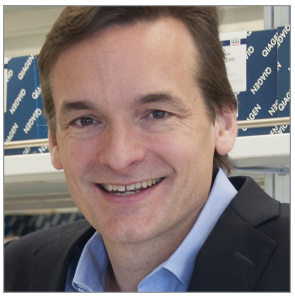

Steve McCarroll, Ph.D.

Institute Member and Director of Genetics in the Stanley Center for Psychiatric Research at the Broad Institute of MIT and Harvard

Assistant Professor of Genetics at Harvard Medical School

STEVE MCCARROLL is an institute member of the Broad Institute of MIT and Harvard, and director of genetics for the Broad's Stanley Center for Psychiatric Research. He is also assistant professor in Harvard Medical School's Department of Genetics.

McCarroll and the scientists in his lab use genetics, molecular biology, and novel approaches for single-cell analysis to reveal the ways in which genomes vary from person to person and the mechanisms by which such variation contributes to human disease. By applying new molecular and computational approaches to study the brain, he hopes to uncover the key molecular and cellular events in the development of schizophrenia and other brain illnesses. The hope is that such discoveries will lead to new, innovative therapies.

McCarroll's human genome research has revealed that human genomes commonly vary at large scales, exhibiting deletion, duplication, inversion, and other rearrangements of long genomic segments. His lab has developed widely used approaches for identifying and characterizing such variation in people's genomes.

McCarroll's lab also recently developed a technology (called Drop-Seq) for high-throughput single-cell analysis of tens of thousands of individual cells at once. Scientists in the lab are using the approach to understand brain function and dysfunction in terms of the behavior of individual cells.

By combining human genetics with these new biological tools, McCarroll's lab is working to discover how genetic risk factors give rise to key molecular and cellular events in the development of schizophrenia and bipolar disorder. Their work combines genome-wide data, collected from tens of thousands of patients, with focused molecular biological experiments in neurons and brains. McCarroll and his group seek to understand how human biology changes under the influence of these genetic variants – what genes and proteins are affected and in what populations of cells, and how the molecular biology of these cells is affected as a consequence.

McCarroll's research draws upon his training in molecular neuroscience and human genetics. He earned his Ph.D. in neuroscience at the University of California, San Francisco in the lab of Cori Bargmann. He completed his postdoctoral fellowship in the lab of David Altshuler (formerly of the Broad, Harvard, and MIT) studying human genome variation and the genetic basis of common disease.

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