
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME PELAYO CAMACHO, Rosana		POSITION TITLE Senior Research Scientist, Mexican Institute for Social Security	
eRA COMMONS USER NAME (credential, e.g., agency login) rosana.pelayo			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	DATE	FIELD OF STUDY
National Autonomous University of Mexico National Autonomous University of Mexico	B.Sc. M.Sc.	1983-1988 1989-1991	Chemist Pharmacol Biol Immunology
National Autonomous University of Mexico Oklahoma Medical Research Foundation	Ph.D. Postdoctoral	1997-2002 2002-2006	Immunology Immunobiology and Cancer

A. Personal Statement

The major interest of my laboratory for past 10 years is the study of early development of blood cells in health and disease. Because childhood acute lymphoblastic leukemia (ALL) is the most common cause of mortality of relapsed patients worldwide and shows the highest incidences in Latin America, the comprehensive understanding of its cell root and dynamics according to the tumor microenvironment and clinical context that ultimately lead to improve cancer surveillance and fight child mortality, is the prime goal of our research. To pursuit this goal, the early phase of my independent career, was mostly focused on identity and functional activity of lymphoid progenitors using controlled culture systems, mouse models and transplantation. We are extending our findings to humans, by addressing four principal areas: (1) Optimization of the hematopoietic replenishment, exploiting continuous signals by TLR in the emergency cell fate decisions. (2) Design of biological strategies to target leukemic lymphopoiesis, with special interest in extrinsic mechanisms provided by the tumor microenvironment in bone marrow (BM) that regulate leukemia burden. (3) New approaches to learn about ALL pathobiology and to provide useful tools for high throughput screening of biological and pharmacological strategies: development of organoid-like three-dimensional cellular structures that resemble the BM microenvironment and hematopoietic niches where leukemia starts and progresses., and (4) Mathematical modeling to address micro and macro perspectives of leukemia complexity: use of systems oncoimmunology computational tools to simulate the etiology and population dynamics in leukemic evolution and relapse. The environment at CIBIOR is remarkable with strong support and focus on clinically translatable projects and close interactions with clinicians. My laboratory is well positioned to provide the resources and support for education and development of translational immunologists. Pelayo Lab members are highly trained and dedicated undergraduate students and junior investigators who show diligence, extraordinary work capabilities in the pediatric oncoimmunology field and great deal of independence.

B. Positions and Honors

Positions

- 1992-1997 Associate Research Scientist. Immunology Department, Military School of Health Graduates. Secretary of National Defense. Mexico City, Mexico.
- 2002-2005 Associate Research Scientist. Posdoctoral training in Dr. Paul Kincade's Laboratory. Immunobiology and Cancer Program. Oklahoma Medical Research Foundation. Oklahoma City, OK, USA

- 2005-2006 Senior Research Scientist. Immunobiology and Cancer Program. Oklahoma Medical Research Foundation. Oklahoma City, OK, USA.
- 2006-2008 Associate Research Scientist, Oncology Research Unit, Oncology Hospital, National Medical Center, Mexican Institute of Social Security. Mexico City, Mexico.
- 2006-2010 Senior Research Scientist (Visitor-Part time). Immunobiology and Cancer Program. Oklahoma Medical Research Foundation. Oklahoma City, OK, USA.
- 2008-2017 Senior Research Scientist, Oncology Research Unit, Oncology Hospital, National Medical Center, Mexican Institute of Social Security. Mexico City, Mexico.
- 2016-present External Associate Researcher. Science Center of Complexity, National Autonomous University of Mexico. Mexico City, Mexico.
- 2017-present Senior Research Scientist, Oncoimmunology Group Leader, Eastern Biomedical Research Center CIBIOR. Mexican Institute of Social Security. Mexico City, Mexico.

