

## Hua Bai, Ph.D.

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### EDUCATION

01/2005-11/2009	Ph.D. Entomology	University of Kentucky
09/1997-07/2000	M.S. Aquatic biology	Shanghai Ocean University, China
09/1993-07/1997	B.S. Biology	East China Normal University, China

### PROFESSION POSITIONS

01/2016-	Assistant Professor, Iowa State University
07/2014-12/2015	Investigator, Brown University
12/2009-06/2014	Postdoc, Brown University

### PROFESSIONAL AFFILIATIONS

- Genetics Society of America 2010-present
- Entomological Society of America 2005- 2009
- Ohio Valley Entomological Society 2005, 2007-2008

### GRANTS AND FELLOWSHIPS

2016-2018	<b>NIH/NIA R00 Pathway to Independence Award</b> (Pending) Role: PI Title: Activin-Mediated Autophagy During Cardiac Aging Total costs: \$747,000.00
2014-2015	<b>NIH/NIA K99 Pathway to Independence Award (1K99AG048016)</b> Role: PI Title: Activin-Mediated Autophagy During Cardiac Aging Total costs: \$175,282.00
2011-2012	<b>Ellison Medical Foundation/AFAR Postdoctoral Fellow</b> , \$47,210/yr (\$39,360 of Salary, plus \$7,850 of Supplies and Benefit)
2008-2009	<b>Dissertation Year Fellowship Award, University of Kentucky</b> , \$16,000/yr
2013	Keystone Symposia Future of Science Fund Scholarship, Keystone Symposia, \$1200
2013	Annual NIA Summer Training fellowship in Experimental Aging Research (Sponsored by the National Institute on Aging and the Barshop Institute)
2011	Molecular Biology of Aging Summer Training fellowship at Marine Biology Laboratory (Sponsored by The Ellison Medical Foundation)
2008	Clarke & Knapp Travel Grant, University of Kentucky, \$300
2007	Publication Scholarship, University of Kentucky, \$150
2005-2008	Student Travel Grant, University of Kentucky, \$1200

**PUBLICATIONS****(A). Peer-reviewed publications**

1. **Bai H**, Post S, Kang P, Tatar M. 2015. *Drosophila* longevity assurance conferred by reduced insulin receptor substrate chico requires 4E-BP. *PLoS One*. (Accepted)
2. Cheng-Wen Huang, **Bai H**, Pei-Yu Wang. 2015. Tequila regulates insulin-like signaling and extends life span in *Drosophila melanogaster*. *Journal of Gerontology: Biological Sciences*.
3. **Bai H**, Kang P, Hernandez AM, Tatar M. 2013. Activin signaling targeted by insulin/dFOXO regulates aging and muscle proteostasis in *Drosophila*. *PLoS Genetics*. 9(11): e1003941. PMID: PMC3820802.

**(Highlighted in Faculty of 1000, Brown News and ScienceDaily)**

4. Yamamoto R, **Bai H**, Dolezal AG, Amdam G, Tatar M. 2013. Juvenile hormone regulation of *Drosophila* aging. *BMC Biology*. 11:85. PMID: PMC3726347.
5. **Bai H**, Kang P, Tatar M. 2012. *Drosophila* insulin-like peptide-6 (dilp6) expression from fat body extends lifespan and represses secretion of *Drosophila* insulin-like peptide-2 from the brain. *Aging Cell*. 11(6):978-85. PMID: PMC3500397.

