Curriculum Vitae

Jennifer Martinez, Ph.D.

Tenure-Track Investigator *
Inflammation and Autoimmunity Group *
Immunity, Inflammation, and Disease Laboratory *
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Professional Experience

Current Positions

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 arthritis, type I diabetes, and colitis.

Adjunct Assistant Professor
University of North Carolina, Department of Microbiology and Immunology, Chapel Hill, NC (February 2016 to present)

Previous Positions

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

Lead Guest Editor. *Autophagy*: *A Healthy Outside Starts from the Inside.* (2017)

Chair. Earl Stadtman Investigator Search Committee (Immunology). NIH (2016-2017)

Faculty Member. 2016 AAAAI Annual Meeting (2016)

Committee Member. Earl Stadtman Investigator Search Committee (Immunology). NIH (2015-2016).

Associate Guest Editor. *Mediators of Inflammation*: Holding the Inflammatory System in Check: TLRs and NLRs (2015-2016)

Committee Member. NIEHS DIR Retreat Committee (2015-2016)

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)

Invited Lectures and Scientific Conferences

Invited Speaker. Nature Conference on Inflammatory Diseases. Beijing, China. (2017)

Invited Speaker. IMMUNOLOGY 2017. "Non-canonical autophagy links efferocytosis to inflammation" American Association of Immunologists .Washington, D.C. (2017)

Invited Speaker. University of North Carolina, Oral Biology Seminar Series. "LC3-associated phagocytosis: Autoimmunity and beyond." Chapel Hill, NC (2016)

Invited Speaker. The Research Institute at Nationwide Children's Hospital. "LC3-associated phagocytosis: Autoimmunity and beyond." Columbus, OH. (2016)

Invited Speaker. Duke University, Department of Dermatology. "LC3-associated phagocytosis as a critical regulator of inflammation." Durham, NC (2016)

Invited Speaker. North Carolina State University, Department of Biological Sciences, Toxicology Program. "Non-canonical autophagy as a critical regulator of inflammation and autoimmunity." Raleigh, NC (2016)

Chosen Speaker. Cell Symposia: 100 Years of Phagocytes. "Non-canonical

autophagy as a critical regulator of autoimmunity and inflammation." Giardini-Naxos, Sicily. (2016)

Chosen Speaker. NIH Immunology Interest Group Retreat. "Non-canonical autophagy as a critical regulator of autoimmunity and inflammation." Leesville, VA. (2016)

Invited Speaker. Southeastern Immunology Symposium. "LC3-associated phagocytosis as a critical regulator of inflammation." Durham, NC (2016)

Invited Speaker. Gordon Research Conference: New Concepts in Cell Death Research: From Basic Mechanisms to Clinical Opportunities. "LC3-associated phagocytosis as a critical regulator of autoimmunity." Girona, Spain (2016)

Moderator and Invited Speaker. American Academy of Allergy, Asthma & Immunology (AAAAI) 2016 Annual Meeting. "LC3-Associated Phagocytosis as a Critical Regulator of the Innate Immune Response." Los Angeles, CA (2016).

Invited Speaker. Department of Microbiology and Immunology, University of North Carolina. "LC3-associated phagocytosis: Autoimmunity and beyond." Chapel Hill, NC. (2015)

Chosen Speaker. TOLL 2015: Targeting Innate Immunity. "Engagement of LC3-associated phagocytosis is critical for immunity against *Aspergillus fumigatus*." Marbella, Spain. (2015).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Poster Presenter. Keystone Symposia: NK and NKT Cell Biology. “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

Moderator and Organizer American Academy of Allergy, Asthma & Immunology (AAAAI) 2016 Annual Meeting: Autophagy and Phagocytosis: At the Crossroads of Inflammation and Tolerance (2016).

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 2015) *

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

Peer-Reviewer for numerous manuscripts at PNAS, Nature Medicine, Nature Immunology, Autophagy, and Immunity (2011-present) *

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

Daniels BP, Snyder AG, Olsen TM, Orozco S, Oguin TH, Tait SW, **Martinez J**, Gale M Jr., Loo YM, and Oberst A. RIPK3 restricts West Nile virus pathogenesis via death-independent neuroinflammation. **Cell** (Accepted).

Feeley, EM, Pilla-Moffett DM, Zwack EE, Piro AS, Finethy R, Kolb JP, **Martinez J**, Brodsky IE, and Coers J. Galectin-3 directs antimicrobial guanylate binding proteins to vacuoles furnished with bacterial secretion systems. **PNAS** 2017 doi: 10.1073/pnas.1615771114.

