

Curriculum Vitae

Jennifer Martinez, Ph.D.

Tenure-Track Investigator
Inflammation and Autoimmunity Group
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Professional Experience

Tenure-Track Investigator, Inflammation and Autoimmunity Group

National Institute of Environmental Health Sciences, Immunity, Inflammation, and Disease Laboratory, Research Triangle Park, NC (March 2015 to present) –

Leading an independent research program to explore the molecular mechanisms of the functionally unique pathway of LC3-associated phagocytosis (LAP) in terms of signal initiation and modulation of immune response, as well as its role, as a process distinct from canonical autophagy, in regulating autoimmune and autoinflammatory disorders, including SLE, type I diabetes, and colitis.

Postdoctoral Research Fellow

St. Jude Children's Research Hospital, Dept. of Immunology, Laboratory of Douglas R. Green, Memphis, TN (February 2010 to March 2015) - Characterization of the role and mechanism of LAP, and its *in vivo* relevance to pathogen clearance and inflammation.

Adjunct Assistant Teaching Professor

Rhodes College, Dept. of Biology, Memphis, TN (January to March 2012) - Conceptualization, design, and presentation of an advanced undergraduate biology curriculum. This experience was made possible by the Rhodes College Teaching Fellowship.

Research Scientist

Gene and Cell Therapy Core Laboratory, University of Washington, Seattle, WA (May 2003 to July 2005) - Development of and perform a variety of protocols within the ISO class 7 facility for re-infusion into the subject during Phase I/II clinical trials, including rapid expansion of HER-2/neu specific T Cells for the therapeutic treatment of breast cancer and HBVcore-specific Cytotoxic T-Lymphocytes for cell therapeutic treatment of chronic Hepatitis B.

Education

Ph.D., Department of Immunology, Duke University, Laboratory of Yiping Yang, M.D., Ph.D., Duke University, Durham, NC (August 2005 to January 2010) - Determination of the mechanisms by which the innate immune response recognize and control vaccinia viral (VV) infection, specifically the requirements for optimal Natural Killer (NK) cell activation in response to VV infection and the mechanisms by which plasmacytoid dendritic cells produce type I interferons in response to VV infection.

Bachelor of Science, Cellular and Molecular Biology, Tulane University, New Orleans, LA (August 1997 to May 2001) - Received Distinguished Scholars Scholarship and graduated on President's List.

Awards and Honors

Poster Judge. 2015 UNC Translational Medicine Symposium. (2015).

NIH Pathway to Independence (K22) Award. "LC3-associated phagocytosis as a critical regulator of the innate immune response" (2015-2017, Awarded, but declined due to NIEHS position).

Abstract Award Recipient. IMMUNOLOGY 2013™, 100th Annual Meeting of The American Association of Immunologists. "LC3-associated phagocytosis is a critical regulator of innate immunity." The American Association of Immunologists, Honolulu, HI. (2013)

NIH Loan Repayment Award Recipient. "Characterization of LC3-Associated Phagocytosis." (2012-2014).

NIH Ruth L. Kirschstein National Research Service (F32) Award Recipient. "Characterization of LC3-Associated Phagocytosis." (2011-2014).

Competition Award Winner. 5th Annual Respiratory, Inflammation, and Autoimmunity Abstract Competition. "The role of LC3-associated phagocytosis in the clearance of dead cells." MedImmune, Gaithersburg, MD. (2010)

Award Winner. G. Bernard Amos Immunology Lecture. "The TLR8-dependent activation of plasmacytoid dendritic cells by vaccinia virus DNA." Duke University, Durham, NC. (2009)

Keystone Symposia Education Fund Scholarship Recipient. Keystone Symposia: NK and NKT Cell Biology, Keystone, CO. (2008)

Scientific Conferences

Keystone Symposia: Autophagy. **Poster Participant.** “LC3-associated phagocytosis links efferocytosis to inflammation and metabolism.” Breckenridge, CO. (2015)

2015 Duke Innate Immunity Group. **Poster Participant.** “LC3-associated phagocytosis links efferocytosis to inflammation and metabolism.” Durham, NC. (2015)

Duke Innate Immunity Group. **Invited Speaker.** “At the crossroads: LC3-associated phagocytosis is a critical regulator of innate immunity.” Durham, NC. (2015)

Keystone Symposia: Cell Death Signaling in Cancer and the Immune System. **Chosen Speaker.** “LC3-associated phagocytosis is a critical regulator of inflammation.” Guarujá, Sao Paulo, Brazil (2014)

Cold Spring Harbor Laboratory: Cell Death. **Poster Participant.** “LC3-associated phagocytosis is a critical regulator of innate immunity.” Cold Spring Harbor, NY. (2013)

