# Matthew C. Keller

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## Positions and Education

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|---|---|
| March 2022-present | Director, Institute for Behavioral Genetics<br>University of Colorado, Boulder |
| July 2007-present | Department of Psychology and Neuroscience<br>University of Colorado, Boulder<br>Professor (2020-present)<br>Associate Professor (2014-2020)<br>Assistant Professor (2007-2014) |
| 2005-2007 | Virginia Institute of Psychiatric and Behavioral Genetics<br>Virginia Commonwealth University<br>Postdoctoral Fellow |
| 2004-2005 (8 months) | Center for Society and Genetics<br>University of California, Los Angeles<br>Postdoctoral Fellow |
| 2004 (3 months) | Genetic Epidemiology Laboratory<br>Queensland Institute of Medical Research, Australia<br>Postdoctoral Fellow |
| 1998-2004 | University of Michigan, Ann Arbor<br>Ph.D. in Social Psychology<br>M.A. in Statistics |
| 1991-1996 | University of Texas, Austin<br>B.A. in Psychology<br>Minor in Biology |

## Grant Support

Active

**NIMH R01 MH130448** (PI: Keller) 7/2022-4/2027 2.25 academic
NIH/NIMH $3,713,565 (total direct) 1.00 summer
**Causes and consequences of mental disorders: The environmental and genetic influences of parents on offspring**
Role: Principal investigator
This project will extend existing and develop new models that use whole-genome data measured in parents and offspring to help disentangle the genetic and environmental causes of parent-offspring similarity on traits.

**NIMH 2R01 MH100141** (PI: Keller) 2/2013-4/2023 2.25 academic
NIH/NIMH $2,428,703 (total direct) 1.00 summer
**Estimating the genetic and environmental architecture of psychiatric disorders**
Role: Principal investigator
This application develops methods that use sporadic relatedness in genome-wide biobank data to estimate the genetic and environmental influences on psychiatric disorders and other complex traits.

**NIMH R25 MH019918** (PI: Keller) 2/2024-1/2029 0 academic
NIH/NIMH $992,671 (total direct) .50 summer
**Workshop on statistical genetic methods for human complex traits**
Role: Principal investigator
This grant educates researchers in whole-genome and twin statistical genetic techniques in yearly week-long workshops.

**NIMH T32 MH016880** (PI: Keller/Friedman) 7/1/2020 - 6/30/2025 0 academic
NIH/NIMH $2,196,744 (total direct) .25 summer
**Research training: Mental health behavior genetics**
Role: Principal investigator
This grant trains scientists who will be able to contribute significantly to our understanding of genetic contributions to mental health.

**NIDA R01 DA054087** (PI: Rhee/Keller) 5/1/2022 – 4/30/2027 1 academic
NIH/NIDA $4,620,951 (total direct) 0 summer
**Understanding the links between parental and adolescent substance use: complementary natural experiments using the children of twins design**
Role: Co-Principal investigator
This application uses a children of twins design in samples from Minnesota and Colorado to understand the impact of parental substance use on children substance use.

**NIDA R01 DA046064** (PI: Friedman) 4/2018-1/2023 1.0 academic
NIH/NIDA $2,528,039 (total direct) 0 summer

**Brain and genetic predictors of individual differences in pain and placebo analgesia**
Role: Co-investigator
This is the first large-scale attempt to describe the brain, behavioral, and genetic predictors of individual differences in placebo responses.

**NIDA R01 DA044283** (PI: Vrieze) 5/2019 – 2/2024 2.00 academic
NIH/NIDA $2,655,691 (total direct) $1,205,234 (subcontract direct) .50 summer
**Deep sequencing, phenotyping, and imputation in large-scale biobanks: A novel and cost-effective framework to identify rare mutations associated with addiction**
Role: Principal investigator of subcontract
This application proposes to identify and deeply phenotype carriers of rare, deleterious mutations in genes robustly associated with addiction.

**NIDA R01 DA053693** (PI: Hopfer) 4/2024 – 3/2028 0.45 academic
NIH/NIDA $2,225,000 (total direct) 0 summer
**Adult Progression of Adolescent Onset Substance Use Disorder in a High Risk Sample**
Role: Co-investigator
The research proposed in this application aims to understand risk and protective factors that promote continuation and desistance of problematic substance use and antisocial behavior that began in adolescence.

Pending

**NIAAA R01 AA050680** (PI: Evans) 4/1/2022 – 3/31/2027 1.00 academic
NIH/NIAAA $2,795,430 (total direct) 0.50 summer
**The shared genetic architecture and predictive relationships of alcohol use with internalizing phenotypes, differentiated between problematic alcohol use and consumption**
Role: Co-investigator
This application will identify genes, gene networks and specific brain regions involved in the comorbidity of alcohol use disorders and internalizing disorders.

Completed

**NIMH 1R01 MH100141** (PI: Keller) 2/1/2013-1/31/2018 2.25 academic
NIH/NIMH $1,605,455 (total direct) 2.00 summer
**Estimating the frequencies and population specificities of risk alleles**
Role: Principal investigator
This application develops methods that use haplotypic information from genome-wide data to estimate the additive genetic variation and allelic spectra underlying complex traits.

**NIMH K01 MH085812** (PI: Keller) 1/01/2010 – 12/31/2015 6.00 academic
NIH/NIMH $824,000 (total direct) 3.00 summer
**Evolutionary Roles of Homozygosity & Copy Number Variation in Mental Disorders.**

Role: Principal investigator
This application proposes to use dense whole-genome SNP data to detect distal inbreeding effects on the risk for psychiatric disorders.

## Publications

Publications: 118 (first or senior on 65) Citations: 36,021 h-index: 66 i10-index: 129
Keller mentees are underlined.

Refereed Journal Articles

1. Zorina-Lichtenwalter K, Bango CI, Van Oudenhove L, Ceko M, Lindquist MA, Grotzinger AD, **Keller MC**, Friedman NP, Wager TD (2023). Genetic risk shared across 24 chronic pain conditions: identification and characterization with genomic structural equation modeling. Pain, *164,* 2239-2252. [PMCID: PMC10524350].

2. Horwitz TB, Balbona JV, Paulich KN, **Keller MC** (2023). Evidence of correlations between human partners based on systematic reviews and meta-analyses of 22 traits and UK Biobank analysis of 133 traits. *Nature Human Behavior, 7,* 1568-1583. [PMCID in progress].

3. Colbert SM, Wendt FR, Pathak GA, Helmer DA, Hauser ER, **Keller MC**, Polimanti R, Johnson EC (2023). Declining autozygosity over time: An exploration in over 1 million individuals from three diverse cohorts. *The American Journal of Human Genetics, 110,* 1008-1014. [PMCID: PMC10257001].

4. Axelrud LK, Hoffman MS, Vosberg DE, Santoro M, Pan PM, Gadelha A, Belangero SI, Miguel EC, Shin J, Thapar A, Smoller JW, Pausova Z, Rohde LA, **Keller MC,** Paus R, Salum GA (2023). Disentangling the influences of parental genetics on offspring's cognition, education, and psychopathology via genetic and phenotypic pathways. *Journal of Child Psychology and Psychiatry*, *64*, 408-416. [PMCID in progress].

5. Hatoum AS, Morrison CL, Mitchell EC, Lam M, Benca-Bachman CE, Reineberg AE, Palmer RHC, Evans LM, **Keller MC**, Friedman NP (2023). Genome-wide association study shows that executive functioning is influenced by GABAergic processes and is a neurocognitive genetic correlate of psychiatric disorders. *Biological Psychiatry, 93*, 59-70. [PMCID: PMC9722603].

