Mira V. Han
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Education

Ph.D. in Informatics, Indiana University, Bloomington 2011
Thesis: Evolution by gene duplication, loss, and transposition
Minor in Statistics and Biology
B.S. in Computer Science and Engineering, Seoul National University 2002

Professional Experience

Assistant Professor, School of Life Sciences, University of Nevada, Las Vegas 2013-present
Affiliate Faculty, Nevada Institute of Personalized Medicine, UNLV 2015-present
Postdoctoral Associate, National Evolutionary Synthesis Center (NESCent), Duke University 2011-2013
Member of Technical Staff, Pantech, Seoul, Korea 2003-2004

Publications

Preprints

Peer-reviewed

21. Chung, N., Jonaid, G., Quinton, S., Ross, A., Sexton, C.E., Alberto, A., Clymer, C., Churchill, D., Leija, O.N., and **Han, M.V.** (2019). Transcriptome analyses of tumor-adjacent somatic tissues reveal genes co-expressed with transposable elements. Mobile DNA, *in press* (Preprint available at doi.org/10.1101/385062).
20. Sexton, C.E., and **Han, M.V.** (2019). Paired-end Mappability of Transposable Elements in the Human Genome. Mobile DNA, *in press* (Preprint available at doi.org/10.1101/663435).
19. Hardy, C.M., Burke, M.K., Everett, L.J., **Han, M.V.**, Lantz, K.M., and Gibbs, A.G. (2017). Genome-wide analysis of starvation-selected Drosophila melanogaster—a genetic model of obesity. Molecular Biology and Evolution 35, 50–65.
18. Graves Jr, J.L., Hertweck, K.L., Phillips, M.A., **Han, M.V.**, Cabral, L.G., Barter, T.T., Greer, L.F., Burke, M.K., Mueller, L.D., and Rose, M.R. (2017). Genomics of parallel experimental evolution in Drosophila. Molecular Biology and Evolution 34, 831–842.
17. Navarro-Leija, O., Varghese, S., and **Han, M.V.** (2016). Measuring accelerated rates of insertions and deletions independent of rates of nucleotide substitution. Journal of Molecular Evolution 83, 137–146.
16. Neafsey, D.E., Waterhouse, R.M., Abai, M.R., Aganezov, S.S., Alekseyev, M.A., Allen, J.E., Amon, J., Arcà, B., Arensburger, P., Artemov, G., … **Han, M.V.** … et al. (2015). Highly evolvable

malaria vectors: the genomes of 16 Anopheles mosquitoes. Science 347, 1258522.