Department of Immunology, University of Washington. **Invited Speaker.** “LC3-associated phagocytosis is a critical regulator of innate immunity.” Seattle, WA. (2013)

IMMUNOLOGY 2013™, 100th Annual Meeting of The American Association of Immunologists. **Chosen Speaker.** “LC3-associated phagocytosis is a critical regulator of innate immunity.” Honolulu, HI. (2013)

Center for Gene and Cell Therapy, Baylor University. **Invited Speaker.** “LC3-associated phagocytosis mediates IFN α secretion in response to DNA-immune complexes.” Houston, TX. (2012)

XXXVII Congress of the Brazilian Immunology Society. **Chosen Speaker.** “LC3-associated phagocytosis mediates IFN α secretion in response to DNA-immune complexes.” Campos do Jordao, Brazil. (2012)

Symposium on Cell Death: ICB-USP. **Chosen Speaker.** “LC3-associated phagocytosis mediates IFN α secretion in response to DNA-immune complexes.” Sao Paulo, Brazil. (2012)

8th European Workshop on Cell Death. **Chosen Speaker.** “The role of LC3-associated phagocytosis in the clearance of dead cells.” Le Monétier-les-Bains, France. (2012)

Keystone Symposia: Cell Death Pathways/Mitochondrial Dynamics and Physiology **Chosen Speaker.** “The role of LC3-associated phagocytosis in the clearance of dead cells.” Banff, Alberta, Canada. (2012)

EMBO Molecular Medicine Workshop on Cell Death & Disease **Chosen Speaker**. “The role of LC3-associated phagocytosis in the clearance of dead cells.” Obergurgl, Austria. (2011)

5th Annual Respiratory, Inflammation, and Autoimmunity Abstract Competition, MedImmune. **Chosen Participant**. “The role of LC3-associated phagocytosis in the clearance of dead cells.” Gaithersburg, MD. (2010)

7th European Workshop on Cell Death. **Poster Participant**. “The role of LC3-associated phagocytosis in the clearance of dead cells.” Tiveside, Denmark. (2010)

Duke University G. Bernard Amos Immunology Lecture. **Poster Award Winner**. “The TLR8-dependent activation of plasmacytoid dendritic cells by vaccinia virus DNA.” Durham, NC. (2009)

National Graduate Student Symposium, St. Jude Children’s Research Hospital. **Chosen Participant**. “The TLR8-dependent activation of plasmacytoid dendritic cells by vaccinia virus DNA.” Memphis, TN. (2009)

Graduate Student Symposium, Duke University. **Chosen Speaker**. “The TLR8-dependent activation of plasmacytoid dendritic cells by vaccinia virus DNA.” Durham, NC. (2008)

Keystone Symposia: NK and NKT Cell Biology. **Poster Presenter**. “Direct action of type I IFN on NK cells is required for their activation in response to vaccinia viral infection in vivo.” Keystone, CO. (2008)

Additional Experience

Organizing Member for Cell Death Pathways: From Zero to Sixty (2014-2015)

Editorial Board Member of *Molecular & Cellular Oncology*, Landes Bioscience (2014)

Associate Faculty Member of Faculty of 1000. (2013 to present)

Correspondent for local radio program “Eye on Vision” on WYPL-FM 89.3 (2013)

Peer-Reviewer for numerous manuscripts at PNAS, Nature Medicine, and Immunity (2011-2013)

Microscopy and Imaging Representative, Department of Immunology, St. Jude Children’s Research Hospital, Memphis, TN. (2011-2012)

Mentor, Undergraduate Summer Internship, St. Jude Children's Research Hospital, Memphis, TN. (2010-2011)

Mentor, Women in Mathematics Mentoring, Durham, NC. (2008-2010)

Duke University Department of Immunology Faculty Recruit Student Liaison, Durham, NC. (2007-2010)

Gordon G. Hammes Teaching Award Committee, Duke University, Durham, NC. (2005-2007)

Committee Chair, Department of Immunology Retreat Planning Committee, Duke University, Durham, NC. (2006-2007)

Teaching Assistant, Principles of Immunology, Duke University, Durham, NC. (2007)

Publications

Original Research Publications

Martinez J, Park S, Yang M, Lu Q, Orchard R, Virgin HW, and Green DR LC3-associated phagocytosis links clearance of dying cells to autoinflammation and lupus-like disease in mice. **Nature** (in revision).

Sanders MG, Parsons MJ, Howard A, Liu J, Fassio S, **Martinez J**, and Bouchier-Hayes L. Single cell imaging of inflammatory caspase dimerization reveals differential recruitment to inflammasomes. **Cell, Death, and Disease** (in revision).

