 2015 – present (3)

\*2018 CNS Award for Excellence in Computational Biology, Biochemistry, and Chemistry Research

\* 2016 CNS Award for Excellence in Computational Biology, Biochemistry, and Chemistry Research

Graduate research project: *Gene expression divergence in paralogs*, 2015 (1)

Graduate research project: *Comparative ChIP-seq: challenges of non-model 'omics*, 2014 (1)

Undergraduate research project: *Searching for ancient mechanisms of social behaviors using comparative transcriptomics*, 2014-2015 (1)

Graduate research project: *Monodelphis domestica breeding colony establishment*, 2009 - 2010 (1)

Undergraduate research project: *Foraging strategy in soricid shrews: a model of behavioral stress response*, 2007-2008 (1)

Undergraduate research project: *What are generalists? An empirical test of the niche variation hypothesis in soricid shrews*, 2008 (1)

Undergraduate research assistant supervisor, 2005-2008 (4)

### Outside Reader

Second Reader for Plan II Thesis: *Physiological Implications and Sociological Motivations of Bulldog Breeding*, Sang Sao.

### Professional Services:

**Editorial Board Member for:** *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology; Scientifica*

**Peer Reviewer for:** *Acta Theriologica, American Naturalist, Biological Journal of the Linnean Society, Evolution, Evolution and Development, Evolutionary Ecology, Functional Ecology, Heredity, Journal of Anatomy, Journal of Evolutionary Biology, Journal of Experimental Zoology A, Journal of Experimental Zoology B, Journal of Mammalogy, Proceeding of the Royal Society B, Science*

**Grant Reviewer for:** *National Science Foundation, Austrian Science Fund – FWF*

### Animal Husbandry Consultant:

Bonk, M., G. Cameron, E. Hill, P. Stewart, and **R.L. Young**. 2009. Opossum (*Monodelphis domestica*): Husbandry Standard Operating Procedure. Yale University Animal Resources Center.

**Feature Writer for:** *Journal of Experimental Zoology Part B – Molecular and Developmental Evolution*

### Public Engagement:

- Featured expert for science news outlets including (selected):
  - [NerdNite](#) (Austin): [How mother's control our biology](#) (2018)

## Becca Young: Curriculum Vitae

- National Geographic: Weird Animal Question of the Week (7/30/2016): [How the Venomous, Egg-Laying Platypus Evolved](#)
- NSF Science 360 News: [Biologist Rebecca Young traces the genes behind monogamous behavior, with help from the NSF-funded Wrangler supercomputer](#) (TACC podcast)
- UTNews: [2015 Summer Blockbusters: Meet the Science Truth Detector – Trainwreck](#)
- Mentor – Power Chats 2017, [Girls Empowerment Network](#). Austin, TX.
- Invited Presenter – Big Data in Evolutionary Biology, Science Undergraduate Research Group (SURGe), 2016
- Chair – Young Women in Bio Committee, Women in Bio (Austin, TX chapter), 2015-2016
- Designer & Coordinator – Hill Country Science Mill, Forensic Science Special Event (ages 9-13): *CSI Science Mill: Find the tater hater*. July 2015 (event recap: <http://goo.gl/VGxpnk>)
- Invited presenter – *How and why female birds exert favoritism in terms of offspring sex ratio and birth order* in “Clever Bats, Poison Frogs, Zombie Ants and other wild tales from the work of graduate students and research scientists.” Forum UT, 2014
- Life Sciences Professional Interviewee – Scottsdale Preparatory Academy middle school project, 2011
- Invited presenter – Spring Meeting, American Association of University Women (AAUW): Lower Connecticut Valley Branch, 2010
- Invited presenter – Fall Meeting, AAUW: Greater Meriden Connecticut Branch, 2009
- Career Panelist – Expanding Your Horizons Conference, Women in Science and Engineering, University of Arizona, 2007
- Guest Speaker – *What is a mammal?*, Brushy Creek Elementary, Round Rock ISD, Round Rock, TX, 2004