6. Grotzinger AD, **Keller MC** (2022). Potential bias in genetic correlations. *Science, 378*, 709-710. [PMCID: PMC10171193]

7. Balbona JV, Kim Y, **Keller MC** (2022). The estimation of environmental and genetic parental influences. *Development and Psychopathology*, *34*, 1876-1886. [PMCID: PMC10272284]

8. Colbert S, **Keller MC**, Agrawal A, Johnson EC (2022). Exploring the relationships between autozygosity, educational attainment, and cognitive ability in a contemporary, trans-ancestral American sample. *Behavior Genetics*, 52, 315-323. [PMCID: PMC10658661].

9. Saunders GRB, Wang X, …[219 authors including **Keller MC**]… Vrieze SI (2022). Genetic diversity fuels gene discovery for tobacco and alcohol use. *Nature*, *612*, 720-724.

10. Jang S, Evans L… [61 authors]… **Keller MC**, Vrieze SI (2022). Rare genetic variants explain missing heritability in smoking. *Nature Human Behavior, 6*, 1577-1586. [PMCID: PMC9985486]

11. Maitino AA, Rosenfarb IF, Glaser DN, **Keller MC** (2022). An evolutionary investigation of depressed mood: The relationship between daily stressors and patterns of depressive symptoms. *Journal of Behavior Therapy and Experimental Psychiatry,* 76: 101749.

12. Mallard TT, Linnér RK, Grotzinger AD, Sanchez-Roige S, Seidlitz J, Okbay A, de Vlaming R, Meddens SFW, Palmer AA, Davis LK, Tucker-Drob EM, Kendler KS, **Keller MC**, Koellinger PD, Harden KP (2022). Multivariate GWAS of psychiatric disorders and their cardinal symptoms reveal two dimensions of cross-cutting genetic liabilities. *Cell Genomics,* 2: 100140. [PMCID: PMC9264403].

13. Pardiñas AF…[32 authors including **Keller MC**]… Walters JTR, Genetics Workstream of the Schizophrenia Treatment Resistance and Therapeutic Advances (STRATA), Schizophrenia Working Group of the Psychiatric Genomics Consortium (2022). Interaction testing and polygenic risk scoring to estimate the association of common genetic variants with treatment resistance in schizophrenia. *JAMA Psychiatry,* 79, 260–69. [PMCID: PMC8756361].

14. Trubetskoy V...[94 authors including **Keller MC**]… O'Donovan MC, Schizophrenia Working Group of the Psychiatric Genomics Consortium (2022). Mapping genomic loci implicates genes and synaptic biology in schizophrenia. *Nature, 604*, 502–8. [PMCID: PMC9392466].

15. Border R, O'Rourke S, de Candia T, Goddard ME, Visscher PM, Yengo L, Jones MC, **Keller MC** (2022). Assortative mating biases marker-based heritability estimators. *Nature Communications, 13,* 1-10. [PMCID: PMC8814020]

16. Howe LJ... [48 authors including **Keller MC**]… Davies NM (2021). Within-sibship genome-wide association analyses decrease bias in estimates of direct genetic effects. *Nature Genetics, 54,* 581-592. [PMCID: PMC9110300].

17. Friedman NP, Banich MT, **Keller MC** (2021). Twin studies to GWAS: there and back again. *Trends in Cognitive Science*, 25, 855-869. [PMCID: PMC8446317].

18. Sapin E, **Keller MC** (2021)**.** Novel approach for parallelizing pairwise comparison problems as applied to detecting segments identical by decent in whole-genome data. *Bioinformatics, 10*, 2121-2125. [PMCID: PMC8352502]

19. Evans LM, Jang S, Hancock DB, Ehringer MA, Otto JM, Vrieze SI, **Keller MC**. (2021). Genetic architecture of four smoking behaviors using partitioned SNP heritability. *Addiction*, *116*, 2498-2508. [PMCID: PMC83620764]

20. Yengo L, Yang J, **Keller MC**, Goddard ME, Wray NR, Visscher PM (2021). Genomic partitioning of inbreeding depression in humans. *American Journal of Human Genetics, 108,* 1488-1501. [PMCID: PM8387293].

21. Lam M… [70 authors]… **Keller MC**, Andreasesen O, Deary I, Glahn D, Huang H, Liu C, Malhotra AK, Lencz T (2021). Identifying nootropic drug targets via large-scale cognitive GWAS transcriptomics. *Neuropsychopharmacology*, 46, 1788-1801. [PMCID: PMC8357785].

22. Balbona JV, Kim Y, **Keller MC** (2021). Estimation of parental effects using polygenic scores. *Behavior Genetics, 51,* 264-278. [PMCID: PMC8093180]

23. Kim Y, Balbona JV, **Keller MC** (2021). Bias and precision of parameter estimates from models using polygenic scores to estimate environmental and genetic parental influences. *Behavior Genetics, 51,* 279-288. [PMCID: PMC8093160]

24. Kemper KE, Yengo L, Zheng Z, Abdellaoui A, **Keller MC**, Goddard ME, Wray NR, Yang J, Visscher PM (2021). Phenotypic covariance across the entire spectrum of relatedness for 86 billion pairs of individuals. *Nature Communications, 12,* 1-11. [PMCID: PMC7886899].

25. Evans LM, Johnson EC, Melroy-Grief WE, Hewitt JK, Hoeffer CA, **Keller MC**, Saba LM, Stitzel JA, Ehringer MA (2020). The role of a priori-identified addiction and smoking gene sets in smoking behaviors. *Nicotine and Tobacco Research, 22,* 1310-1315. [PMCID: PMC7749195]

26. Yengo L, Sidari M, Verweij KJH, Visscher PM, **Keller MC**, Zietsch BP (2020). No Evidence for Social Genetic Effects or Genetic Similarity Among Friends Beyond that Due to Population Stratification: A Reappraisal of Domingue et al (2018). *Behavioral Genetics*, 50, 67-71. [PMCID: PMC7077882]

27. Border R, Johnson EC, Evans LM, **Keller MC** (2019). Measurement Error Cannot Account for Failed Replications of Historic Candidate Gene-by-Environment Hypotheses. *American Journal of Psychiatry*, 176, 668-669. [PMCID: PMC7185869]

28. Lam M… [67 authors including **Keller MC**]… Lencz T (2019). Pleiotropic Meta-Analysis of Cognition, Education, and Schizophrenia Differentiates Roles of Early Neurodevelopmental and Adult Synaptic Pathways. *American Journal of Human Genetics*, 105, 334-350. [PMCID: PMC6699140]

29. Huckins LM… [34 authors including **Keller MC**]… Stahl EA. (2019). Gene expression imputation across multiple brain regions provides insights into schizophrenia risk. *Nature Genetics*, 51, 659-674. [PMCID: PMC7034316]

30. Border R, Johnson EC, Evans LM, Smolen A, Berley N, Sullivan PF, **Keller MC** (2019). No support for historic candidate gene or candidate gene-by-interaction hypotheses for major depression across multiple large samples. *American Journal of Psychiatry,* 176, 376-387. [PMCID: PMC6548317]

31. Palmer RHC, Brick LA, Chou Y, Agrawal A, McGeary JE, Heath AC, Bierut L, **Keller MC**, Johnson E, Hartz SM, Schuckit MA, Knopik VS (2019). The etiology of DSM-5 alcohol use disorder: Evidence of shared and non-shared additive genetic effects. *Drug and alcohol dependence*, 201, 147-154. [PMCID: PMC6929687]