Martinez J, Subbarao MRK, Lu Q, Cunha LD, Pelletier S, Gingras S, Orchard R, Tan H, Peng J, Kanneganti TD, Virgin HW, and Green DR. Molecular characterization of LC3-associated phagocytosis (LAP) in the innate response to *Aspergillus fumigatus* infection. **Nature Cell Biology** (accepted April 10, 2015).

Xu X, Araki K, Li S, Han JH, Ye L, Tan WG, Konieczny BT, Bruinsma MW, **Martinez J**, Pearce EL, Green DR, Jones DP, Virgin HW, and Ahmed R. Autophagy is essential for effector CD8(+) T cell survival and memory formation. **Nature Immunology**. 15(12):1152-61, 2014.

Figueiredo N, Chora A, Raquel H, Pejanovic N, Pereira P, Hartleben B, Neves-Costa A, Moita C, Pedroso D, Pinto A, Marques S, Faridi H, Costa P, Gozzelino R, Doring G, Zhao J, Soares M, Gama-Carvalho M, **Martinez J**, Green D, Zhang Q, Grompe M, Simas P, Huber T, Baltimore D, Gupta V, Ferreira J, and Moita L. The anthracycline epirubicin triggers an ATM-dependent protective response against severe sepsis. **Immunity**. 39(5):874-84, 2013.

Kim J-Y*, Zhao H*, **Martinez J**, Doggett T, Kolesnikov A, Tang P, Ablonczy Z, Chan C, Zhou Z, Green D, and Ferguson T. Non-canonical Autophagy Promotes the Visual Cycle. **Cell**. 154(2): 365-376, 2013. *co-first authorship

Lupfer C, Thomas P, Anand P, Vogel P, Milasta S, **Martinez J**, Huang G, Green M, Kundu M, Chi H, Xavier R, Green D, Lamkanfi M, Dinarello C, Doherty P, and Kanneganti T. RIPK2-mediated mitophagy negatively regulates inflammasome activation and host defense during influenza virus infection. **Nature Immunology**. 14(5): 80-8, 2013.

Henault J*, **Martinez J***, Riggs J, Tian J, Latz E, Brinkmann M, Coyle A, Kolbeck R, Green D, and Sanjuan M. Noncanonical autophagy is required for type I interferon secretion in response to DNA-immune complexes. **Immunity**. 37(6): 986-997, 2012. *co-first authorship

Liao X, Sluimer J, Wang Y, Subramanian M, Brown K, Pattison J, Robbins J, **Martinez J**, and Tabas I. Macrophage Autophagy Plays a Protective Role in Advanced Atherosclerosis. **Cell Metabolism**. 15(4):545-53, 2011.

Martinez J, Almendinger J, Oberst A, Ness R, Dillon C, Fitzgerald P, Hengartner M, and Green D. Microtubule-associated protein 1 light chain 3 alpha (LC3)-associated phagocytosis is required for the efficient clearance of dead cells. **PNAS**. 108(42): 17396-401, 2010.

Martinez J, Huang X, and Yang Y. Toll-like receptor 8-mediated activation of murine plasmacytoid dendritic cells by vaccinia viral DNA. **PNAS**. 107(14): 6442- 6447, 2010.

Martinez J, Huang X, Yang Y (2010) Direct TLR2 Signaling Is Critical for NK Cell Activation and Function in Response to Vaccinia Viral Infection. **PLoS Pathogens**. 6(3): e1000811.

Quigley M, **Martinez J**, Huang X, and Yang Y. A critical role for direct TLR2-MyD88 signaling in CD8 T cell clonal expansion and memory formation following vaccinia viral infection. **Blood**. 113(10):2256-64, 2009.

Martinez J, Huang X, and Yang Y. Direct action of type I IFN on NK cells is required for their activation in response to vaccinia viral infection in vivo. **Journal of Immunology**. 180(3):1592-7, 2008.

Zhu J, **Martinez J**, Huang X, and Yang Y. Innate immunity against vaccinia virus is mediated by TLR2 and requires TLR-independent production of IFN-beta. **Blood**. 109(2):619-25, 2007.

Editorial and Review Publications

Martinez J, Verbist K, Wang R, and Green D. The relationship between metabolism and the autophagy machinery during the innate immune response. **Cell Metabolism**. 17(6):895-900, 2013.

Miller C, Dillon C, **Martinez J**, Parsons M, Weinlich R, Melino G. Scientists contemplate unexplained death in Austrian Alps. **EMBO Molecular Medicine**. 3(7):363-6, 2011.