15. **Han, M.V.**, Thomas, G.W., Lugo-Martinez, J., and Hahn, M.W. (2013). Estimating gene gain and loss rates in the presence of error in genome assembly and annotation using CAFE 3. Molecular Biology and Evolution 30, 1987–1997.
14. Chen, S., Xu, J., Liu, C., Zhu, Y., Nelson, D.R., Zhou, S., Li, C., Wang, L., Guo, X., Sun, Y., … **Han, M.V.** … et al. (2012). Genome sequence of the model medicinal mushroom Ganoderma lucidum. Nature Communications 3, 913.
13. **Han, M.V.** (2012). Characterizing gene movements between chromosomes in Drosophila. Fly 6, 121–125.
12. **Han, M.V.**, and Hahn, M.W. (2012). Inferring the history of interchromosomal gene transposition in Drosophila using n-dimensional parsimony. Genetics 190, 813–825.
11. Snell-Rood, E.C., Cash, A., **Han, M.V.**, Kijimoto, T., Andrews, J., and Moczek, A.P. (2011). Developmental decoupling of alternative phenotypes: insights from the transcriptomes of horn-polyphenic beetles. Evolution: International Journal of Organic Evolution 65, 231–245.
10. Moyle, L.C., Muir, C.D., **Han, M.V.**, and Hahn, M.W. (2010). The contribution of gene movement to the "two rules of speciation." Evolution: International Journal of Organic Evolution 64, 1541–1557.
9. Lu, Y.-K., Marden, J., **Han, M.**, Swingley, W.D., Mastrian, S.D., Chowdhury, S.R., Hao, J., Helmy, T., Kim, S., Kurdoglu, A.A., et al. (2010). Metabolic flexibility revealed in the genome of the cyst-forming α-1 proteobacterium Rhodospirillum centenum. BMC Genomics 11, 325.
8. **Han, M.V.**, and Zmasek, C.M. (2009). phyloXML: XML for evolutionary biology and comparative genomics. BMC Bioinformatics 10, 356.
7. Meisel, R.P., **Han, M.V.**, and Hahn, M.W. (2009). A complex suite of forces drives gene traffic from Drosophila X chromosomes. Genome Biology and Evolution 1, 176–188.
6. **Han, M.V.**, Demuth, J.P., McGrath, C.L., Casola, C., and Hahn, M.W. (2009). Adaptive evolution of young gene duplicates in mammals. Genome Research 19, 859–867.
5. **Han, M.V.**, and Hahn, M.W. (2008). Identyfing Parent-Daughter Relationships Among Duplicated Genes. In Pacific Symposium on Biocomputing 2009, (World Scientific), pp. 114–125.
4. Costello, J.C., **Han, M.V.**, and Hahn, M.W. (2008). Limitations of pseudogenes in identifying gene losses. In RECOMB International Workshop on Comparative Genomics, (Springer, Berlin, Heidelberg), pp. 14–25.
3. Hahn, M.W., **Han, M.V.**, and Han, S.-G. (2007). Gene family evolution across 12 Drosophila genomes. PLoS Genetics 3, e197.
2. Stark, A., Lin, M.F., Kheradpour, P., Pedersen, J.S., Parts, L., Carlson, J.W., Crosby, M.A., Rasmussen, M.D., Roy, S., Deoras, A.N., … **Han, M.V.** … et al. (2007). Discovery of functional elements in 12 Drosophila genomes using evolutionary signatures. Nature 450, 219.
1. Drosophila Comparative Genome Sequencing and Analysis Consortium (2007). Evolution of genes and genomes on the Drosophila phylogeny. Nature 450, 203.

Grants

Funded External

- NSF-DBI Advances in Bio Informatics Program. DBI-1750532 "CAREER: Using indel rate variation to understand evolutionary constraints on distances between functional elements in the genome". $574,068. Sole PI. 2018-2023
- NIH NIGMS P20GM121325 "Personalized Medicine in Nevada COBRE". SubProject # 8462 – "Integrated Prediction of Tissue of origin in Cancers of Unknown Primary". Subproject Cost $1,555,676. Subproject PI. 2018-2023
- NIH NIGMS R15GM116108 "Transposable Element Silencing in Human Somatic Cells". $353,244. Sole PI 2015-2017
- National Evolution Synthesis Center (NESCent) Postdoctoral Fellowship. "Gene evolution in genomic context: Integrating genomic location into gene evolution models". $96,000. Postdoctoral Fellow. 2011-2013

Pending External

- NIH NIMHD "Creating personalized reference ranges of bone density to reduce healthcare disparities in osteoporosis diagnosis and treatment". PI: Wu, Qing. Role: Co-Investigator. 2020-2025

Funded Internal

- UNLV Faculty Opportunity Award. "Association study on transposable element silencing in human somatic cells". $20,000. Sole PI. 2014-2015
- UNLV Doctoral Graduate Research Assistant Award "Predicting the deleterious effect of insertions and deletions based on evolutionary constraint". $109,385. Co-PI with Dr. Kazem Taghva. 2014-2017

Teaching

BIOL 415: Evolution	Spring & Fall 2015, Spring & Fall 2017, Fall 2018
BIOL 412/611: Molecular Evolution	Fall 2014, Spring
New Course Developed.	2016, Spring 2018

Invited Talks and Conference Presentations

- Rocky Bioinformatics 2018, Transcriptome analysis of cancer adjacent normal tissues reveal genes co-expressed with LINE elements. 2018
- Invited Speaker, Nevada Chapter of the American Statistical Association Fall Symposium, 2018, Uncertainty in quantifying the transcription of repeat elements in the genome. 2018
- Evolution 2014, Small-scale gene transpositions in rearranged genomes. 2014

