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My group is interested in dissecting innate immune signaling triggered by pattern-recognition receptors (PRRs), particularly Toll-like receptors (TLRs) and the nucleotide-binding domain, leucine-rich repeat-containing (NBD-LRR) proteins (NLRs). The innate immune response constitutes the first line of defense against pathogens and tissue-associated “danger” signals during infection, inflammation or other types of cell stress. Signaling by these receptors initiates key inflammatory responses driving tissue damage. Dysregulated TLR or NLR signaling contributes to the underlying mechanism in many chronic diseases, such as neurodegenerative disorder, metabolic syndrome, autoimmune disease and cancer.

Our goal is to identify and characterize novel innate immune signaling nodes and uncover novel regulatory mechanisms, and eventually develop pathway selective modulators to treat inflammation-associated diseases by restoring tissue homeostasis. We are particularly interested in the interface of innate and adaptive immunity and the functional consequences of innate immune regulators in neurodegenerative diseases. We utilize a wide array of discovery technologies, including chemical genetics, functional genomics and various in vitro and in vivo

models. We work closely with discovery platforms and many other disease areas at NIBR, including Autoimmunity, Transplantation & Inflammation, Cardiovascular & Metabolic Disease, and Immune Oncology.

Selected Publications

KMT1E-mediated chromatin modifications at the Fc γ R11b promoter regulate thymocyte development. [2]

Martin FJ, Xu Y, Lohmann F, Ciccone DN, Nicholson TB, Loureiro JJ, Chen T, Huang Q. *Genes Immun.* 2015 Mar;16(2):162-9.

PIKfyve, a class III lipid kinase, is required for TLR-induced type I IFN production via modulation of ATF3 [3].

Cai X, Xu Y, Kim YM, Loureiro J, Huang Q. *J Immunol.* 2014 Apr 1;192(7):3383-9.

Histone Deacetylase Activities are required for Innate Immune Cell Control of Th1 But Not Th2 Effector Cell Function [4].

Brogdon J, Xu Y, Szabo S, An S, Buxton F, Cohen D, Huang Q. *Blood.* 2007 Feb 1;109(3):1123-30

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[2] <https://www.ncbi.nlm.nih.gov/pubmed/25569264>

[3] <https://www.ncbi.nlm.nih.gov/pubmed/24600036>

[4] <https://www.ncbi.nlm.nih.gov/pubmed/17008546>