

## CURRICULUM VITAE

### Tracy A. Heath

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[phyloworks.org](http://phyloworks.org)

### UPCOMING POSITION

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#### Assistant Professor

Department of Ecology, Evolution, & Organismal Biology

#### Iowa State University

Ames, IA

Starting January 1, 2015

### CURRENT POSITIONS

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#### Associate Research Specialist

Department of Integrative Biology

#### University of California, Berkeley

Berkeley, CA

December 2010 - December 2014

#### Postdoctoral Researcher

Department of Ecology and Evolutionary Biology

#### University of Kansas

Lawrence, KS

June 2013 - December 2014

### EDUCATION

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#### Ph.D. in Ecology, Evolution, and Behavior

August 2008

Advisor: David Hillis

#### University of Texas

Austin, TX

#### B.A. in Biology

May 2000

#### Boston University

Boston, MA

### RESEARCH POSITIONS

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#### Postdoctoral Research Fellow

NSF Fellowship in Biological Informatics

Supervisors: Mark Holder & John Huelsenbeck

#### University of Kansas

#### University of California, Berkeley

September 2008 - November 2010

#### Graduate Research Trainee

Integrative Graduate Education and Research Traineeship (IGERT)

Computational Phylogenetics and Applications to Biology

#### University of Texas

Austin, TX

2003 - 2005 & 2007 - 2008

#### Visiting Researcher

Biomathematics Research Centre

The Allan Wilson Centre for Molecular Ecology and Evolution

#### University of Canterbury

Christchurch, NZ

2007

**Graduate Research Assistant**

School of Biological Sciences

CIPRES: Modeling and Simulation

Tree Set Visualization: Program Documentation and Web Page

Tree Set Visualization: Analysis and Visualization of Tree Space

Genetic Algorithms for Maximum Likelihood Inference (GAML)

**University of Texas**

Austin, TX

2005 - 2007

2004

2003

2002

**Laboratory Manager**

Department of Biology, DNA Sequencing Facility

Supervisor: Michael Sorenson

**Boston University**

Boston, MA

2000 - 2001

**Research Assistant**

Department of Biology, Evolutionary Genetics Lab

Mentor: Christopher Schneider

**Boston University**

Boston, MA

2000

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**TEACHING****Workshop Instructor**

Wellcome Trust-EMBL-EBI-EMBO Course: Computational Molecular Evolution

2013 – 2015

Workshop on Molecular Evolution, Woods Hole, MA

2012 – 2015

Bodega Applied Phylogenetics Workshop, Bodega Bay, CA

2011 – 2015

NESCent Academy Course: Phylogenetic Analysis Using RevBayes

2014

Workshop on Molecular Evolution, Český Krumlov, Czech Republic

2013

\*For teaching materials see: <http://treethinkers.org/tracy-heath-workshop-materials/>**Teaching Assistant/Laboratory Instructor**

School of Biological Sciences

Advanced Systematics (computer lab course)

Vertebrate Natural History (lab/field course)

Limnology and Oceanography (lab/field course)

**University of Texas**

Austin, TX

2002 &amp; 2007

2002

2001

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**PUBLICATIONS AND MANUSCRIPTS**

Cook, J.A., S.V. Edwards, E.A. Lacey, R.P. Guralnick, P.S. Soltis, D.E. Soltis, C.K. Welch, K.C. Bell, K.E. Galbreath, C. Himes, J.M. Allen, **T.A. Heath**, A.C. Carnival, K.L. Cooper, M. Liu, J. Hanken, and S. Ickert-Bond. 2014. Natural history collections as emerging resources for innovative education. *Bioscience* 64:725–734.

**Heath, T.A.**, J.P. Huelsenbeck, and T. Stadler. 2014. The fossilized birth-death process for coherent calibration of divergence-time estimates. *Proceedings of the National Academy of Sciences* 111(29):E2957–E2966.

Höhna, S., **T.A. Heath**, B. Boussau, M.J. Landis, F. Ronquist, and J.P. Huelsenbeck. 2014. Probabilistic graphical model representation in phylogenetics. *Systematic Biology*, 63:753–771

**Heath, T.A.** and B.R. Moore. 2014. Bayesian inference of species divergence times. In: Chen, M.-H., L. Kuo, and P.O. Lewis (editors). *Bayesian Phylogenetics: Methods, Algorithms, and Applications*. Chapman & Hall/CRC. (invited book chapter; <http://www.crcpress.com/product/isbn/9781466500792>)

Stoltzfus, A., H. Lapp, N. Matasci, H. Deus, B. Sidlauskas, C.M. Zmasek, G. Vaidya, E. Pontelli, K. Cranston, R. Vos, C.O. Webb, L.J. Harmon, M. Pirrung, B. O'Meara, M.W. Pennell, S. Mirarab,