32. Liu M… [139 authors, including **Keller MC**]… Vrieze SI (2019). Association studies of up to 1.2 million individuals yield new insights in the genetic etiology of tobacco and alcohol use. *Nature Genetics*, 51, 237-244. [PMCID: PMC6358542]

33. Verhulst B, Prom-Wormley E, **Keller MC**, Medland S, Neale MC (2019). Type I Error Rates and Parameter Bias in Multivariate Behavioral Genetic Models. *Behavioral Genetics*, 49, 99-111. [PMCID: PMC6345547]

34. Border R, Smolen A, Corley RP, Stallings MC, Brown SA, Conger RD, Derringer J, Donnellan MB, Haberstick BC, Hewitt JK, Hopfer C, Krauter K, McQueen MB, Wall TL, **Keller MC**, Evans LM (2019). Imputation of behavioral candidate gene repeat variants in 486,551 publicly available UK Biobank individuals. *European Journal of Human Genetics*, 27, 963-969. [PMCID: PMC6777532]

35. Brick LA, **Keller MC**, Knopik VS, McGeary JE, Palmer RHC (2019). Shared additive genetic variation for alcohol dependence among subjects of African and European ancestry. *Addiction Biology,* 24, 132-144. [PMCID: PMC6312725]

36. Yengo L, Robinson MR, **Keller MC,** Kemper KE, Yang Y, Trzaskowski M, Gratten J, Turley P, Cesarini D, Benjamin DJ, Wray NR, Goddard ME, Yang J, Visscher PM (2018). Imprint of assortative mating on the human genome. *Nature Human Behaviour*, 2, 948-954. [PMCID: PMC6705135]

37. Evans LM, Tahmasbi R, Vrieze SI, Abecasis G, Das S, Bjelland D, DeCandia T, Haplotype Reference Consortium, Goddard ME, Neale BM, Yang J, Visscher PM, **Keller MC** (2018). Comparison of methods that use whole genome data to estimate the heritability and genetic architecture of complex traits. *Nature Genetics*, 50, 737-745. [PMCID: PMC5934350]

38. Davies G… [198 authors, including **Keller MC**] … Deary IJ (2018). Study of 300,486 individuals identifies 148 independent genetic loci influencing general cognitive function. *Nature Communications*, 9: 2098 [PMCID: PMC6494826]

39. Johnson EC, Evans LM, **Keller MC** (2018). Relationship between estimated autozygosity and complex traits in the UK Biobank. *PLoS Genetics*, 14, e1007556. [PMCID: PMC6082573]

40. **Keller MC** (2018). Evolutionary perspectives on genetic and environmental risk factors for psychiatric disorders. *Annual Review Clinical Psychology,* 14, 471-493. [PMCID: PMC29401047]

41. Savage JE…[106 authors, including **Keller MC**] … Posthuma D (2018). Genome-wide association meta-analysis in 269,867 individuals identifies new genetic and functional links to intelligence. *Nature Genetics*, 50, 912-919. [PMCID: PMC6411041]

42. Evans LM, Tahmasbi R, Jones M, Vrieze SI, Abecasis GR, Das S, Bjelland DW, deCandia TR, Haplotype Reference Consortium, Yang J, Goddard ME, Visscher PM, **Keller MC** (2018). Narrow-sense heritability estimation of complex traits using identity-by-descent information. *Heredity,* 121, 616-630. [PMCID: PMC3327879].

43. Evans LM, **Keller MC** (2018). Correspondence: Using partitioned heritability methods to explore genetic architecture. *Nature Reviews Genetics*, 19, 185. [PMCID: PMC5934350].

44. Ruderfer DM, …[208 authors, including **Keller MC**]…Kendler KS (2018). Genomic dissection of biolar disorder and schizophrenia, including 28 subtypes. *Cell*, 173, 1705-1715.

45. Demmit BA, Corley RP, Huibregtse BM, **Keller MC**, Hewitt JK, McQueen MB, Knight R, McDermott I, Krauter KS (2017). Genetic influences on the human oral microbiome. *BMC Genomics*, 18, 659. [PMCID: PMC5571580]

46. Johnson EC, Border R, Melroy-Greif WE, de Leeuw C, Ehringer MA, **Keller MC** (2017). No evidence that schizophrenia candidate genes are more associated with schizophrenia than non-candidate genes. *Biological Psychiatry,* 82, 702-708. [PMCID: PMC5643230]

47. Bjelland DW, Lingala U, Patel PS, Jones M, **Keller MC** (2017). A fast and accurate method for detection of IBD shared haplotypes in genome-wide SNP data. *European Journal of Human Genetics,* 25, 617-624. [PMCID: PMC5437913]

48. Lam M… [60 authors including **Keller MC**]… Lencz T (2017). Large-Scale Cognitive GWAS Meta-Analysis Reveals Tissue-Specific Neural Expression and Potential Nootropic Drug Targets. *Cell reports*, 21, 2597-2613. [PMCID: PMC5789458]

49. Border R & **Keller MC** (2017). Fundamental problems with candidate gene-by-environment interaction studies. *Journal of Child Psychology and Psychiatry,* 58, 328-330. [PMCID: PMC5312579]

50. Lee AJ, Hibbs C, Wright MJ, Martin NG, **Keller MC**, Zietsch BP (2017). Assessing the accuracy of perceptions of intelligence based on heritable facial features. *Intelligence*, 64, 1-8.

51. Lee AJ, Wright MJ, Martin NG, **Keller MC**, Zietsch BP (2017). Facial trustworthiness is associated with heritable aspects of face shape. *Adaptive human behavior and physiology*, 3, 351-364.

52. Trampush JW … [48 authors] … **Keller MC**, Andreassen OA, Deary IJ, Glahn DC, Malhotra AK, Lencz T (2017). GWAS meta-analysis reveals novel loci and genetic correlates for general cognitive function: A report from the COGENT consortium. *Molecular Psychiatry,* 22, 336-345. [PMCID: PMC5659072]

53. Liu M, Malone SM, Vaidyanathan U, **Keller MC,** McGue M, Iacono WG, Vrieze SI (2017). Psychophysiological endophenotypes to characterize mechanisms of known schizophrenia genetic loci. *Psychological Medicine,* 47, 1116-1125. [PMCID: PMC5352523]

54. Benca CE, Derringer JL, Corley RP, Young SE, **Keller MC**, Hewitt JK, Friedman NP (2017). Predicting cognitive executive functioning with polygenic risk scores for psychiatric disorders. *Behavioral Genetics*, 47, 11-24. [PMCID: PMC5225028]

55. Tahmasbi R, **Keller MC**. GeneEvolve: a fast and memory efficient forward-time simulator of realistic whole-genome sequence and SNP data (2017). *Bioinformatics,* 33, 294-296. [PMCID: PMC6074839].

56. Johnson EC, Bjelland DW, Howrigan DP, Abdellaoui A, Breen G, Borglum A, Cichon S, Degenhardt F, Forstner AJ, Frank J, Genovese G, Heilmann-Heimbach S, Herms S, Hoffman P, Maier W, Mattheisen M, Morris D, Mowry B, Müller-Mhysok G, Neale BM, Nenadic I, Nöthen MM, O'Dushlaine D, Rietschel M, Ruderfer DM, Rujescu D, Schulze TG, Simonson MA, Stahl E, Strohmaier J, Witt SH, Schizophrenia Working Group of the Psychiatric Genomics Consortium, Sullivan PF, **Keller MC** (2016). No Reliable Association Between Runs Of Homozygosity And Schizophrenia In A Well-Powered Replication Study. *PLoS Genetics,* 12, e1006343. [PMCID: PMC5085024].

