

# Ho, Wei-Chin

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## Education

- 2011 - 2017    **Ph.D. in Ecology and Evolutionary Biology**  
**University of Michigan, Ann Arbor, USA.**  
Dissertation: The genotype-phenotype map: origins, properties, and evolutionary consequences (Advisor: Dr. Jianzhi Zhang)
- 2008 - 2010    **M.S. in Zoology**  
**National Taiwan University, Taiwan.**  
Thesis: Inferring speciation history of *Drosophila* by massive parallel sequencing (Advisor: Dr. Chau-Ti Ting)
- 2004 - 2008    **B.S. in Life Science (Minor in Chemistry)**  
**National Taiwan University, Taiwan.**

## Professional Experiences

- 2017 -            **Postdoctoral Research Associate, Center for Mechanisms of Evolution, The Biodesign Institute, Arizona State University, USA.** (Advisor: Dr. Michael Lynch)
- 2010 - 2011    **Research Assistant, Department of Life Science, National Taiwan University, Taiwan.** (Advisor: Dr. Chau-Ti Ting)

## Research Interests

- Factors affecting evolutionary outcomes and their evolution, including (but not limited to) mutation rates, mutational effects, robustness, and plasticity.
- Relative contribution of chance and necessity in evolution.
- Predictability of evolutionary outcomes *via* systems biology approaches.

## Publications

(\*co-first authors; @corresponding authors; ^mentored undergraduate students)

*in preparation*

- Wei-Chin Ho, Megan Behringer, Sam Miller, Jadon Gonzales<sup>^</sup>, Amber Nguyen<sup>^</sup>, Meriem Allahwerdy<sup>^</sup>, Gwyneth Boyer, & Michael Lynch (2020) **Evolutionary and ecological dynamics of hypermutators adapting to a complex environment.**

*submitted*

- Megan Behringer<sup>\*@</sup>, Wei-Chin Ho<sup>\*@</sup>, Sam Miller, John Meraz, Gwyneth Boyer, & Michael Lynch (2020) **Antagonism in evolutionary opportunities results in non-monotonic evolution across an environmental gradient.**
- Michael Lynch<sup>@</sup>, Chris Kempes & Wei-Chin Ho (2020) **Evolutionary scaling of maximum growth rates with the drift barrier.**

8. Wei-Chin Ho\*, Diyan Li\*, Qing Zhu, & Jianzhi Zhang<sup>@</sup> (2020) **Phenotypic plasticity as a long-term memory easing readaptations to ancestral environments.** *Science Advances*. *in press*.
7. Michael Lynch<sup>@</sup> & Wei-Chin Ho (2020) **The limits to estimating population-genetic parameters with temporal data.** *Genome Biol. Evol.* *in press*.
6. Wei-Chin Ho & Jianzhi Zhang<sup>@</sup> (2019) **Genetic gene expression changes during environmental adaptations tend to reverse plastic changes even after the correction for statistical nonindependence.** *Mol. Biol. Evol.* 36(3):604-612.
5. Wei-Chin Ho & Jianzhi Zhang<sup>@</sup> (2018) **Evolutionary adaptations to new environments generally reverse plastic phenotypic changes.** *Nat. Comm.* 9: 350.
4. Wei-Chin Ho, Yoshikazu Ohya, & Jianzhi Zhang<sup>@</sup> (2017) **Testing the neutral hypothesis of phenotypic evolution.** *Proc. Natl. Acad. Sci. U.S.A.* 114(46): 12219-12224.
3. Calum J. Maclean\*, Brian P.H. Metzger\*, Jian-Rong Yang\*, Wei-Chin Ho, Bryan Moyers, & Jianzhi Zhang<sup>@</sup> (2017) **Deciphering the genic basis of yeast fitness variation by simultaneous forward and reverse genetics.** *Mol. Biol. Evol.* 34(10): 2486-2502.
2. Wei-Chin Ho & Jianzhi Zhang<sup>@</sup> (2016) **Adaptive genetic robustness of *Escherichia coli* metabolic fluxes.** *Mol. Biol. Evol.* 33(5): 1164-1176.
1. Wei-Chin Ho & Jianzhi Zhang<sup>@</sup> (2014) **The genotype-phenotype map of yeast complex traits: basic parameters and the role of natural selection.** *Mol. Biol. Evol.* 31(6): 1568-1580.