- Invited Seminar, Seoul National University 2013, Gene transpositions in the Drosophila genome 2013
- Invited Seminar, College of Charleston Biology Department 2012, Gene transpositions in the Drosophila genome 2012
- Drosophila Research Conference 2010, Gene transpositions in the Drosophila genome 2010
- Society for Molecular Biology and Evolution 2009, Identifying Duplications and Translocations by Parsimony 2009
- Pacific Symposium on Biocomputing 2009, Identifying Parent-Daughter Relationships Among Duplicated Genes 2009

Awards

- NSF CAREER Award NSF 2018
- NISBRE Young Investigator Travel Award NIH NISBRE 2018
- UNLV Faculty Opportunity Award UNLV 2014
- UNLV Faculty Doctoral Graduate Research Assistant Award (DGRA) UNLV 2014
- OIST Summer School and Workshop travel support (Quantitative Evolutionary and Comparative Genomics 2010) OIST 2010
- MBI Workshop travel support (Inference in Stochastic Models of Sequence Evolution) OSU MBI 2009
- International Society for Computational Biology (ISCB) Travel Fellowship to PSB 2009 ISCB 2009
- NESCent Summer Course on Computational Phyloinformatics travel award NESCENT 2008
- Summer Institute in Statistical Genetics tuition scholarship and travel award SISG 2008
- Indiana University GPSO Travel Award IU GPSO 2008
- SMBE Graduate Student Poster Award SMBE 2007

Public Service

University Service

- Search Committee for Bioinformatics Faculty, Nevada Institute of Personalized Medicine 2019, 2018, 2017, 2016, 2015
- Organization of Workshop on Intrinsically disordered proteins - invited speaker Dr. Keith Dunker (Indiana University), College of Sciences Research Week 2017
- Organization of Nevada Institute of Personalized Medicine Seminar Series 2015-2016
- Organization of Cell Free DNA Symposium, Nevada Institute of Personalized Medicine 2015
- Search Committee for Executive Director for the Institute for Quantitative Health Analysis, UNLV 2014

Departmental Service

- Graduate Operations Committee 2015-2016, 2018-
- Space Use Committee 2017-
- Thesis Committees for 9 PhD students (7 current) and 7 MS students (3 current) 2013-
- Search Committee for Assistant Professor in Eco-hydrology 2017-2018
- Curriculum Committee 2017-2018
- Personnel Committee 2015-2016
- SOLS policy handbook committee 2015
- SOLS website committee 2014-2015
- Search Committee for Assistant Professor in Residence 2014-2015
- Scholarship Committee 2014-2015
- School of Informatics PhD Brownbag coordinator 2006

Peer Review

- Panelist, NSF BIO DBI 2016
- Reviewer, US-Israel Binational Science Foundation (BSF) 2016
- Reviewer, Oxford University Press. An Introduction to Molecular Evolution and Phylogenetics, 2nd edition 2014
- Reviewer, Molecular Biology and Evolution, Genome Biology and Evolution, Genetics, Bioinformatics, Journal of Molecular Evolution, IEEE/ACM Transactions on Computational Biology and Bioinformatics, BMC Bioinformatics, BMC Evolutionary Biology, Axios. 2013-

Outreach – Education & Diversity

- UNLV summer code camp (2 weeks every summer as part of the NSF CAREER project) 2019
- Interviewee, Desert Companion, "You Are the Cure" 2018
- Host for high school summer research interns 2018
- SALSA! (Seeing and Learning Science After-school) program 2013
- Darwin Day Road Show 2013
- Women and Mathematics Mentoring Program, Durham County 2012

Students

Graduate Students

- Corinne Sexton (M.S. current student, NSF GRFP awarded) current
- G.M. Jonaid (M.S. 2018, currently at Penn State Ph.D. program) 2018

Undergraduate Students

Adrian Alberto, Sophia Quinton (Barry Goldwater Scholarship awarded, Honor's thesis advised), Matthew Sielaff, Nicky Chung, Austin Ross, Cody Clymer, Daphnie Churchill, Omar Navarro-Leija, Alex Park