57. Howrigan D, Simonson MA, Davies G, Harris SE, Tenesa A, Starr JM, Liewald DC, Deary IJ, McRae A, Wright MJ, Montgomery GW, Hansell N, Martin NG, Payton A, Horan M, Ollier WE, Abdellaoui A, Boomsma DI, DeRosse P, Knowles EEM, Glahn DC, Djurovic S, Melle I, Andreassen OA, Christoforou A, Steen VM, Hellard SL, Sundet K, Reinvang I, Espeseth T, Lundervold AJ, Giegling I, Konte B, Hartmann AM, Rujescu D, Roussos P, Giakoumaki S, Burdick KE, Bitsios P, Donohoe G, Corley RP, Visscher PM, Pendleton N, Malhotra K, Neale

BM, Lencz T, **Keller MC** (2016). Genome-wide autozygosity is associated with lower general cognitive ability. *Molecular Psychiatry,* 21, 837-843. [PMCID: PMC4803638]

58. Lee AJ, Mitchem DG, Wright MJ, Martin NG, **Keller MC,** & Zietsch BP (2016). Facial averageness and genetic quality: Testing heritability, genetic correlation with attractiveness, and the paternal age effect. *Evolution and Human Behavior,* 37, 61-66. [PMCID: PMC4743547]

59. Otowa T, Hek K, Lee M, Byrne EM, Mirza SS, Nivard MG, Bigdeli T, Aggen SH, Adkins D, Wolen A, Fanous A, **Keller MC**, Castelao E, Kutalik Z, der Auwera SV, Homuth G, Nauck M, Teumer A, Milaneschi Y, Hottenga J, Direk N, Hofman A, Uitterlinden A, Mulder CL, Henders AK, Medland SE, Gordon S, Heath AC, Madden PAF, Pergadia ML, van der Most PJ, Nolte IM, van Oort FVA, Hartman CA, Oldehinkel AJ, Preisig M, Grabe HJ, Middeldorp CM, Penninx BWJH, Boomsma D, Martin NG, Montgomery G, Maher BS, van den Oord EJ, Wray NR, Tiemeier H, Hettema JM (2016). Meta-analysis of genome-wide studies of anxiety disorders. *Molecular Psychiatry*, 21, 1391-1399. [PMCID: 4940340]

60. Palmer RHC, Nugent NR, Brick LA, Bidwell CL, McGeary, J. E., **Keller MC**, Knopik VS (2016). Evidence of Shared Genome-Wide Additive Genetic Effects on Interpersonal Trauma Exposure and Generalized Vulnerability to Drug Dependence in a Population of Substance Users (2016). *Journal of Traumatic Stress*, 29, 197–204. [PMCID: PMC6344111]

61. Lee SJ …[185 authors, including **Keller MC**] … van RielInt P (2015). New data and an old puzzle: The negative association between schizophrenia and rheumatoid arthritis. *International Journal of Epidemiology*, 44, 1706–1721. [PMCID: PMC4881824]

62. Yang J, Bakshi A, Zhu Z, Hemani G, Vinkhuyzen AAE, Hong Lee S, Robinson, MR, Perry JRB, Nolte IM, Van Viliet-Ostaptchouk JV, Snieder H, The LifeLines Cohort Study, Esko T, Milani L, Magi R, Metspalu A, Hamsten A, Magnusson PKE, Pedersen NL, Ingelsson E, Soranzo N, **Keller MC**, Wray NR, Goddard ME, Visscher PM (2015). Genetic variance estimation with imputed variants finds negligible missing heritability for human height and body mass index. *Nature Genetics*, 47, 1114-20 [PMCID: PMC4589513]

63. Palmer RHC, McGeary JE, Heath AC, **Keller, MC**, Brick LA, Knopik VS (2015). Shared additive genetic influences on DSM-IV criteria for alcohol dependence in subjects of European ancestry. *Addiction*, 110, 1922-1931 [PMCID: PMC4644467]

64. **Keller MC**, Visscher PM (2015). Genetic variation links creativity to psychiatric disorders. *Nature Neuroscience*, 18, 928-929. [PMCID: PMC4590283]

65. Trampush JW…[41 authors]… **Keller MC**, Andreassen OA, Deary IJ, Glahn DC, Malhotra AK (2015). Independent evidence for an association between general cognitive ability and a genetic locus for educational attainment. *American Journal of Medical Genetics Part B Neuropsychiatric Genetics*, 168, 363-373. [PMCID: PMC4500051]

66. Haysom HJ, Mitchem DG, Lee AJ, Wright MJ, Martin NG, **Keller MC**, Zietsch, BP (2015). A test of the facultative calibration/reactive heritability model of extraversion. *Evolution and Human Behavior*, 36, 414-419. [PMCID: PMC4752124]

67. Derringer J, Corley RP, Haberstick BC, Young SE, Demmitt BA, Howrigan DP, Kirkpatrick RM, Iacono WG, McGue M, **Keller MC**, Brown S, Tapert S, Hopfer CJ, Stallings MC, Crowley TJ, Rhee SH, Krauter K, Hewitt JK, McQueen MB (2015). Genome-Wide Association Study of Behavioral Disinhibition in a Selected Adolescent Sample. *Behavioral Genetics*, 45, 375-81. [PMCID: PMC4459903]

68. Mitchem DG, Zietsch BP, Wright MJ, Martin NG, Hewitt J, **Keller MC** (2015). No relationship between intelligence and facial attractiveness in a large, genetically informative sample. *Evolution and Human Behavior,* 36, 240-247. [PMCID: PMC4415372]

69. Palmer RHC, Brick L, Nugent NR, Bidwell LC, McGeary JE, Knopik VS, **Keller MC** (2015). Examining the role of common genetic variants on alcohol, tobacco, cannabis, and illicit drug dependence. *Addiction*, 110, 530-537. [PMCID: PMC4329043]

70. Dick DM, Agrawal A, **Keller MC** , Adkins A, Aliev F, Monroe S, Hewitt JK, Kendler KS, Sher KJ, (2015). Candidate Gene-Environment Interaction Research: Reflections and Recommendations. *Perspectives on Psychological Science,* 10, 37-59. [PMCID: PMC4302784]

71. Zietsch BP, de Candia TR, & **Keller MC** (2015). Evolutionary behavioral genetics. *Current Opinion in Behavioral Sciences,* 2, 73-80. [PMCID: PMC4288764]

72. Verweij KJH, Abdellaoui A, Veijola J, Sebert S, Koiranen M, **Keller MC,** Jarvelin M, Zietsch BP (2014). The association of genotype-based inbreeding coefficient with a range of physical and psychological human traits. *PLoS One*, 9, e103102. [PMCID: PMC4111285]

73. Mitchem DG, Purkey AM, Grebe NM, Carey G, Garver-Apgar CE, Bates TC, Arden R, Hewitt JK, Medland SE, Martin NG, Zeitsch BP, & **Keller MC** (2014). Estimating the sex-specific effects of genes on facial attractiveness and sexual dimorphism. *Behavior Genetics,* 44, 270-281. [PMCID: PMC4096150]

