

Michael D. Edge

Curriculum Vitae

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Department of Evolution and Ecology

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EDUCATION

2016	PhD in Biology, Stanford University
2012	MA in Psychology (Clinical), University of California, Berkeley
2011	MA in Statistics, University of California, Berkeley
2007	BA in Human Biology, Stanford University

POSITIONS

2020-	Asst. Professor, Dept. of Biological Sciences, Univ. of Southern California
2017-2020	Postdoctoral researcher, Department of Evolution and Ecology, UC Davis
2016-2017	Postdoctoral researcher, Department of Biology, Stanford University
2007-2009	Research staff, Department of Psychology, Stanford University

PUBLICATIONS

Preprints

MD Edge & G Coop (2019). Attacks on genetic privacy via uploads to genealogical databases. *bioRxiv*.

J Kim, **MD Edge**, A Goldberg, & NA Rosenberg (2019). Assortative mating and the dynamical decoupling of genetic admixture levels from phenotypes that differ between source populations. *bioRxiv*, 773663.

MD Edge & G Coop (2019). How lucky was the genetic investigation in the Golden State Killer case? *bioRxiv*.

Peer-reviewed publications in genetics

MD Edge & G Coop (in press). Donnelly (1983) and the limits of genetic genealogy. *Theoretical Population Biology*.

NA Rosenberg, **MD Edge** (in press). Genetic clusters and the race debates: A perspective from population genetics. To appear in *The Race Debates from Metaphysics to Medicine*, QNJ Spencer (ed.), Oxford University Press.

- NA Rosenberg, **MD Edge**, JK Pritchard, & MW Feldman (2019). Interpreting polygenic scores, polygenic adaptation, and human phenotypic differences. *Evolution, Medicine, and Public Health*, 2019:26-34.
- MD Edge** & G Coop (2019). Reconstructing the history of polygenic scores using coalescent trees. *Genetics*, 211:235-262.
- J Kim, **MD Edge**, BF Algee-Hewitt, JZ Li, & NA Rosenberg. (2018). Statistical detection of relatives typed with disjoint forensic and biomedical loci. *Cell*, 175:848-858.
- MD Edge**, BFB Algee-Hewitt, TJ Pemberton, JZ Li, NA Rosenberg (2017). Linkage disequilibrium matches forensic genetic records to disjoint genomic marker sets. *Proceedings of the National Academy of Sciences USA*, 114:5671-5676.
- JTL Kang, A Goldberg, **MD Edge**, DM Behar, NA Rosenberg (2016). Consanguinity rates predict long runs of homozygosity in Jewish populations. *Human Heredity*, 82: 87-102.
- BFB Algee-Hewitt*, **MD Edge***, J Kim, JZ Li, NA Rosenberg (2016). Individual identifiability predicts population identifiability in forensic microsatellite markers. *Current Biology*, 26: 935-942. *=co-first author.
- MD Edge**, NA Rosenberg (2015). A general model of the relationship between the apportionment of human genetic diversity and the apportionment of human phenotypic diversity. *Human Biology*, 87: 313-337.
- MD Edge**, NA Rosenberg (2015). Implications of the apportionment of human genetic diversity for the apportionment of human phenotypic diversity. *Studies in the History and Philosophy of Science Part C*, 52: 32-45.
- RG Winther, R Giordano, **MD Edge**, R Nielsen (2015). The mind, the lab, and the field: On three population concepts in biology. *Studies in the History and Philosophy of Science Part C*, 52: 12-21.
- MD Edge**, NA Rosenberg (2014). Bounds on F_{ST} in terms of the frequency of the most frequent allele and total homozygosity: The case of a specified number of alleles. *Theoretical Population Biology*, 97: 20-34.
- MD Edge**, P Goroochurn, NA Rosenberg (2013). Windfalls and pitfalls: Insights from population genetics in the search for disease genes. *Evolution, Medicine, and Public Health*, 1: 254-272.
- M Jakobsson, **MD Edge**, NA Rosenberg (2013). The relationship between F_{ST} and the frequency of the most frequent allele. *Genetics*, 193: 515-528.