- M.S. Rosenberg, J.P. Balhoff, H.M. Bik, **T.A. Heath**, P.E. Midford, J.W. Brown, E.J. McTavish, J. Sukumaran, M. Westneat, M.E. Alfaro, A. Steele, and G. Jordan 2013. Phylotastic! Making tree-of-life knowledge accessible, reusable and convenient. *BMC Bioinformatics*, 14:158.
- Darriba, D., A. Aberer, T. Flouri, **T.A. Heath**, F. Izquierdo-Carrasco, and A. Stamatakis. 2013. Boosting the performance of Bayesian divergence time estimation with the Phylogenetic Likelihood Library. *IEEE 27th International Symposium on Parallel & Distributed Processing* doi:10.1109/IPDPSW.2013.267. (peer-reviewed conference proceedings)
- Heath, T.A.** 2012. A hierarchical Bayesian model for calibrating estimates of species divergence times. *Systematic Biology*, 61:793-809.
- Heath, T.A.**, M.T. Holder, and J.P. Huelsenbeck. 2012. A Dirichlet process prior for estimating lineage-specific substitution rates. *Molecular Biology and Evolution* 29:939-955.
- Heath, T.A.**, S.M. Hedtke, and D.M. Hillis. 2008. Taxon sampling and the accuracy of phylogenetic analyses. *Journal of Systematics and Evolution* 46:239-257.
- Heath, T.A.**, D.J. Zwickl, J. Kim, and D.M. Hillis. 2008. Taxon sampling affects inferences of macroevolutionary processes from phylogenetic trees. *Systematic Biology* 57:160-166.
- Hillis, D.M., **T.A. Heath**, and K. St. John. 2005. Analysis and visualization of tree space. *Systematic Biology* 54(3):471-482. (cover article)
- Wilcox, T.P., D.J. Zwickl, **T.A. Heath**, and D.M. Hillis. 2002. Phylogenetic relationships of the dwarf boas and a comparison of Bayesian and bootstrap measures of phylogenetic support. *Molecular Phylogenetics and Evolution* 25(2):361-371.

## SOFTWARE

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- RevBayes** (C/C++) – Bayesian phylogenetic inference using Markov chain Monte Carlo—relying on probabilistic graphical models and an interpreted programming language interface (development team member; <https://github.com/revbayes/revbayes>)
- DPPDiv** (C++) – Bayesian estimation of species divergence times under a Dirichlet process prior (developer; <https://github.com/trayc7/FDPPDIV>)
- FossilGen** (C++) – A program for simulating phylogenies and fossil occurrence times under the serial-sampled birth-death process (developer; <https://github.com/trayc7/FossilGen>)
- datelife** (R/Python) – A web service that synthesizes divergence time estimates from published studies—a Phylotastic service (co-developer; <http://www.datelife.org>, <http://phylotastic.org>)
- TreeSetViz** (Java) – Multidimensional scaling for visualizing and summarizing large sets of phylogenetic trees (contributor; <http://comet.lehman.cuny.edu/treeviz>)

## INVITED TALKS

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The European Bioinformatics Institute, EMBL-EBI External Seminar Series	Oct. 2014
University of California, Berkeley, UCMP Fossil Coffee Seminar Series	2014
University of Connecticut, Ecology & Evolutionary Biology Seminar Series	2014
Smithsonian Institution National Museum of Natural History, PhyloPizza	2014
Brown University, Center for Computational Molecular Biology Seminar Series	2013
<a href="#">Phyloseminar.org</a> Series on Integrating Fossils into Phylogenies ( <a href="#">video link</a> )	2013
Brigham Young University, Biology Department Seminar Series	2013

Cornell University, Ecology & Evolutionary Biology Weekly Seminar Series	2013
France-Berkeley Fund Symposium on Fossils & Phylogenetics, Berkeley, CA	2013
Bowdoin College, Biology Department Seminar Series	2013
California Academy of Sciences, Research Seminar Series	2012
University of California, Davis Center for Population Biology Seminar Series	2012
Symposium on Molecular Dating, Hennig XXXI, Riverside, CA	2012
Symposium on Bayesian Inference of Phylogeny, Berkeley, CA	2011
SSB Symposium, Evolution 2010, Portland, OR	2010
CIPRES Symposium & Workshop on Evolutionary Simulation, Philadelphia, PA, USA	2006

## CONFERENCE PRESENTATIONS

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Society for Vertebrate Paleontology (education/outreach poster), Berlin, Germany	Nov. 2014
SACNAS 2014 ( <a href="#">professional development session</a> ), Los Angeles, CA, USA	Oct. 2014
iEvoBio 2014, Raleigh, NC, USA*	2014
Evolution 2013, Snowbird, UT, USA*	2013
Evolution 2012, Ottawa, Ontario, Canada*	2012
Evolution 2011, Norman, OK, USA	2011
Evolution 2009, Moscow, ID, USA	2009
Evolution 2007, Christchurch, New Zealand	2007
The Annual New Zealand Phylogenetics Meeting – Doom07, Whakapapa, NZ	2007
Evolution 2006, Stony Brook, NY, USA	2006
NSF IGERT Project Meeting (poster), Arlington, VA, USA	2006
Evolution 2004, Fort Collins, CO, USA	2004