74. The Schizophrenia Psychiatric Genome-Wide Association Study (GWAS) Consortium. Biological insights from 108 schizophrenia-associated genetic loci. (2014). *Nature*, 511, 421-427. [PMCID: PMC4112379]

75. Gratten J, Wray NR, **Keller MC,** & Visscher PM (2014). Large-scale genomics unveils the genetic architecture of psychiatric disorders. *Nature Neuroscience*, 17, 782-790. [PMCID: PMC4112149]

76. Power RA, **Keller MC**, Wray NR, Lewis CM, Sullivan PF, MDD PGC Working Group, Breen G (2014). A recessive genetic model and runs of homozygosity in major depressive disorder. *Neuropsychiatric Genetics,* 165, 157-166. [PMCID: PMC4234115]

77. Malhotra A… [39 authors including **Keller MC**]… Horan M (2014). Molecular Evidence for Genetic Overlap between General Cognitive Ability and Risk for Schizophrenia: A Report from the Cognitive Genomics Consortium (COGENT). *Molecular Psychiatry, 19,* 168-174. [PMCID: PMC3968799]

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83. Cross-disorder group of the Psychiatric Genomics Consortium (2013). Genetic relationship between five psychiatric disorders estimated from genome-wide SNPs. *Nature Genetics*, 45, 984-994. [PMCID: PMC3800159]

84. Brant AM, Munakata Y, Boomsma DI, DeFries JC, Haworth CMA, **Keller MC**, Martin NG, McGue M, Petrill SA, Plomin R, Wadsworth SJ, Wright MJ, Hewitt JK (2013). The nature and nurture of high IQ: An extended sensitive period for intellectual development. *Psychological Science*, 24, 1487-1495. [PMCID: PMC4511162]

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94. Howrigan DP, Simonson MA, Kamens HM, Stephens SH, Wills AG, Ehringer MA, **Keller MC,** & McQueen MB (2011). Mutational load analysis of unrelated individuals. *BMC Genetics,* 5 (suppl. 9). [PMCID: PMC3287893]

95. **Keller MC,** Medland SE, & Duncan LE (2010). Are extended twin family designs worth the trouble? A comparison of the bias, precision, and accuracy of parameters estimated in four twin family models. *Behavior Genetics*, 40, 377-393. [***Fulker Award winner, best paper published in Behavior Genetics, 2010***]. [PMCID: PMC3228846]

96. Hatemi PK, Medland SE, **Keller MC,** Martin NG, Hibbing JR, Smith K, Alford JR & Eaves LJ (2010). Not by twins alone: Using the extended family design to investigate genetic influence on political beliefs. *American Journal of Political Science,* 54, 798-814.

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98. **Keller MC,** McCrae A, McGaughran JM, Visscher PM, Martin NG, & Montgomery GW (2009). Non-pathological paternal isodisomy of chromosome 2 detected from a genome-wide SNP scan. *American Journal of Medical Genetics Part A,* 149, 1823-1826.

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100. Medland SE, & **Keller MC** (2009). Modeling extended twin family data II: Power associated with different family structures. *Twin Research and Human Genetics,* 29, 19-25.

101. Maes HH, Neale MC, Medland SE, **Keller MC,** Martin NG, Heath AC, & Eaves LJ (2009). Flexible Mx specifications of various extended twin kinship designs. *Twin Research and Human Genetics,* 29, 26-34. [PMCID: 3090211]

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104. Medland SE, Loehlin JC, Willemsen G, Hatemi PK, **Keller MC,** Boomsma DI, Eaves LJ, & Martin NG (2008). Males do not reduce the fitness of their female co-twins in contemporary samples. Data from Australia, the Netherlands, and the United States. *Twin Research and Human Genetics*, 11, 481-487. [PMCID: PMC4041993]

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106. **Keller MC** (2007). Standards of evidence in the nascent field of evolutionary behavioral genetics. *European Journal of Personality,* 21, 608-610.

107. **Keller MC,** Neale MC, & Kendler KS (2007). Association of different adverse life events with distinct patterns of depressive symptoms. *American Journal of Psychiatry,* 164, 1521-1529. [***Selected by the editors as a notable paper of 2007***]

108. **Keller MC,** & Miller GF (2006). Resolving the paradox of common, harmful, heritable mental disorders: Which evolutionary genetic models work best? *Behavioral and Brain Sciences,* 29, 385-452. [***BBS Editors' Choice Award***]

109. **Keller MC,** & Miller GF (2006). An evolutionary framework for mental disorders: Integrating adaptationist and evolutionary genetic models. *Behavioral and Brain Sciences*, 29, 429-441

110. **Keller MC,** & Nesse RM (2006). The evolutionary significance of depressive symptoms: Different adverse situations lead to different depressive symptom patterns. *Journal of Personality and Social Psychology,* 91, 316-330.

111. Cannon T, & **Keller MC** (2005). Endophenotypes in genetic analyses of mental disorders. *Annual Review of Clinical Psychology*, 2, 267-290.

112. **Keller MC,** Coventry WL, Heath AC, & Martin NG (2005). Widespread evidence for non-additive genetic variation in Cloninger's and Eysenck's personality dimensions using a twin plus sibling design. *Behavior Genetics*, 35, 707-721.

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114. **Keller MC** & Coventry WL (2005). Quantifying and addressing parameter indeterminacy in the classical twin design. *Twin Research and Human Genetics*, 8, 201-213.

115. Coventry WL & **Keller MC** (2005). Estimating the extent of parameter bias in the classical twin design: A comparison of parameter estimates from the extended twin-family and classical twin designs. *Twin Research and Human Genetics*, 8, 214-223.

116. Wager T, **Keller MC,** Jonides J, Smith O, & Lacey S (2005). Increased sensitivity in neuroimaging analyses using robust regression. *NeuroImage*, 26, 99-113.

117. **Keller MC,** & Nesse RM (2005). Subtypes of low mood provide evidence of its adaptive significance. *Journal of Affective Disorders,* 86, 27-35.

118. **Keller MC,** Nesse RM, & Hofferth S (2001). The Trivers-Willard effect in parental investment: No effect in the contemporary U.S. *Evolution and Human Behavior,* 22, 34-52.

Books, Chapters, And Editorials

1. **Keller MC** (2023). The challenges of sociogenomics make it more, not less, worth yof careful and innovative investigation. Brain and Behavioral Sciences, 46.

2. Hollon SD, Andrew PW, **Keller MC,** Singala DR, Maslej MM, Mulsant BH (2021). Combining psychotherapy and medications: It's all about the squids and sea bass (at least for nonpsychotic patients). In M Barkham, W Lutz, and L Castonguay (Eds.) *Bergin & Garfield's handbook of psychotherapy and behavior change.*

3. **Keller MC** (2020). Nick Martin as a mentor – a perspective. *Twin Research and Human Genetics, 23,* 112-113.

4. Ybarra O, Rios K, **Keller MC**, Michalak N, Wang I, Chan T (2020). On predicting and being predicted: Navigating life in c competitive landscape full of mind readers. In D. Lamb (Ed.) *Oxford handbook of psychology and competition.*

5. Visscher PM, & **Keller MC** (2011). (Mis)understanding heritability. *European Journal of Personality*, 25, 285-286

6. **Kelle MC,** Howrigan DP, & Simonson MA (2010). Theory and methods in evolutionary behavioral genetics. In D. Buss & P. Hawley (Eds.), *Evolution of personality and individual differences*.

