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^, Amber Nguyen^, Meriem Allahwerdy^, Gwyneth Boyer, & Michael Lynch (2019) **Evolutionary and ecological dynamics of hypermutators adapting to a complex environment.**

submitted

- Megan Behringer*@, Wei-Chin Ho*@, Sam Miller, John Meraz, Gwyneth Boyer, & Michael Lynch (2019) **Antagonism in evolutionary opportunities results in non-monotonic evolution across an environmental gradient.**

- Michael Lynch[@], Chris Kempes & Wei-Chin Ho (2019) **Evolutionary scaling of maximum growth rates with the drift barrier.**
- Michael Lynch[@] & Wei-Chin Ho (2019) **The limits to estimating population-genetic parameters with temporal data.**
- Wei-Chin Ho*, Diyan Li*, Qing Zhu, & Jianzhi Zhang[@] (2019) **Phenotypic plasticity as a long-term memory easing readaptations to ancestral environments.**

6. Wei-Chin Ho & Jianzhi Zhang[@] (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[@] (2018) **Evolutionary adaptations to new environments generally reverse plastic phenotypic changes**. *Nat. Comm.* 9: 350.

4. Wei-Chin Ho, Yoshikazu Ohya, & Jianzhi Zhang[@] (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[@] (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[@] (2016) **Adaptive genetic robustness of *Escherichia coli* metabolic fluxes.** *Mol. Biol. Evol.* 33(5): 1164-1176.

1. Wei-Chin Ho & Jianzhi Zhang[@] (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 SMBE, Chicago, IL, USA, July 2013
- "**Genome-wide genetic architecture of morphological traits in yeast**"
  Annual Meeting of SMBE, 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
- Dean's Award, College of Life Science, National Taiwan University, 2010
- Outstanding Students Conference Travel Grant, Foundation for the Advancement of Outstanding Scholarship, 2010
- Reward of Excellence, Symposium on College of Life Science, National Taiwan University, 2010

Professional Associations

Society for Molecular Biology and Evolution (2010-)

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.