\*slides available at <http://www.slideshare.net/trayc7>

## GRANTS AND AWARDS

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NESCent Academy Course: Phylogenetic Analysis Using RevBayes — PI: T. Heath; Co-PIs: B. Boussau, S. Höhna, J. Huelsenbeck, M. Landis, B. Moore, F. Ronquist, T. Stadler (Summer 2014)

NSF DEB-1256993: “Integrating Fossil Data into Likelihood-based Phylogenetic Analyses with Trilobites as a Model System” (<http://phylo.bio.ku.edu/fossil>) — PI: M. Holder, Co-PI: B. Lieberman, Postdoc/coauthor: T. Heath (2013 – 2016)

NSF Postdoctoral Fellowship in Biological Informatics (2008 – 2010)

University of Kansas/Haskell Indian Nations University NIH Institutional Research and Academic Career Development Award (IRACDA) Postdoctoral Fellowship (2008; declined)

University of Texas Ecology, Evolution, and Behavior Program Hartman Merit Fellowship (2008)

NSF, Integrative Graduate Education and Research Traineeship (IGERT) for graduate training in computational phylogenetics and applications to biology (2003 - 2008)

NSF, Integrative Graduate Education and Research Traineeship (IGERT) Travel Award (2007)

Allan Wilson Centre for Molecular Ecology & Evolution Summer Studentship, Biomathematics Research Centre, University of Canterbury, Christchurch, NZ (2007)

University of Texas Ecology, Evolution, and Behavior Program Hamilton Fellowship (2006)

Summer Institute in Statistical Genetics Scholarship, North Carolina State University (2004)

## WORKSHOP AND HACKATHON PARTICIPATION

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AIM-UP! Workshop on “Museums and Climate Change”, Pacific Grove, CA (February 2014)  
 NESCent BEAST Developers Working Group; Durham, NC (December 2013)  
 France-Berkeley Fund Workshop on Integrating Molecular Phylogenies and the Fossil Record;  
 Organizers: H. Morlon, T. Quental, C. Marshall; Berkeley, CA (2013)  
 AdaCamp Unconference for Women in Open Technology, San Francisco, CA (2013)  
 AIM-UP! All Hands Meeting ([www.aim-up.org](http://www.aim-up.org)), Cambridge, MA (2013)  
 NESCent Hackathon: *Phylotastic! Making the Tree of Life Accessible for Automated Re-use*, Durham,  
 NC (2012)  
 Workshop on Molecular Evolution, Marine Biological Laboratory, Woods Hole, MA (2007)  
 Cass Workshop, “Random models in phylogenetics and resolving ancient divergences”, Biomathematics  
 Research Centre, University of Canterbury, Arthur’s Pass, New Zealand (2007)  
 Summer Institute in Statistical Genetics, North Carolina State University, Raleigh, NC (2004)

## PROFESSIONAL SERVICE & OUTREACH

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Evolution 2015 SSB Symposium Organizer – “Breaking Barriers: Empirical, Theoretical, and Gender  
 Issues in Phylogenetics”; with C. Moreau, B. O’Meara, & S. Perkins (Brazil, June 2015)  
 SACNAS Professional Development Session Organizer – *Cracking the (bio)Code: How to Start a  
 Research Career in Computational Biology* – 2014 SACNAS National Conference, Los Angeles, CA;  
 with F. Zapata, E. Huerta-Sanchez, & C. Sandefur (October 18, 2014)  
 Blog contributor: <http://treethinkers.org/blog> (March 2013 – present)  
*Society of Systematic Biologists* Elected Council Member (2013 – 2015)  
*iEvoBio 2013* Organizing Committee Member (2012 – 2013)  
 Mentor for the Undergraduate Diversity at SSE/SSB Program (Evolution 2011 and Evolution 2012)  
 Reviewer:
 

- *Systematic Biology* Editorial Board Member (2011 – present)
- *Bioinformatics*, *BMC Evolutionary Biology*, *Evolution*, *Gene*, *Journal of Systematics & Evolution*,  
*Molecular Biology & Evolution*, *Proceedings B*, *Systematic Biology*, *Trends in Ecology & Evolution*
- The Graduate Women in Science 2012 National Fellowships Program
- The Society of Systematic Biologists Graduate Student Research Award Competition (2012, 2014)

 Invited Panelist/Speaker:
 

- Girls Who Code Summer Program, @Twitter, San Francisco, CA ([www.girlswhocode.com](http://www.girlswhocode.com); 2013)
- The Women in Science and Engineering Residential Program Seminar, UC–Berkeley (2011)
- The Initiative for Maximizing Student Development (IMSD) Graduate Fellows Program Workshop,  
 UC–Berkeley (2011)

 Society/Organization Membership: Society of Systematic Biologists, Society for Advancement of  
 Chicanos and Native Americans in Science (SACNAS), Society of Vertebrate Paleontology