7. **Keller MC** (2008). An evolutionary genetic framework for heritable disorders. *Encyclopedia of Life Sciences (ELS)*. John Wiley & Sons Ltd: Chicester.

8. **Keller MC** (2008). Dr. Keller replies [Response to Letter], *American Journal of Psychiatry,* 165, 533-534.

9. **Keller MC** (2008). The role of mutation in human mating. In G. Geher & G. Miller (Eds.), *Mating intelligence: Theoretical, experimental, and differential perspectives*. Lawrence Erlbaum: Mahwah, NJ.

10. **Keller MC** (2008). Problems with the imprinting hypothesis of schizophrenia and autism. [Commentary]. *Brain and Behavioral Sciences,* 31, 241-320.

11. Ybarra O, **Keller MC,** Chan E, Baron AS, Hutsler J, Garcia SM, Sanchez-Burks J, & Morrison KR (2007). The social prediction dynamic: A legacy of cognition and mixed motives. In J. Forgas, M. Haselton, & W. von Hippel (Eds.), *Evolution and the Social Mind*. Psychology Press: New York.

12. **Keller MC** (2004) Evolutionary explanations of schizophrenia must ultimately explain the genes that predispose to it [Commentary]. *Behavioral and Brain Sciences*, 27, 861-862.

## Invited Colloquia

1. Department of Medical Statistics, University College London (June 2023)
2. NIMH Genomics Team Seminar Series (February 2023)
3. Club EvMed, remote (February 2022)
4. World Congress of Psychiatric Genetics Education Symposium, remote (Oct 2021)
5. U Pittsburgh Human Genetics Seminar, remote (Sept 2021)
6. Social and Affective Neuroscience Society Symposium, remote (May 2021)
7. Human Medical Genetics & Genomics Seminar, CU Denver (Dec 2019)
8. New York Genome Center Seminar, New York (Nov 2019)
9. Genetics of Human Agency Conference, Charlottesville, VA (May 2019)
10. U Minnesota Psychology Research Day Colloquium, Minneapolis (April 2019)
11. Integrating Genetics and Social Sciences Conference, Boulder (Oct 2018)
12. Twins Life Scientific Board Meeting, Bielefeld, Germany (Jan 2018)
13. Psychiatric Genomics Consortium Statistical Genetics Worldwide Webinar (Oct 2017)
14. Department of Psychology, McMaster University (Jan 2017)
15. Department of Human Genetics, McGill University (March 2016)
16. Program in Complex Trait Genetics, University of Queensland (July 2015)
17. Templeton Foundation, Miami, FL (Nov 2014)
18. Center for Evolution and Medicine, Arizona State (Oct 2014)
19. Douglas Institute, McGill University, Montreal (June 2014)
20. Michigan State Psychology Seminar, East Lansing (March 2014)
21. Human Medical Genetics and Genomics Program Retreat, CU Denver (Nov 2013)
22. NIAAA Advisory Panel on GxE interactions, Rockville, MD (Jan 2013)
23. World Congress of Psychiatric Genetics Education Symposium, Hamburg (Oct 2012)
24. Neuroscience Research Group, University of Denver (Sept 2012)
25. Lindon Eaves Festschrift, Edinburgh, Scotland (June 2012)
26. International Leopoldina NGFN MooDS Symposium, Bonn, Germany (June 2011)
27. Merck Institute on Biology of Developmental Disabilities, Cornell University (June 2010)

28. Center in Psychiatric Genetics Seminar, Northwestern University (Jan 2010)
29. Systems Biology and Social Behavior Seminar, University of Nebraska (Dec 2009)
30. EvoS Consortium, Society for the Study of Evolution, Moscow, ID (June 2009)
31. Grand Rounds, Akron General Medical Center, Akron (Sept 2008)
32. Neuroscience Research Group, University of Denver (Oct 2008)
33. Henry Stewart Talks: Evolutionary Medicine (Sept 2006)
34. Center for Society and Genetics Seminar Series, UCLA, Los Angeles, CA (April 2005)
35. Behavior, Evolution, and Culture, UCLA, Los Angeles, CA (March 2005)
36. Virginia Institute of Psychiatric and Behavioral Genetics, Richmond, VA (Feb 2004)
37. Evolutionary Studies Seminar Series, SUNY Binghampton, NY (Oct 2003)
38. Evolutionary Human Adaptation Program, University of Michigan, MI (Feb 2001)

## Courses Taught

University of Colorado

PSYC 4152: *Research Methods in Behavioral Genetics* Fall 2023
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 41; [Typical FCQ questions not collected this semester]

PSYC 5541: *Statistical Programming in R* Fall 2022
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 4; [Typical FCQ questions not collected this semester]

PSYC 2111-100: *Psychological Statistics* Spring 2021
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 92; [Typical FCQ questions not collected this semester]

PSYC 5541: *Statistical Programming in R* Fall 2020
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 17; [Typical FCQ questions not collected this semester]

PSYC 2111-100: *Psychological Statistics* Spring 2020
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 93; [Typical FCQ questions not collected this semester]

PSYC 7102/IPHY 6010: *Methods Proseminar in Behavioral Genetics* Fall 2019
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 9; Instructor: 5.2/6; Course: 4.3/6; Learned: 5.3/6; Challenge: 4.5/6

PSYC 5541: *Modern Methods in Statistical Genetics* Spring 2019
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 11; Instructor: 5.8/6; Course: 5.1/6; Learned: 4.7/6; Challenge: 5.3/6

PSYC 5541: *Statistical Programming in R* Fall 2018
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 15; Instructor: 4.5/6; Course: 4.9/6; Learned: 5.1/6; Challenge: 6.0/6

PSYC 2111-300: *Psychological Statistics* Fall 2017
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 70; Instructor: 3.5/6; Course: 3.3/6; Learned: 4.2/6; Challenge: 5.2/6

PSYC 2111-400: *Psychological Statistics* Fall 2017
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 43; Instructor: 3.9/6; Course: 3.2/6; Learned: 3.9/6; Challenge: 5.2/6

PSYC 5541: *Statistical Programming in R* Fall 2016
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 22; Instructor: 4.3/6; Course: 4.0/6; Learned: 5.4/6; Challenge: 5.3/6

PSYC 5541: *Modern Methods in Statistical Genetics* Spring 2016
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 14; Instructor: 5.4/6; Course: 5.0/6; Learned: 5.4/6; Challenge: 6.0/6

PSYC 5541: *Statistical Programming in R* Spring 2015
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 20; Instructor: 5.5/6; Course: 5.3/6; Learned: 5.4/6; Challenge: 5.2/6

PSYC 3101: *Statistical and Research Methods* Spring 2015
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 88; Instructor: 4.3/6; Course: 3.8/6; Learned: 4.5/6; Challenge: 4.9/6

PSCY 3101: *Statistical and Research Methods* Spring 2014
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 89; Instructor: 4.5/6; Course: 4.2/6; Learned: 4.5/6; Challenge: 5.1/6

PSYC 3101: *Statistical and Research Methods* Spring 2013
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 55; Instructor: 5.4/6; Course: 5.0/6; Learned: 5.3/6; Challenge: 5.0/6

PSYC 3101: *Statistical and Research Methods* Spring 2012
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 111; Instructor: 4.6/6; Course: 4.0/6; Learned: 4.5/6; Challenge: 4.8/6

PSYC 7102: *Population Genetics in the Modern Genomic Era* Fall 2010
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 12; Instructor: 5.5/6; Course: 5.2/6; Learned: 5.5/6; Challenge: 6.0/6

