Tarjinder (TJ) Singh

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Education

09/2012 - 09/2016 Wellcome Trust Sanger Institute, University of Cambridge
Doctor of Philosophy in Biological Sciences
Supervisor: Dr. Jeffrey C. Barrett

09/2008 - 06/2012 Williams College
B.A. in Biology, Economics, and Mathematics (Magna cum laude with highest honors)
Cumulative GPA: 3.97/4.0; Phi Beta Kappa, Chapter President

Research experience

08/2022 - **Assistant Professor**, Department of Psychiatry, Columbia University, Vagelos College of Physicians and Surgeons.
Affiliate member of the New York Genome Center.
Zuckerman Institute, Columbia University in the City of New York.
Focus: Leveraging population-scale sequencing to uncover biological insights into the etiology of brain disorders

02/2021 - 08/2022 **Instructor**, Department of Medicine, Massachusetts General Hospital, Harvard Medical School, and Broad Institute of Harvard and M.I.T.
Project: Leveraging insights from large-scale sequencing studies towards improved mechanistic understanding of psychiatric disorders
With Dr. Mark J. Daly, Dr. Benjamin M. Neale, Dr. Morgan Sheng

02/2017 - 01/2021 **Postdoctoral Scholar**, Department of Medicine, Massachusetts General Hospital, Harvard Medical School, and Broad Institute of Harvard and M.I.T.
Project: Investigating the genetic architecture of psychiatric traits through the meta-analysis of sequencing data
With Dr. Mark J. Daly

09/2012 - 09/2016 **Doctoral thesis**, Human Genetics, Wellcome Trust Sanger Institute
Project: Investigating the role of rare variation in the genetic architecture of psychiatric and neurodevelopmental disorders
With Dr. Jeffrey C. Barrett

Featured Publications

Singh, T., Poterba, T., Curtis, D., ..., SCHEMA consortium, ..., Neale B. M., and Daly M. J. (2022). Rare coding variants in ten genes confer substantial risk for schizophrenia. Nature 2022 Apr;604(7906):509-516. https://doi.org/10.1038/s41586-022-04556-w

Heyne, H. O., **Singh, T.**, Stamberger, H., Abou Jamra, R., Caglayan, H., ..., Lemke, J. R. (2018). De novo Variants In Neurodevelopmental Disorders With Epilepsy. Nature Genetics, 50, 1048-1053 (2018).

Singh, T., Walters, J. T. R., Johnstone, M., Curtis, D., Suvisaari, J., Torniainen, M., Rees, E., ..., INTERVAL Study, UK10K Consortium, Palotie, A., Sullivan, P. F., O'Donovan, M. C., Owen M. J., Barrett, J. C. (2017). The contribution of rare variants to risk of schizophrenia in individuals with and without intellectual disability. Nature Genetics, 49:11671173.

Singh, T., Kurki, M. I., Curtis, D., Purcell, S. M., Crooks, L., McRae, J., Suvisaari, J., Chheda, H., ..., Swedish Schizophrenia Study, INTERVAL Study, DDD Study, UK10K Consortium, Sullivan, P. F., Hurles, M. E., O'Donovan, M. C., Palotie, A., Owen, M. J., Barrett, J. C. (2016). Rare loss-of-function variants in *SETD1A* are associated with schizophrenia and developmental disorders. Nature Neuroscience, 19:571-577

Other Publications

Howrigan, D., Rose, S. A., Samocha, K. E., ..., **Singh, T.**, ..., McCarroll, S., Tsuang, M., Neale, B. Exome sequencing in schizophrenia-affected parentoffspring trios reveals risk conferred by protein-coding de novo mutations. Nature Neuroscience 23 (2), 185-193 (2020).

Feng, Y.-C. A., Howrigan, D. P., Abbott, L. E., Tashman, K., Cerrato, F., **Singh, T.**, ..., Neale, B. M. Ultra-Rare Genetic Variation in the Epilepsies: A Whole-Exome Sequencing Study of 17,606 Individuals. (2019). Am. J. Hum. Genet. 105, 267282.

Kyle Satterstrom, F., Walters, R. K., **Singh, T.**, ..., Daly, M. J. Autism spectrum disorder and attention deficit hyperactivity disorder have a similar burden of rare protein-truncating variants. (2019). Nature Neuroscience 22 (12), 1961-1965.