Martinez J, Cunha LD, Park S, Yang M, Lu Q, Orchard R, Li Q-Z, Yan M, Janke L, Guy C, Linkermann A, Virgin HW, and Green DR. Noncanonical autophagy inhibits the autoinflammatory, lupus-like response to dying cells. **Nature** 2016 May 5;533(7601):115-9

Ravindran R, Loebbermann J, Nakaya H, Khan N, Gama L, Machiah D, Sharma P, Lawson B, Wang Y-C , Hakimpour P, Kaufman P, Li S, **Martinez J**, and Pulendran B. The amino acid sensor GCN2 controls gut inflammation by inhibiting inflammasome activation. **Nature** 2016 Mar 24;531(7595):523-7.

Lu Q, Yokoyama CC, Williams JW, Baldridge MT, Jin X, DesRochers B, Bricker T, Wilen CB, Bagatikar J, Loginicheva E, Sergushichev A, Kreamalmeyer D, Keller B, Zhao H, Kambal A, Green DR, **Martinez J**, Dinauer MC, Holtzman MJ, Crouch EC, Beatty W, Boom ACM, Zhang H, Randolph GJ, Artyomov MN, and Virgin HW. Homeostatic Control of Innate Immune Lung Inflammation by Vici Syndrome Gene Epg5 and Additional Autophagy Genes Promotes Influenza Virus Pathogenesis. **Cell Host & Microbe** 2016 Jan 13;19(1):102-13.

Park S, Buck MD, Reese TA, Loginicheva E, Zhang X, **Martinez J**, Freeman ML, Blackman MA, Levine B, Green DR, Artyomov MN, and Virgin HW. Autophagy genes enhanve murive gammaherpesvirus 68 reactivation from latency by preventing virus-induced systemic inflammation. **Cell Host & Microbe** 2016 Jan 13;19(1):91–101.

Liu L*, Lu Y*, **Martinez J***, Wang T, Wang J, Yang M, Liu G, Green DR, and Wang R. Pro-inflammatory stimulation suppresses proliferation and shifts the regulation of macrophage metabolism from a Myc-dependent to a HIF1α-dependent manner. **PNAS**. 2016 Feb 9;113(6):1564-9. *co-first authorship

Sanders MG, Parsons MJ, Howard A, Liu J, Fassio S, **Martinez JA**, and Bouchier-Hayes L. Single cell imaging of inflammatory caspase dimerization reveals differential recruitment to inflammasomes. **Cell, Death, and Disease.** 2015 Jul 9;6:e1813.

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) reveals distinct roles for Rubicon, NOX2, and autophagy proteins. **Nature Cell Biology.** 2015 Jul;17(7):893-906.

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, 2011.

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

Kolb JP, Oguin TH, III, Oberst A, and **Martinez J**. Programmed cell death and inflammation: Winter is Coming. **Trends in Immunology** 2017 (Accepted).

Galluzzi L, Amaravadi RK . . . **Martinez J** . . . *et al.* Molecular definitions of autophagy and related processes. **EMBO** 2017 (Accepted).

Oguin TH and **Martinez J**. Gut check: Dead cell samples leads to tolerant examples. **CDD News and Views** 2017 (Accepted).

Cunha LD and **Martinez J**. Autophagy and LC3-Associated Phagocytosis Mediate the Innate Immune Response. ***Autophagy: Cancer, Other Pathologies****…* Elsevier Limited Press (2017).

Holl, E. K., Allen, I. C. & **Martinez, J**. Holding the Inflammatory System in Check: TLRs and NLRs. **Mediators Inflamm** 2016, 8156816, doi:10.1155/2016/8156816 (2016).

Green DR, Oguin TH, and **Martinez J**. The Clearance of Dying Cells: Table for Two. **Cell Death and Differentiation** 2016 Mar 18. doi: 10.1038/cdd.2015.172.

Kolb JP and **Martinez J.** Bon EPOtit! S1P-Mediated EPO Signaling Whets a Macrophage's Appetite for Apoptotic Cells. **Immunity**. 2016;44(2):209-11.

Klionsky DJ, Abdelmohsen K . . . **Martinez J.** . . *et al*. Guidelines for the use and interpretation of assays for monitoring autophagy (2nd edition). **Autophagy**. 2016 Jan 2;12(1):1-222.

Martinez J. Prix Fixe: Efferocytosis as a Four-Course Meal. **Current Topics in Microbiology and Immunology**. 2015 Aug 26. [Epub ahead of print]

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.