PSYC 3101: *Statistical and Research Methods - Honors* Fall 2009
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 13; Instructor: 5.7/6; Course: 5.4/6; Learned: 5.5/6; Challenge: 5.1/6

PSYC 5541: *Statistical Programming with R* Spring 2009
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 10; Instructor: 5.9/6; Course: 5.6/6; Learned: 5.8/6; Challenge: 5.4/6

PSYC 3101: *Statistical and Research Methods – Honors* Spring 2009
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 12; Instructor: 5.3/6; Course: 4.6/6; Learned: 5.4/6; Challenge: 5.8/6

PSYC 5541: *Statistical Programming with R* Fall 2008
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 12; Instructor: 5.6/6; Course: 5.3/6; Learned: 5.3/6; Challenge: 5.5/6

PSYC 3101: *Statistical and Research Methods – Honors* Spring 2008
Department of Psychology and Neuroscience, University of Colorado; Boulder, CO
Enrollment: 14; Instructor: 5.0/6; Course: 4.8/6; Learned: 5.4/6; Challenge: 5.7/6

## Short Courses & Workshops

- *2022 Workshop on Statistical Genetics*, Boulder, CO – Director & instructor
- *2021 Workshop on Statistical Genetics*, Boulder, CO – Co-director
- *2020 Workshop on Statistical Genetics*, Boulder, CO – Co-director & instructor
- *2019 Workshop on Statistical Genetics*, Boulder, CO – Co-director & instructor
- *2019 RSF Summer Institute in Social Science Genomics,* Santa Barbara, CA – Instructor
- *2018 Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2018 Integrating Genetics and Social Sciences Conference,* Boulder, CO – Keynote Lecturer
- *2017 RSF Summer Institute in Social Science Genomics,* Santa Barbara, CA – Instructor
- *2017 Advanced Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2016 Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2015 Advanced Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2014 Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2013 Advanced Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2012 Workshop on Methodology of Twin and Family Studies*, Boulder, CO – Instructor
- *2012 R Short Course,* Boulder, CO – Instructor
- *2011 Advanced Workshop on Statistical Genetics*, Boulder, CO – Instructor
- *2010 OpenMx Workshop*, Richmond, VA – Instructor
- *2010 Workshop on Methodology of Twin and Family Studies*, Boulder, CO – Instructor
- *2008 International Statistical Genetics Methods Workshop*, Leuven, Belgium – Instructor
- *2008 Workshop on Methodology of Twin and Family Studies*, Boulder, CO – Instructor

## Advisory and Supervisory Responsibilities

Previous Postdoctoral Trainees

- Dr. Christine Garver-Apgar, NIMH Training Grant (Hewitt) 2008 - 2011
  Topic: Multivariate genetic relationships underlying psychiatric disorders
  Current Position: Assistant Professor of Psychiatry, CU Anschutz
- Dr. Doug Bjelland, NIMH Training Grant (Hewitt) 2013 - 2016
  Topic: Identity by descent detection and effects on fitness traits
  Current Position: Research Geneticist, Alta Genetics
- Dr. Luke Evans, NIMH R01 (Keller) 2015 - 2018
  Topic: Heritability methods of complex traits
  Current Position: Assistant Professor, EBIO, CU Boulder
- Dr. Rasool Tahmasbi, NIMH R01 (Keller) 2015 - 2018
  Topic: Statistical models of haplotype heritability
  Current Position: Senior Statistical Machine Learning Engineer, Palo Alto Networks
- Dr. Meng Huang, NIDA R01 (Vrieze) 2020 - 2021
  Topic: Effects of ultra-rare coding variants in nicotine dependence
  Current Position: Research Scientist II, U North Texas Health Science Center
- Dr. Richard Border NIMH R01 (Keller) 2020-2021
  Topic: GREML estimation of heritability and how assortative mating biases it

Current Position: Postdoctoral Fellow, UCLA & the Broad (joint)

- Dr. Subrata Paul, NIMH R01 (Keller) 2020 - 2021
  Topic: Estimation of variance due to rare variants using imputed genomic data
  Current Position: Bioinformatics Analyst, Frederick National Laboratory
- Dr. Yongkang Kim, NIMH R01 (Keller) 2019 - 2023
  Topic: Estimation of mechanisms of assortative mating using genomic data

Current Postdoctoral Trainees

- Dr. Emmanuel Sapin, NIMH R01 (Keller) 2018 - present
  Topic: Detection of distant relatives in biobanks using whole-genome data
- Dr. Katerina Zorina (co-mentored), NIDA R01 (Friedman) 2020 - present
  Topic: Developing methods to understand genetic heterogeneity of psychiatric traits
- Dr. Kristen Kelly, NIMH R01 (Keller) 2021 - present
  Topic: Developing methods to understand genetic heterogeneity of psychiatric traits
- Dr. Noemie Valenza, NIMH R01 (Keller) 2023 - present
  Topic: Using SEM_PGS in MoBa to understand the causes of parent-offspring similarity
- Dr. Dinka Smajlagic (visiting scholar, University of Oslo) 2023 - present
  Topic: Using SEM_PGS in MoBa to understand the causes of parent-offspring similarity

Current Mentored Faculty

- Dr. Megan Patterson (K08; Research Assistant Professor, CU Anschutz) 2023 - present
  Topic: Psychiatric genetics and puberty

Previous Doctoral Trainees

- Dr. Laramie Duncan 2008 - 2010
  Dissertation: *Critical review of gene-environment interactions in psychiatry*
  Current Position: Assistant Professor of Psychiatry, Stanford
- Dr. Dan Howrigan (co-mentored with McQueen) 2008 - 2012
  Dissertation: *Non-traditional approaches to interrogating genome-wide SNP data*
  Current Position: Data Group Leader, Broad Institute, Harvard & MIT
- Dr. Matthew Simonson (co-mentored with McQueen) 2008 - 2013
  Dissertation: *Polygenic analysis of genome-wide SNP data*
  Current Position: Senior Data Scientist, Trianz, Greenville, NH
- Dr. Teresa de Candia 2011 - 2015
  Dissertation: *The role of ethnicity in the genetics of disease*
  Current Position: Data Scientist, Adecco Group, Berlin, Germany
- Dr. Emma Johnson 2012 - 2017
  Dissertation: *The Genetic Etiology of Schizophrenia And Other Complex Traits: Novel Insights From Existing Genome-Wide Datasets*

Current Position: Instructor, Washington University, MO

- Dr. Richard Border (co-mentored with Rhee) 2014 - 2019
  Dissertation: *Topics in Quantitative Analysis of Complex Trait Genetic Architectures.*
  Current Position: Postdoctoral Fellow, UCLA & the Broad (joint)
- Dr. Jared Balbona 2018 - 2022
  Topic: Development of genetically informed models to estimate parental influences
- MA Spencer Moore (co-mentored with Evans) 2020 - 2022
  Topic: Unbiased estimation of heritability using segregation variance