Gardner, E. J., Prigmore, E., Gallone, G., Danecek, P., Samocha, K. E., Handsaker, J., Gerety, S. S., ..., **Singh, T.**, ,..., FitzPatrick, D. R., Firth, H. V., Hurles, M. E. Contribution of retrotransposition to developmental disorders. (2019). Nature Communications 10 (1), 1-10.

Artomov, M., Stratigos, A. J., Kim, I., ..., **Singh, T.**, Barrett, J. C., Adams, D. J., Jonsson, G., Daly, M. J., Tsao, H. (2017). Rare Variant, Gene-Based Association Study of Hereditary Melanoma Using Whole-Exome Sequencing. Journal of the National Cancer Institute, 109 (12): djx083.

McRae, J. F., Clayton, S., Fitzgerald, T. W., Kaplanis, J., Prigmore, E., Rajan, D., Sifrim, A., Aitken, S., Akawi, N., Alvi, M., Ambridge, K., Barrett, D. M., Bayzetinova, T., Jones, P., Jones, W. D., King, D., Krishnappa, N., Mason, L. E., **Singh, T.**, ..., FitzPatrick, D. R., Barrett, J. C., Hurles, M. E. (2017). Prevalence and architecture of de novo mutations in developmental disorders. Nature, 542:433-438.

Sifrim, A., Hitz, M-P., Wilsdon, A., Breckpot, J., Al-Turki, S. H., Thienpont, B., McRae, J., Fitzgerald, T. W., **Singh, T.**, ..., Brook, D. J., and Hurles, M. E. (2016). Distinct genetic architectures for syndromic and nonsyndromic congenital heart defects identified by exome sequencing. Nature Genetics, 9:1060-1065

Mtatiro, S. N., Mgaya, J., **Singh, T.**, Mariki, H., Rooks, H., Soka, D., Mmbando, B., Thein, S. L., Barrett, J. C., Makani, J., Cox, S. E., and Menzel, S. (2015). Genetic association of fetal-hemoglobin levels in individuals with sickle cell disease in Tanzania maps to conserved regulatory elements within the MYB core enhancer. BMC medical genetics, 16(1):4

Singh, T.*, Levine, A. P.*, Smith, P. J., Smith, A. M., Segal, A. W., and Barrett, J. C. (2015). Characterization of expression quantitative trait loci in the human colon. Inflammatory bowel diseases, 21(2):251?6

De Rubeis, S., He, X., Goldberg, A. P., Poultney, C. S., Samocha, K., Cicek, A. E., Kou, Y., Liu, L., Fromer, M., Walker, S., **Singh, T.**, ..., Palotie, A., Schellenberg, G. D., Sklar, P., State, M. W., Sutcliffe, J. S., Walsh, C. A., Scherer, S. W., Zwick, M. E., Barrett, J. C., Cutler, D. J., Roeder, K., Devlin, B., Daly, M. J., and Buxbaum, J. D. (2014). Synaptic, transcriptional and chromatin genes disrupted in autism. Nature, 515(7526):209?15

Mtatiro, S. N.*, **Singh, T.***, Rooks, H., Mgaya, J., Mariki, H., Soka, D., Mmbando, B., Msaki, E., Kolder, I., Thein, S. L., Menzel, S., Cox, S. E., Makani, J., and Barrett, J. C. (2014). Genome wide association study of fetal hemoglobin in sickle cell anemia in Tanzania. PloS one, 9(11):e111464

Gao, T., McKenna, B., Li, C., Reichert, M., Nguyen, J., **Singh, T.**, Yang, C., Pannikar, A., Doliba, N., Zhang, T., Stoffers, D. A., Edlund, H., Matschinsky, F., Stein, R., and Stanger, B. Z. (2014). Pdx1 maintains β cell identity and function by repressing an α cell program. Cell metabolism, 19(2):259?71

