Ho, Wei-Chin

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Education

2011 – 2017 **Ph.D. in Ecology & 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 – Now Postdoctoral Research Associate
Biodesign Center for Mechanisms of Evolution, 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)

Publications (*co-first authors; @corresponding authors; ^mentored undergrads)

In-prep:

- Wei-Chin Ho*@, Lily King*^, Ryan Stikeleather & Michael Lynch (2022) Evolution of novel metabolic capabilities by non-selection forces in a rich environment.
- Megan G. Behringer*@, Wei-Chin Ho*@, Samuel F. Miller, Sarah B. Worthan, Zeer Cen, Ryan Stikeleather & Michael Lynch (2022) Trade-off between biofilm formation and motility in adaptation to prolonged famine cycles.
- Wei-Chin Ho@, Jadon Gonzales^, & Michael Lynch@ (2022) Antibiotic treatment affects the distribution of fitness effects of spontaneous mutations.

Published:

12. Wen Wei*@, Wei-Chin Ho*, Megan G. Behringer, Samuel F. Miller, George Bcharah & Michael Lynch@ (2022) **Rapid evolution of the mutation rate and spectrum in response to environmental and population-genetic challenges**. *Nat. Comm.* 13: 4752.
11. Leandra Brettner, Wei-Chin Ho, Kara Schmidlin, Sam Apodaca, Rachel Eder, Kerry Geiler-Samerotte@ (2022) **Challenges and potential solutions for studying the**

genetic and phenotypic architecture of adaptation in microbes. *Curr. Opin. Genet. Dev.* 75: 101951.

10. Megan G. Behringer*[@], Wei-Chin Ho*[@], John Meraz, Samuel F. Miller, Gwyneth Boyer, Carl Stone, Meredith Andersen & Michael Lynch (2022) **Complex ecotype dynamics evolve in response to fluctuating resources.** *mBio* 13(3): e03467-21.
9. Wei-Chin Ho[@], Megan G. Behringer, Samuel F. Miller, Jadon Gonzales[^], Amber Nguyen[^], Meriem Allahwerdy[^], Gwyneth Boyer & Michael Lynch[@] (2021) **Evolutionary dynamics of asexual hypermutators adapting to a novel environment.** *Genome Biol. Evol.* 13(12): evab257.
8. Wei-Chin Ho*, Diyan Li*, Qing Zhu & Jianzhi Zhang[@] (2020) **Phenotypic plasticity as a long-term memory easing readaptation to ancestral environments.** *Sci. Adv*. 6(21): eaba3388.
7. Michael Lynch[@] & Wei-Chin Ho (2020) **The limits to estimating population-genetic parameters with temporal data.** *Genome Biol. Evol.* 12(4): 443-455.
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.

Talks and Oral Presentation

- "Adaptation of *Escherichia coli* hypermutators to a novel environment"
  Evolution Meeting, Cleveland, USA, June 2022.
- "Antibiotic treatment increases fitness effects of spontaneous mutations"
  Arizona Postdoctoral Research Conference, Phoenix, USA, Sep 2021.
- "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, USA, Jan 2013.
- "Expression divergence between two behavioral races of *Drosophila melanogaster* revealed by whole transcriptome analyses"
  Annual Meeting of SMBE, Lyon, France, July 2010.

Poster Presentation

- "Antibiotic treatment affects the effect sizes of spontaneous mutations on bacterial population-growth characters"
  PEQG Conference, Pacific Grove, USA, June 2022.
- "Antibiotic treatment increases fitness effects of spontaneous mutations"
  Annual Meeting of SMBE Online, July 2021.
- "Evolution of high mutation rates is generally constrained but permitted during intermediate-level cycles of starvation"
  PEQG at The Allied Genetics Conference Online, April 2020.
- "Evolutionary and ecological dynamics of *Escherichia coli* mutators adapting to a complex environment"
  Gordon Research Conference on Molecular Mechanisms in Evolution, Easton, 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, USA, July 2017.
- "Testing the neutral hypothesis of phenotypic evolution using 220 morphological traits in yeast"
  Annual Meeting of SMBE, Chicago, 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 in National Taiwan University, Taipei, Taiwan, June 2010.
- "Incomplete lineage sorting in *Drosophila simulans* clade"
  Symposium on College of Life Science in National Taiwan University, Taipei, Taiwan, June 2009.

Teaching Experiences

- Graduate Student Instructor, Genetics (BIOLOGY 305), University of Michigan, W2017, W2015, W2013, W2012
- Graduate Student Instructor, Evolution (EEB 390), University of Michigan, 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

Mentoring Experiences

- Mentoring undergraduate researchers (*with honor thesis; #accelerated MS program): Meriem Allahwerdy (2019), Tristan Chen (2019), Jadon Gonzales*# (2018-), Logan Graham*# (2020-), Lily King* (2019-2022), Ameya Kulkarni (2022-), Amber Nguyen (2018-2019), Arin Shaw (2022-), Dannish Tung (2020-2021).
- Mentoring graduate student instructors in the class Supervised Teaching (EEB/MCDB 801), University of Michigan, W2017

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* Reviewer for journals:
    - *BMC Genomics*
    - *Ecol*. *Evol*.
    - *eLife*
    - *Evol*. *Dev*.
    - *Genome Biol*. *Evol*.
    - *Mol*. *Biol*. *Evol*.
    - *Nat. Eco. Evol.*
    - *Proc. Natl. Acad. Sci. U.S.A.*
    - *PLoS Genetics*
    - *PLoS One*
- Co-organizer, SMBE satellite meeting on Mechanisms of Cellular Evolution, Arizona State University (postponed to 2023)
- Organizer, Diversity, Equity, and Inclusion (DEI) Reading Group, Center for Mechanisms of Evolution, Arizona State University (2020-2021)
- Volunteer, ASU Open Door at the Biodesign Institute (Feb-24-2018, Feb-23-2019, Feb-22-2020)
- Committee Representative, the 13th Annual University of Michigan Early Career Scientists Symposium: Ecology and Evolutionary Biology of Phenotypic Plasticity, University of Michigan, Ann Arbor (Mar-11 2017)
- Co-organizer, special lunch seminar- EEB's Faculty "Leslie" Panel: A "behind the scenes" look at life from multiple positions in academia, University of Michigan, Ann Arbor (Nov-29 2016)
- Voluntary helpers, Software Carpentry Workshops, University of Michigan, Ann Arbor (Oct-17 2016, Dec-14 2016).
- Seminar Committee Representative, Graduate Researchers in Ecology and Evolutionary Biology, University of Michigan, Ann Arbor (F2016-W2017, F2013-W2014)
- Camp Director, Life Science Camp (Five-day symposium for 80 high school students) at National Taiwan University (July2007)
- Director of Academic and Culture Section, Student Association of the Department of Life Science at National Taiwan University (F2006-Sp2007)
- Deputy Editor, *The Cell*, published (in Chinese) by Student Association of the Department of Life Science at National Taiwan University (Sp2006)

Professional Development

- Rackham-CRLT Seminar on Preparing Future Faculty at University of Michigan, Ann Arbor (May-Jun 2016)
- LS&A ELI/CRLT Graduate Student Instructor Training Course at University of Michigan, Ann Arbor (Jul-Aug 2011)

Programming Skills C/C++, MATLAB, Perl, Python, R.