# Multi-institutional collaborative effort to create a cell map of the human heart

September 16 2020

Dr. Nathan Tucker of the MMRI. Credit: Masonic Medical Research Institute

Researchers from the Masonic Medical Research Institute (MMRI), the Precision Cardiology Lab (PCL) of the Broad Institute at MIT and Harvard, Bayer USA, Massachusetts General Hospital, and University of

Pennsylvania collaborated to uncover some pressing questions about the biology of the heart. While understanding the mechanisms causal to human heart disease remain active areas of research for many scientists, important knowledge gaps about its composition and function remain unknown.

The current study, "Transcriptional and Cellular Diversity of the Human Heart," published on August 4th in the journal *Circulation*, sought to uncover how many different cell types comprise the heart, how each cell type differs between various regions of the heart, and how the differences relate to genetic risk and affect cardiac health. The team applied state-of-the-art approaches to identify these previously unknown signatures and created a map of the nearly 300,000 identified cells in human hearts.

Ultimately, this study increases scientists' understanding of the human heart, enabling a greater understanding of and treatments for cardiac disease. "Understanding of human cardiac biology at this resolution was not possible just a few years ago," said Dr. Nathan Tucker, Assistant Professor at MMRI and first author of the study. "We are proud of the strong collaborative effort that was required to make this important observation a reality and are excited to see where it goes and the effect it has in the near future."

The results should also serve as a resource to scientists around the world. "One of our major aims was to create a public resource to share with our research community," Tucker noted, "We are very excited to see how this facilitates studies by other groups, both as a data source for further analysis and as a roadmap for complementary work." For more information, please visit: broadinstitute.org/news/single-cell-map-heart-reveals-wide-cellular-diversity.

**More information:** Nathan R. Tucker et al, Transcriptional and Cellular Diversity of the Human Heart, *Circulation* (2020). DOI: 10.1161/CIRCULATIONAHA.119.045401