Singh, T., Edwards, J., and Maroja, L. S. (2014). Development and characterization of 10 microsatellite markers in Sagina nodosa (Caryophyllaceae). Applications in plant sciences, 2(1):2?5

p Gao, T., Zhou, D., Yang, C., **Singh, T.**, Penzo-Mendez, A., Maddipati, R., Tzatsos, A., Bardeesy, N., Avruch, J., and Stanger, B. Z. (2013). Hippo signaling regulates differentiation and maintenance in the exocrine pancreas. Gastroenterology, 144(7):1543?53, 1553.e1

Awards and Grants

2019	Brain and Behavior Research Foundation NARSAD Young Investigator Grant, two years of funding worth $70,000 from 2020 to 2022
2019	Winner of World Congress of Psychiatric Genetics oral presentation award, Anaheim, CA.
2018	Postdoctoral winner of the Charles J. Epstein Trainee Awards for Excellence in Human Genetic Research, American Society of Human Genetics, San Diego, CA.
2018	Recipient of the World Congress of Psychiatric Genetics Early Career Investigator Travel Award, Glasgow, UK.
2018	Massachusetts General Hospital Scientific Advisory Board Poster of Distinction winner, Boston, MA.
2017	Winner of World Congress of Psychiatric Genetics oral presentation award, Orlando, FL.
2015	Graduate finalist in Charles J. Epstein Trainee Awards for Excellence in Human Genetics Research at the American Society of Human Genetics conference, Baltimore, MD.
2015	Oral Presentation Finalist in the World Congress of Psychiatric Genetics, Toronto, ON.
2012 - 2014	Dr. Herchel Smith Fellowship to support two years of graduate studies at Emmanuel College, Cambridge.
2013	Best MPhil or 1st Year PhD Poster in Graduate School of Life Science Research Competition, Cambridge, UK.
2012	James Bronson Conant and Nathan Russell Harrington Prize in Biology for excellence in the life sciences, Williams College, MA.

Talks

2020	New Developments in Prenatal Diagnosis and Medical Genetics, Toronto, ON
2019	(Featured Plenary) American Society of Human Genetics, Houston, TX
2019	World Congress of Psychiatric Genetics, Anaheim, CA
2018	14th Annual Broad Institute Scientific Retreat, Boston, MA
2018	American Society of Human Genetics, San Diego, CA
2018	World Congress of Psychiatric Genetics, Orlando, FL
2017	World Congress of Psychiatric Genetics, Orlando, FL
2017	Stanley Symposium on Severe Mental Illness, Boston, MA
2017	SUPER symposium on genetic mechanisms of psychotic disorders, Helsinki, FI
2016	Genomics of Brain Disorders, Hinxton, UK
2016	Genomics of Rare Disease, Hinxton, UK
2015	World Congress of Psychiatric Genetics, Toronto, ON
2015	American Society of Human Genetics, Baltimore, MD

Teaching experience

2019 - 2022	BroadE steering committee member, Broad Institute of Harvard and M.I.T. Help organize regular scientific workshops for the wider community. (BroadE workshop website)

July 2019	Speaker, Martinos Center Summer Enrichment Program, Massachussetts General Hospital. Discussed the genetic architecture of human disorders, and particular applications of genetics to understand psychiatric illnesses.
Jan. 2019	Speaker, Martinos Center Synapse Winter Course, Massachussetts General Hospital. Discussed the use of whole-exome sequencing to understand the spectrum of loss-of-function effects in the population.
Jan. 2016	Speaker, Fundamentals of Clinical Genetics course, Wellcome Genome Campus. Discussed the interpretation of the pathogenicity of coding variants.
April 2015	Demonstrator, Faculty of Biology, University of Cambridge. Supervising bioinformatics practical for first-year medical and veterinary students.
2009 - 2012	Dean's Tutor, Williams College Office of the Dean. Assisted students with exam and lab preparation in all introductory economics and chemistry classes.
2010 - 2012	Tutor, Math and Science Resource Resource Center, Williams College. Held biweekly review sessions for multivariable calculus and introductory genetics.
2011	Teaching Assistant, Dept. of Mathematics, Williams College. Graded assignments, and held review sessions on numerical and computation methods in applied mathematics.
2009 - 2010	Teaching Assistant, Dept. of Chemistry, Williams College. Lab teaching assistant for physical chemistry, and graded assignments and held review sessions for introductory chemistry.

Last updated: September 28, 2022