Peer-reviewed publications in psychology and other fields

- MG Wilson, CMC Sweet, **MD Edge**, EN Madero, M McGuire, M Pilsmaker, D Carpenter, S Kirschner (2017). Evaluation of a digital behavioral counseling program for reducing risk factors for chronic disease in a workforce. *Journal of Occupational and Environmental Medicine*, 59, e150-e155.
- MD Edge**, SJ Lwi, SL Johnson (2015). An assessment of reactivity to frustration of goal pursuit in euthymic bipolar I disorder. *Clinical Psychological Science*, 3: 940-955.

- MD Edge**, SL Johnson, T Ng, CS Carver (2013). Iowa gambling task performance in euthymic bipolar I disorder: A meta-analysis and empirical study. *Journal of Affective Disorders*, 150: 115-122.
- MD Edge**, CJ Miller, L Muhtadie, SL Johnson, CS Carver, N Marquinez, IH Gotlib (2013). People with bipolar I disorder report avoiding rewarding activities and dampening positive emotion. *Journal of Affective Disorders*, 146: 407-413.
- JR Kuo, IG Edge, W Ramel, **MD Edge**, EM Drabant, WM Dayton, JJ Gross (2012). Trait rumination is associated with enhanced recollection of negative words. *Cognitive Therapy and Research*, 36: 722-730.
- SL Johnson, **MD Edge**, MK Holmes, CS Carver (2012). The behavioral activation system and mania. *Annual Review of Clinical Psychology*, 8: 243-267.
- EM Drabant, W Ramel, **MD Edge**, LW Hyde, JR Kuo, PR Goldin, AR Hariri, JJ Gross (2012). Neural mechanisms underlying 5-HTTLPR-related sensitivity to acute stress. *American Journal of Psychiatry*, 169: 397-405.
- EM Drabant, JR Kuo, W Ramel, J Blechert, **MD Edge**, JR Cooper, PR Goldin, AR Hariri, JJ Gross (2012). Experiential, autonomic, and neural responses during threat anticipation vary as a function of threat intensity and neuroticism. *Neuroimage*, 55: 401-410.
- T Carthy, N Horesh, A Apter, **MD Edge**, JJ Gross (2010). Emotional reactivity and cognitive regulation in anxious children. *Behaviour Research and Therapy*, 48: 384-393.
- MD Edge**, W Ramel, EM Drabant, JR Kuo, KJ Parker, JJ Gross (2009). For better or worse? Stress inoculation effects for implicit but not explicit anxiety. *Depression and Anxiety*, 26: 831-837.

Book

MD Edge (2019). *Statistical Thinking from Scratch: A Primer for Scientists*. Oxford University Press.

AWARDS

2019	Ruth L. Kirschstein National Research Service Award
2016	Samuel Karlin Prize in Mathematical Biology, Stanford University
2013	Center for Computational, Evolutionary, and Human Genetics Trainee Research Award, Stanford University
2012-2015	Stanford Graduate Research Fellowship, Stanford University
2009-2011	Berkeley Graduate Fellowship, University of California, Berkeley
2007	First Prize, Student Research Poster, Neurocognitive Interest Group, Advances in Behavioral and Cognitive Therapies
2007	Phi Beta Kappa, Stanford University
2007	Departmental Honors, Program in Human Biology, Stanford University

EXTERNAL FUNDING

NIH Ruth L. Kirschstein National Research Service Award (Feb. 1, 2019 – Jan. 31, 2021)

Reconstructing the history of polygenic adaptation using ancestral recombination graphs
Grant #: 1 F32 GM130050-01

INVITED TALKS

- 2019 **MD Edge**. Identifying security vulnerabilities in genetic genealogy services that allow user uploads. AncestryDNA, August 22nd, 2019.
- 2018 **MD Edge**. What is a “population” in population genetics? Polygenic Turn Workshop, Edmond J. Safra Center for Ethics, Harvard University, October 25th, 2018.
- 2017 **MD Edge**. Record linkage of CODIS profiles with SNP Genotypes. Webinar series, Forensic Technology Center of Excellence, September 21st, 2017.
- 2015 **MD Edge**, NA Rosenberg. Implications of the apportionment of human genetic diversity for the apportionment of human phenotypic diversity. Invited talk presented at meeting of American Association of Physical Anthropologists, St. Louis, MO, March 2015.
- 2014 Invited panelist at “The Race Debates: from Philosophy to Biomedical Research,” University of San Francisco, April 2014.
- 2014 **MD Edge**, NA Rosenberg. Multilocus Classification Accuracy and Multilocus Trait Differences. UC Santa Cruz public conference on “Genomics and Philosophy of Race.” April 2014.
- 2014 **MD Edge**, NA Rosenberg. Multilocus Classification Accuracy and Multilocus Trait Differences. UC Davis workshop of “Genomics and Philosophy of Race” research cluster. March 2014.