Current Doctoral Trainees

- Pamela Romero Villela (co-mentored with Ehringer) 2019 - present
  Topic: Overlap between rare and common genetic signals
- Xuanyu Lyu 2023 - present
  Topic: Development of multivariate SEM models to understand parental influences
- Yanyan Xu 2024 - present
  Topic: Differentiating the causes of mate similarity using genomic data

| External (non-P&N) Dissertation Thesis Committee Membership | Defense |
|---|---|
| Casper Burik (VU University) | Dec 2021 |
| David Clark (Univ Edinburgh) | Oct 2021 |
| Christine Foxx (IPHY, CU Boulder) | July 2020 |
| Brittany Demmitt (MCDB, CU Boulder) | July 2018 |
| Robbee Wedow (Sociology, CU Boulder) | July 2018 |
| Ronald de Vlaming (VU University) | July 2017 |
| David Brazel (MCDB, CU Boulder) | May 2018 |
| Simone Stahringer (MCDB, CU Boulder) | Nov 2013 |

| Undergraduate Honors Thesis Committee Chair | Defense |
|---|---|
| Jack Lovell, Psych and Neuroscience, CU Boulder (with Friedman) | Nov 2021 |
| Courtney Hibbs, Psych and Neuroscience, CU Boulder | May 2015 |
| Teresa Adams, Psych and Neuroscience, CU Boulder | Dec 2012 |
| Alicia Purkey, Psych and Neuroscience, CU Boulder | Nov 2011 |

## Departmental & Institute Service

Psychology & Neuroscience (P&N) Service

- Director, BPSG Area (2018-2021)
- Member, Merit & Salary Review Committee (2018-2021)
- Member, Curriculum for Undergraduate Education (2011-2017, 2019-present)
- Member, Strategic Planning Committee (2013-2017)
- Co-Director, Undergraduate Research Day (2007-2017)
- Member, Awards Committee (2013-2017)

- Member, Honors Undergraduate Committee (2007-2012)
- Member, Helping Undergraduate Education [HUGE] (2012)

Institute for Behavioral Genetics (IBG) Service
- Director (2022-present)
- Chair, Salary Committee (2021-present)
- Public & Media Relations (2019-present)
- Member, Training Committee (2010-present)
- Organizer, First Friday Talks (2018-2021)
- Developer, *Proseminar in Behavioral Genetics* course (with Stitzel; 2019)
- Organizer, Journal Club (2008-2018)

Faculty Search Committees
- Chair, IBG search (2019), hire of Andrew Grotzinger
- Point person, P&N Diversity Initiative (2018), offer to Rohan Palmer (declined)
- Chair, IBG search (2017), offer to Tychele Turner (declined), Shauna Clark (declined)
- Chair, IBG search (2017), hire of Luke Evans
- Chair, IBG search (2014), offer to Dajiang Liu (declined)
- Member, IBG search (2012), hire of Scott Vrieze

Professional Service
- Psychiatric Genomics Consortium Statistical Workgroup (2012-present)
- Genetics of Human Agency advisory board (2015-2019)
- Member At Large (Elected position), *Behavior Genetics Association* (2014-2018)
- World Congress of Psychiatric Genetics Program Committee Member (2012-2013)

## Editorial & Reviewing Service

Grant Reviewing
- National Science Foundation (2019)
- National Institutes of Health (2015-2018)
- Templeton Foundation (2016-2020)
- Dutch Research Council (2014)

Editorial
- Behavioral Genetics (Associate Editor 2018-present)
- PLoS Genetics (Guest Editor)

Ad Hoc & Academic Book Reviewer
- *Acta Psychiatrica Scandinavica*
- *Alcoholism: Clin. & Exp. Research*
- *American Journal of Human Genetics*
- *American Journal of Medical Genetics B*
- *American Journal of Psychiatry*
- *Archives of General Psychiatry*
- *Behavioral and Brain Sciences*
- *Behavior Genetics*
- *Biological Psychiatry*
- *BMC Evolutionary Biology*
- *Current Dir. of Psychological Science*
- *Emotion*
- *Evolution and Human Behavior*
- *Frontiers Genetics*

- *Genetics*
- *Human Nature*
- *Human Genetics*
- *Journal of Personality*
- *Journal of Politics*
- *Journal of Theoretical Biology*
- *Molecular Genetics and Genomics*
- *Molecular Psychiatry*
- *Neuropsychiatric Genetics*
- *Nature Communications*
- *Nature Human Behavior*
- *Nature Genetics*
- *Nature Neuroscience*
- *Nature*
- *Oxford University Press*
- *Personality and Individual Differences*
- *Personality and Soc Psychology Review*
- *PLoS Genetics*
- *Proc. Roy Soc B: Biological Sciences*
- *Psychiatric Research*
- *Psychological Medicine*
- *Psychological Reports*
- *Psychological Science*
- *Twin Research & Human Genetics*

## Awards & Distinctions

Keller

| | |
|---|---|
| Fulker Award, Best paper in *Behavioral Genetics* (Balbona, Kim, & Keller, 2021) | 2022 |
| Faculty Research Award, Psychology & Neuroscience | 2019 |
| Behavioral Genetics Association's Fuller/Scott Early Career Award | 2012 |
| Fulker Award, Best paper in *Behavioral Genetics* (Keller, Medland, & Duncan, 2010) | 2011 |
| Notable paper of 2007 (Keller, Neale, & Kendler, 2007) *American Journal of Psychiatry* | 2007 |
| *Lindon J. Eaves Award for Excellence in Postdoctoral Research* (VIPBG) | 2007 |
| Editor's Choice Article *Behavioral and Brain Sciences* (Keller & Miller, 2006) | 2006 |

Mentees

| | |
|---|---|
| Dosier/Muenzinger Award, Outstanding Contribution to Research (Richard Border) | 2020 |
| Thompson Award, Best talk at BGA Conference (Jared Balbona) | 2020 |
| WCPG Oral Presentation Award Finalist (Laramie Duncan) | 2011 |
| Imogene Jacobs Scholarship in Psychology (Alicia Purkey) | 2011 |

## Professional Consultation

- Consultant on NIA R01 *Major opportunities for research in epidemiology of Alzheimer's Disease and Cognitive Resilience* (PI Galama) 2016-2021
- Consultant on NIMH R01 *Psychiatric Genomics Consortium: Finding actionable variation* (PI Sklaar) 2015-2020
- Advisory Board, Templeton Foundation *Genetics of Human Agency* research grant (PI Turkheimer) 2015-2019
- Consultant on NIDA R01 *Cortisol, socioeconomic status, and genetic influence on cognitive development* (PI Tucker-Drob) 2014-2016

## Sample of Popular Press Coverage of Research

- The Guardian, *Opposites don't attract*, Sept 2023
- The Atlantic, *A waste of 1000 research papers*, May 2019
- Nature Briefing, *'Depression gene' research built on sand,* May 2019
- NPR, *Why making a designer baby would be easier said than done*, May 2019
- Spectrum, *Genetic risk factors for autism may affect family size,* Aug 2017
- Daily Camera, *CU-Boulder researchers shed light on height-intelligence link*, Sept 2013
- Men's Health, *The Science of Heartbreak*, March 2009
- Colorado Arts & Sciences Magazine, *An Evolutionary Paradox*, March 2009
- Scientific American, *'Spring Fever' Is a Real Phenomenon*, March 2007
- The Los Angeles Times, *The Mind, As It Evolves*, Feb 2007
- Psychology Today, *Happiness is a Beach, Sometimes*, Feb 2006
- The Washington Post, *Unconventional Wisdom: Spring Forward, Fall Down*, Oct 2005
- The Courier Mail (Queensland, Australia), *Rugged Up in Winter Blues*, July 2005
- Herald Sun (Melbourne, Australia), *Bright Way to Lift Spirits*, June 2005
- The Los Angeles Times, *Happy Daze*, April 2005

- Science Central News, *Sunny Mood*, Jan 2005
- ABC National News Segment, *A Walk in Nice Weather Improves Mood*, Nov 2004