**(Highlighted in Faculty of 1000)**

6. Hong S-H, Lee K-H, Kwak S-H, Kim A-K, **Bai H**, Jung M-S, Kwon O-Y, Song W-J, Tatar M, Yu K. 2012. Minibrain/Dyrk1a regulates food intake through the Sir2-FOXO-sNPF/NPY pathway in *Drosophila* and mammals. *PLoS Genetics*. 8(8): e1002857. PMID: PMC3410862.
7. Sheng Z, Xu J, **Bai H**, Zhu F, Palli SR. 2011. Juvenile hormone regulates vitellogenin gene expression through insulin-like peptide signaling pathway in the red flour beetle, *Tribolium castaneum*. *Journal of Biological Chemistry*. 286(49):41924-36. PMID: PMC3234905.
8. **Bai H**, Zhu F, Shah K, Palli SR. 2011. Large-scale RNAi screen of G protein-coupled receptors involved in larval growth, molting and metamorphosis in the red flour beetle. *BMC Genomics*, 12(1):388. PMID: PMC3163568.
9. **Bai H**, Gelman D. B, Palli SR. 2010. Mode of action of methoprene in affecting female reproduction in the African malaria mosquito, *Anopheles gambiae*. *Pest Management Science*, 66(9):936-43. PMID: PMC2928151.
10. **Bai H**, Palli SR. 2010. Functional characterization of bursicon receptor and genome-wide analysis for identification of genes affected by bursicon receptor RNAi. *Developmental Biology*, 344(1):248-58. PMID: PMC2909337.
11. Zhu F, Parthasarathy R, **Bai H**, Woitheb K, Kausmannb M, Nauenb R, Harrison DA, Palli SR. 2010. A brain-specific cytochrome P450 responsible for the majority of deltamethrin resistance in the QTC279 strain of *Tribolium castaneum*. *The Proceedings of the National Academy of Sciences of the U.S.A.*, 107(19):8557-62. PMID: PMC2889294.
12. Parthasarathy R, Sun Z, **Bai H**, Palli SR. 2010. Juvenile hormone regulation of vitellogenin synthesis in the red flour beetle, *Tribolium castaneum*. *Insect Biochemistry and Molecular Biology*, 40(5):405-14. PMID: PMC2875371.
13. Parthasarathy R, Tan A, **Bai H**, Palli SR. 2008. Transcription factor broad suppresses precocious development of adult structures during larval-pupal metamorphosis in the red flour beetle, *Tribolium castaneum*. *Mechanisms of Development*, 125(3-4):299-313. PMID: PMC3556786.

14. **Bai H**, Parthasarathy R, Palli SR. 2007. Identification and characterization of juvenile hormone esterase gene from the yellow fever mosquito, *Aedes aegypti*. *Insect Biochemistry and Molecular Biology*, 37(8):829-37. PMID: PMC2020842.
15. Wu Y, Parthasarathy R, **Bai H**, Palli SR. 2006. Mechanisms of midgut remodeling: Juvenile hormone analog methoprene blocks midgut metamorphosis by modulating ecdysone action. *Mechanisms of Development*, 123(7):530-547. PMID: 16829058.
16. Lu J, Chang G, Wu X, **Bai H**, Zhao W, Cheng Y. 2009. The mandibular organ in crustacean and a radiochemical assay for methyl farnesoate. *Fisheries Science*, 28(2):113-116.
17. Lu J, **Bai H**, Cheng Y, Zhao W. 2006. *In vitro* regulation of hormone biosynthesis of the mandibular organ in crayfish, *Procambarus clarkia*. *Journal of Fisheries of China*. Vol.13, No.3, 471-474.
18. Zhao W, **Bai H**, Lu J. 2002. The regulation of methyl farnesoate biosynthesis in *Procambarus clarkii*. *Journal of Fisheries of China*. Vol.26, Suppl. 1-6.
19. Yuan C, **Bai H**, Yang F. 2002. Effects of the Chinese herb, *Radix polygoni multiflori* on MPTP-induced mouse model of Parkinson's disease. *Journal of East China Normal University (Natural Science)*. No.3, 95-98.
20. Zhao W, **Bai H**. 2001. The biosynthesis of methyl farnesoate by the mandibular organ in crayfish, *Procambarus clarkii*. *Journal of Fisheries of China*. Vol.25, No.3, 193-196.
21. Zhao W, **Bai H**, Ma X. 1999. Changes in progesterone contents of the ovary and mandibular organ in crayfish during vitellogenesis. *Journal of Shanghai Fisheries University*. Vol.8, No.3, 232-236.

#### (B). Book chapters

1. **Bai H**, 2012. Genome-Wide RNAi Screen for the Discovery of Gene Function, Novel Therapeutical Targets and Agricultural Applications. In: *Functional genomics*. Meroni G. and Petrera F. (ed). *InTech*. DOI: 10.5772/49945
2. **Bai H**, Palli SR. 2012. G protein-coupled receptors as target sites for insecticide discovery. In: *Advanced Technologies for Controlling Insect Pests*. Ishaaya I, Palli S.R, Horowitz A.R. (ed). *Springer Science*.
3. Palli SR, **Bai H**, Wigginton J. 2011. Insect genomics and beyond. In: *Insect Biochemistry and Molecular Biology*. Gilbert L. (ed). *Springer Science*.
4. Garry NH, Hill RJ, Dedos SG, Swevers L, Latrou K, Tan A, Parthasarathy R, **Bai H**, Zhang Z, Palli SR. 2009. Applications of RNA interference in ecdysone research. In: *Ecdysone, structures and functions*. G. Smaghhe (ed). *Springer Science*, 205-227.