#### Public Talks and Conference Oral Presentation

- **“Phenotypic changes in organismal adaptation to new environments: plasticity distorts while evolution restores”**  
Annual Meeting of SMBE, Gold Coast, Australia, July 2016
- **“Adaptive origin of the genetic robustness of metabolic fluxes”**  
Annual Meeting of SMBE, Vienna, Austria, July 2015
- **“Prevalent adaptive evolution of morphological traits in the budding yeast *Saccharomyces cerevisiae*”**  
Annual Meeting of SMBE, San Juan, Puerto Rico, June 2014
- **“Natural selection for robustness shapes the genetic architecture of yeast complex traits”**  
University of Michigan, Ann Arbor, Jan 2013
- **“Expression divergence between two behavioral races of *Drosophila melanogaster* revealed by whole transcriptome analyses”**  
Annual Meeting of SMBE, Lyon, France, July 2010

#### Conference Poster Presentation

- **“Evolutionary and ecological dynamics of *Escherichia coli* mutators adapting to a complex environment”**  
Gordon Research Conference on Molecular Mechanisms in Evolution, Easton, MA, USA, May 2019
- **“Experimental evolution of *Escherichia coli* mutators in a complex environment”**  
Annual Meeting of SMBE, Yokohama, Japan, July 2018
- **“Does genetic correlation constrain or facilitate long-term phenotypic evolution?”**  
Annual Meeting of SMBE, Austin, TX, USA, July 2017

- **“Testing the neutral hypothesis of phenotypic evolution using 220 morphological traits in yeast”**  
Annual Meeting of SMCB, Chicago, IL, USA, July 2013
- **“Genome-wide genetic architecture of morphological traits in yeast”**  
Annual Meeting of SMCB, Dublin, Ireland, June 2012
- **“Differential gene expression between two behavioral races of *Drosophila melanogaster*”**  
Asian-Pacific *Drosophila* Research Conference, Taipei, Taiwan, May 2011
- **“Searching candidate loci responsible for behavior differentiation between two *Drosophila melanogaster* races by genomic approaches”**  
Symposium on College of Life Science, National Taiwan University, Taipei, Taiwan, June 2010
- **“Incomplete lineage sorting in *Drosophila simulans* clade”**  
Symposium on College of Life Science, National Taiwan University, Taipei, Taiwan, June 2009

### **Mentoring Experiences**

- Mentoring undergraduate researchers:
  - Meriem Allahwerdy (2019)
  - Tristan Chen (2019)
  - Jadon Gonzales (2018-)
  - Lily King (2019-)
  - Amber Nguyen (2018-2019)
- Mentoring graduate student instructors in the class Supervised Teaching (EEB/MCDB 801), University of Michigan, W2017

### **Teaching Experiences**

- Graduate Student Instructor, Genetics (BIOLOGY 305), University of Michigan, W2017, W2015, W2013, W2012
- Graduate Student Instructor, Evolution, University of Michigan (EEB 390), F2013
- Graduate Student Instructor, Introductory Biology: Ecology and Evolution (BIOLOGY 171), University of Michigan, F2011
- Teaching Assistant, Population Genetics (EEB 5045), National Taiwan University, F2010, F2009, F2008
- Teaching Assistant, Genetics (LS 3007), National Taiwan University, Sp2010
- Teaching Assistant, General Biology (LS 1006), National Taiwan University, F2009
- Teaching Assistant, General Biology Laboratory (LS 1017), National Taiwan University, F2008

### **Awards and Fellowships**

- Young Investigator Travel Award, Annual Meeting of the Society for Molecular Biology and Evolution, 2018-2015
- Rackham One-Term Dissertation Fellowship, Rackham Graduate School, University of Michigan, 2016
- Graduate Travel Award, Annual Meeting of the Society for Molecular Biology and Evolution, 2014, 2010
- Chia-Lun Lo Fellowship (\$10,000), Rackham Graduate School, University of Michigan, 2013
- Scholarship of Government Sponsorship for Overseas Study in Systematic Biology (Taiwan), 2011 (declined)
- Dean’s Award, College of Life Science, National Taiwan University, 2010

- Outstanding Students Conference Travel Grant, Foundation for the Advancement of Outstanding Scholarship (Taiwan), 2010
- Reward of Excellence, Symposium on College of Life Science, National Taiwan University, 2010

### **Professional Associations**

Genetics Society of America (2020-)

Society for Molecular Biology and Evolution (2010-)

Society for the Study of Evolution (2020-)

### **Academic Services**

- *Ad-hoc* Journal Reviewer for *BMC Genomics*, *Genome Biol. Evol.*, *Mol. Biol. Evol.*, *PLoS Genetics*.
- Voluntary helpers in Software Carpentry Workshops at University of Michigan (Oct-17 2016, Dec-14 2016).
- Committee Representative, 13th Annual University of Michigan Early Career Scientists Symposium: Ecology and Evolutionary Biology of Phenotypic Plasticity, University of Michigan, Ann Arbor, (Mar-11 2017)
- Organizer for a special lunch seminar (title: EEB's Faculty "Leslie" Panel: A "behind the scenes" look at life from multiple positions in academia) at University of Michigan, Ann Arbor (Nov-29 2016)
- Seminar Committee Representative, Graduate Researchers in Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, F2016 - W2017, F2013 - W2014

### **Computational Skills**

- Programming languages: C/C++, Perl, Python.
- Statistical computing: R, MATLAB.
- Evolutionary analysis tools: PAML, MrBayes, Phylip, MEGA.