CONTRIBUTED CONFERENCE PRESENTATIONS (Selected)

- 2019 **MD Edge**, JJ Berg, G Coop. Identifying population stratification for GWAS-based selection tests using sibling-based effect size estimates. Talk presented at *Evolution* 2019, Providence, RI, June 21-25
- 2018 **MD Edge**. Record linkage of CODIS profiles with SNP genotypes. Podium talk presented at National Institute of Justice Forensic Science R&D Symposium at American Academy of Forensic Sciences meeting, Seattle, WA, February 20th, 2018.
- 2014 **MD Edge**, M Jakobsson, NA Rosenberg. Using constraints on F_{ST} to interpret genetic differentiation in genomic data. Poster presented at meeting of the American Society of Human Genetics, San Diego, CA, October 2014.
- 2010 **MD Edge**, SL Johnson. “Bipolar” disorder? The longitudinal relationship between symptoms of mania and depression. Poster presented at the meeting of the Society for Research in Psychopathology, October 2010.
- 2007 **MD Edge**, EM Drabant, W Ramel, IG Shelton-Mottsmith, WM Dayton, JJ Gross (2007, November). The Effects of 5-HTTLPR and Early-Life Stress on Social Interpretation Biases. Poster presented at Advances in Behavioral and Cognitive Therapies, November 2007.

TEACHING EXPERIENCE

As Instructor

At University of California, Berkeley

Methods for Research in Psychological Science (Fall 2016). Lecture course for 50 honors psychology majors, based on my textbook. Mean effectiveness rating 6.1/7.

One-day Workshops

Effect size and Power, 2/26/16, for UC Berkeley Psychology Department, Social/Personality Area.

Mediation Analysis, 4/07/16, for UC Berkeley Psychology Department, Social/Personality Area.

As Teaching Assistant

At Foothill College

Ecology, Systematics, & Evolution (Shadowed and assisted Prof. Gillian Schultz as part of Stanford's Preparing Future Professors program, Winter 2016).

At Stanford University

Human Behavioral Biology (w/ Prof. Robert Sapolsky, TA in Spring 2014, mean effectiveness rating 4.8/5)

Core Plant Biology and Ecology/Evolution Laboratory (TA in Spring 2013, mean effectiveness rating 4.7/5)

At University of California, Berkeley

Research and Data Analysis in Psychology (TA in Fall 2011, mean effectiveness rating 6.2/7; Spring 2012, mean effectiveness rating 6.7/7)

Additional Lectures

"SNPs and STRs in Forensic Practice I and II," 11/6/18 and 11/8/18, Forensic Genetics, Prof. Rori Rohlf, San Francisco State University

"Introduction to Human Genetic Diversity," 1/19/17, Philosophy of Race, Prof. Rasmus Winther, UC Santa Cruz

"Properties of 2×2 Association Statistics," 5/24/16, Advanced Topics in Human Population Genetics, Prof. Noah Rosenberg, Stanford University

"Introduction to Population Genetics," 4/12/16, Ecology, Systematics, and Evolution, Prof. Gillian Schultz, Foothill College

Additional Teaching Training

Stanford University Preparing Future Professors Program (2016). Selective program for Stanford PhD students, w/ regular shadowing of a faculty mentor at a teaching-focused institution.

SERVICE

- 2013 Organized day-long workshop of “Genomics and Philosophy of Race” research cluster, Stanford University, 10/12/13: <http://ihr.ucsc.edu/portfolio/philosophy-in-a-multicultural-context/>. First of three meetings of a group that raised funds from UC Santa Cruz Institute for Humanities Research to promote interdisciplinary conversation on human genetics and race.
- 2012- Ad hoc review for *G3, Genetics, Human Biology, Molecular Biology and Evolution, Philosophy and Theory in Biology, PLoS ONE, Royal Society Open*, and *Studies in History and Philosophy of Biological and Biomedical Sciences*.