**MENTORING EXPERIENCE**

2010-2015 Brown University, Providence, RI

Graduate student:

- ❖ Stephanie Post: The nutritional geometry of insulin-like peptides in adult *Drosophila*

Undergraduate students:

- ❖ Stephen Skubina: Transcriptional regulation of dilp2 expression in insulin-producing cells
- ❖ Ellen Shrontz: The role of Kr-h1 in the regulation of glucose uptake and insulin sensitivity
- ❖ Rachel Thakore: The role of juvenile hormone in lipid metabolism in adult *Drosophila*
- ❖ Stephanie Vasquez: Transcriptional regulation of insulin-like peptides in *Drosophila*
- ❖ Prashanthi Divakar: Identification of dFOXO direct target genes regulating lifespan in *Drosophila*
- ❖ Eric Bai: The cross-talk between juvenile hormone and insulin signaling in *Drosophila*
- ❖ Michael Lin: Phosphoproteomics of *Drosophila* insulin signaling

2005-2009 University of Kentucky, Lexington, KY

Graduate students:

- ❖ Aline Mackert: Identification of a juvenile hormone esterase-like gene in the honey bee
- ❖ Zhiyuan Sun: The role of juvenile hormone in vitellogenesis in the red flour beetle
- ❖ Yipeng Sui: Transcriptional regulation of Kr-h1 in the yellow fever mosquito

**TEACHING EXPERIENCE**

2014 **Sheridan Teaching Certificate Recipient**  
Brown University, Providence, RI

One year training and practice on the development and refinement of fundamental teaching and assessment strategies and communication skills, including following five modules:

- ❖ Reflections on Teaching and Learning
- ❖ Developing Student Learning Goals: Course & Syllabus Design
- ❖ How Students Learn
- ❖ Grading and Evaluation: Measuring Your Students' Learning
- ❖ Rhetorical Practice: Teaching as Persuasive Communication

Fall 2008 University of Kentucky, Lexington, KY

- ❖ Teaching Assistant for ENT 635, Insect Physiology Course (With Dr. Subba R. Palli)
- ❖ Laboratory Instructor for ENT 635, Insect Physiology Course
  - ◆ Taught lab lectures (one hour per section)
  - ◆ Led 10 wet-lab sections that met 3 hr / week
  - ◆ Led ~50 hrs course project on RNA interference in the red flour beetle

Fall 1998 Shanghai Fisheries University, Shanghai, China

- ❖ Teaching Assistant for Animal Physiology Course (With Prof. Weixin Zhao)
- ❖ Laboratory Instructor for Animal Physiology Course
  - ◆ Taught lab lectures (one hour per section)
  - ◆ Led 8 wet-lab sections that met 3~4 hr / week

Fall 1996 Dongchang Middle School, Shanghai, China

Biology teacher

Taught 8-week General Biology Course and Laboratory (Seventh Grade).

**Ad hoc GRANT REVIEWER**

03/2013 National Science Foundation, International Science & Engineering proposal  
 08/2012 National Science Foundation, BIO/IOS-PSS proposal

**Ad hoc JOURNAL REVIEWER**

*Cell Report; Aging Cell; PLoS Genetics; PLoS One; Cell Cycle; BMC Genomics; Insect biochemistry and molecular biology; Journal of Insect Physiology; Journal of Insect Science; Archives of Insect Biochemistry and Physiology; Pest Management Science; Pesticide Biochemistry and Physiology; Journal of Applied Entomology; Journal of Economic Entomology; Journal of Medical Entomology; Environmental Entomology; Annals of the Entomological Society of America; The Canadian Entomologist*

**PUBLIC SERVICES**

2008 Co-organizer of Student Network of the Entomological Society of America  
 2008 Judge for the 2008 Kentucky American Water – Fayette County Public Schools District Science Fair, Lexington, KY  
 2006/7 Volunteer for Annual Meeting of the Entomological Society of America  
 1999 President of Graduate Student Congress, Shanghai Fisheries University, China

