From Stem Cells to Human Development and Disease

**Abstract:** My lab interrogates human development and disease mechanisms through combining genetic tools with stem cell biology. We have used efficient and precise genome editing techniques in human pluripotent stem cells (hPSCs) to investigate mechanisms of human pancreatic development and diabetes including monogenic forms of type 2 diabetes. We have further employed CRISPR/Cas genome-scale screening approach to identify novel protein-coding regulators of definitive endoderm development. In parallel to our interest in specific regulators of developmental lineage decisions, we are interested in the roles of general epigenetic regulation in development with a particular focus on the roles of DNA methylation underlying human development.

**Bio:** Dr. Danwei Huangfu is an Associate Professor in the Developmental Biology Program at Sloan Kettering Institute of Memorial Sloan Kettering Cancer Center and the Joan & Sanford I. Weill Medical College of Cornell University. She received her B.S. in Genetics from Fudan University in Shanghai, China. In 2005, she received her Ph.D. in Neuroscience from Cornell University Weill Graduate School of Medical Sciences. She subsequently completed a postdoctoral fellowship with Professor Douglas Melton at Harvard University. In September 2010, Dr. Huangfu joined Sloan Kettering Institute of Memorial Sloan Kettering Cancer Center as an Assistant Member. The Huangfu lab ([http://www.mskcc.org/huangfu](http://www.mskcc.org/huangfu)) is interested in embryonic development and stem cell biology. The lab applies precision genetics and genetic screening approaches in human pluripotent stem cells (hPSCs), including both embryonic and induced pluripotent stem cells (hESCs/hiPSCs), to understand both conserved and non-conserved aspects of human development and disease mechanisms. In particular, the lab has focused on studying diseases that affect the pancreas, including diabetes and pancreatic cancer; and the regulation of DNA methylation during hPSC self-renewal and differentiation.