**AWARDS AND HONORS** (After 2005)

2008 1<sup>st</sup> place in Student Oral Presentation Competition at 2008 National Annual Meeting of the Entomological Society of America. Reno, NV  
 2008 2<sup>nd</sup> place in Ph.D. Oral competition at 2008 Ohio Valley Entomological Association Student Forum, Dow Agrosiences, Indianapolis, IN  
 2007 1<sup>st</sup> place in the Ph.D. poster competition at 2007 National Conference on Agricultural Genomics, Purdue University  
 2006 2<sup>nd</sup> place in Student Poster Competition at 2006 National Annual Meeting of the Entomological Society of America. Indianapolis, IN

**INVITED TALKS**

04/2015 Entomological Society of America Annual meeting (Pacific Branch) Coeur d'Alene, ID.  
 10/2014 Department of Physiology Seminar. University of Kentucky, Lexington, KY.  
 02/2014 COBRE & Orthopaedic Research Seminar. Rhode Island Hospital, Providence, RI.  
 10/2013 Providence Area Aging Research Forum. Brown University, Providence, RI.  
 07/2013 Insect Hormones International Workshop, Minneapolis, MN.  
 10/2012 Molecular Genetics of Aging Meeting, Cold Spring Harbor Laboratory, NY.  
 05/2012 The Boston Aging Data Symposium. Harvard Medical School, Boston, MA.  
 03/2012 Annual Drosophila Research Conference, Chicago, IL.  
 03/2012 Providence Area Aging Research Forum. Brown University, Providence, RI.

**SELECTED CONFERENCE ABSTRACT**

1. **Bai H**, Post S, Kang P, Tatar M. 2015. 4E-BP is required for insulin-mediated longevity assurance in *Drosophila*. Gordon Research Conference. Sunday River, ME.
2. **Bai H**, Kang P, Hernandez AM, Tatar M. 2014. TGF- $\beta$ /Activin signaling targeted by insulin/dFOXO regulates muscle autophagy and protein homeostasis in *Drosophila*. Keystone Symposia. Steamboat Springs, CO.

3. **Bai H**, Kang P, Hernandez AM, Tatar M. 2013. TGF- $\beta$ /Activin signaling, the downstream target of dFOXO, regulates longevity through muscle autophagy in *Drosophila*. 54th Annual *Drosophila* Research Conference. Washington DC.
4. **Bai H**. 2012. Identification of dFOXO direct targets regulating lifespan in *Drosophila melanogaster*. 25th Annual AFAR Grantee Conference, Santa Barbara, CA.
5. **Bai H**, Kang P, Tatar M. 2012. Fat body-specific dilp6 over-expression extends lifespan and represses brain insulin secretion in *Drosophila*. The Aging, Biology of Gordon Research Conference, Ventura, CA.
6. **Bai H**, Yamamoto R, Kang P, Tatar M. 2011. Juvenile hormone regulation of lipid and carbohydrate metabolism in adult *Drosophila*. 52nd Annual *Drosophila* Research Conference. San Diego, CA.
7. **Bai H**, Yamamoto R, Kang P, Tatar M. 2010. Lifespan regulation by juvenile hormone of adult *Drosophila*. Molecular Genetics of Aging Conference. Cold Spring Harbor Laboratory, NY.
8. **Bai H**, Parthasarathy R, Palli S.R. 2009. G protein-coupled receptors (GPCRs) as target sites for pesticide development: Genome-wide analysis of GPCRs in the red flour beetle. Annual meeting of the Entomological Society of America. Indianapolis, IN.
9. **Bai H**, Parthasarathy R, Palli S.R. 2008. Genome-wide analysis of G protein-coupled receptors required for development and reproduction in *Tribolium astaneum*. Annual meeting of the Entomological Society of America. Reno, NV.
10. **Bai H**, Parthasarathy R, Palli S.R. 2008. G protein-coupled receptors as target sites for pesticides: Functional characterization of GPCRs in the red flour beetle. Ohio Valley Entomological Association Annual Student Forum. Dow agrosiences, Indianapolis, IN.
11. **Bai H**, Palli S.R. 2007. Development of feeding RNA interference method for the yellow fever mosquito. Ohio Valley Entomological Association Annual Student Forum. Columbus, OH.
12. **Bai H**, R. Parthasarathy, Palli S.R. 2007. Identification and characterization of juvenile hormone esterase of yellow fever mosquito, *Aedes aegypti*. National conference on agricultural genomics at Purdue University, West Lafayette, IN.
13. **Bai H**, Parthasarathy R, Palli S.R. 2006. Identification and characterization of juvenile hormone esterase of yellow fever mosquito, *Aedes aegypti* (Diptera: Culicidae). Annual meeting of the Entomological Society of America. Indianapolis, IN.