Other Experience and Professional Memberships

- 2008-present International Society of Experimental Hematology and Stem Cells
- 2009-present Mexican Society of Stem Cell Research.
- 2009-2015 National Council of Science and Technology (CONACyT) RedFarmed.
- 2011-present National Committee for Scientific Research.
- 2011-present National System of Researchers (SNI). Level 2.
- 2013-present School of Medicine Dictation Committee, UNAM.
- 2014-2016 Board of the Mexican Society of Immunology.
- 2014-present Mexican Academy of Sciences.
- 2016-2018 President of the Mexican Society of Immunology

Honors

- 1988 Honorable mention. Undergraduate studies. School of Chemistry. National Autonomous University of Mexico.
- 1991 Honorable mention. M.Sc. studies. Biomedical Sciences Program -Immunology-. National Autonomous University of Mexico
- 1991 Gabino Barrera Medal. National Autonomous University of Mexico.
- 2005 PINCUS Award. Postdoctoral Development, from the Federation of American Societies for Experimental Biology (FASEB), U.S.A.

C. Selected Peer-reviewed Publications

Balandrán JC, Purizaca J, Enciso J, Dozal D, Sandoval A, Jiménez-Hernández E, Alemán-Lazarini L, Perez-Koldenkova V, Quintela-Núñez Del Prado H, Rios de Los Ríos J, Mayani H, Ortiz-Navarrete V, Guzman ML, **Pelayo R**. Pro-inflammatory-Related Loss of CXCL12 Niche Promotes Acute Lymphoblastic Leukemic Progression at the Expense of Normal Lymphopoiesis. *Front Immunol*. 2017 Jan 5;7:666. doi: 10.3389/fimmu.2016.00666.

Vadillo E, Dorantes-Acosta E, **Pelayo R**, Schnoor M. T cell acute lymphoblastic leukemia (T-ALL): New insights into the cellular origins and infiltration mechanisms common and unique among hematologic malignancies. *Blood Rev*. 2017 Aug 15. pii: S0268-960X(17)30028-0. doi: 10.1016/j.blre.2017.08.006.

Schnoor M, García Ponce A, Vadillo E, **Pelayo R**, Rossaint J, Zarbock A.. Actin dynamics in the regulation of endothelial barrier functions and neutrophil recruitment during endotoxemia and sepsis. *Cell Mol Life Sci*. 2017 Jun;74(11):1985-1997. doi: 10.1007/s00018-016-2449-x

Mora-Velandia LM, Castro-Escamilla O, Méndez AG, Aguilar-Flores C, Velázquez-Avila M, Tussí-Luna MI, Téllez-Sosa J, Maldonado-García C, Jurado-Santacruz F, Ferat-Osorio E, Martínez-Barnetche J, **Pelayo R**, Bonifaz LC. A Human Lin⁺ CD123⁺ CD127^{low} Population Endowed with ILC Features and Migratory Capabilities Contributes to Immunopathological Hallmarks of Psoriasis. *Front Immunol*. 2017 Mar 2;8:176. doi: 10.3389/fimmu.2017.00176

Balandrán JC, Vadillo E, Dozal D, Reyes-López A, Sandoval-Cabrera A, Laffont-Ortiz MD, Prieto-Chávez JL, Vilchis-Ordoñez A, Quintela-Núñez Del Prado H, Mayani H, Núñez-Enríquez JC, Mejía-Arangur JM, López-Martínez B, Jiménez-Hernández E, **Pelayo R**. Analysis of Normal Hematopoietic Stem and Progenitor Cell Contents in Childhood Acute Leukemia Bone Marrow. *Arch Med Res*. 2016 Nov;47(8):629-643. doi: 10.1016/j.arcmed.2016.12.004.

Enciso J, Mayani H, Mendoza L, **Pelayo R**. Modeling the Pro-inflammatory Tumor Microenvironment in Acute Lymphoblastic Leukemia Predicts a Breakdown of Hematopoietic-Mesenchymal Communication Networks. *Front Physiol*. 2016 Aug 19;7:349. doi: 10.3389/fphys.2016.00349.

Enciso J, Mendoza L, **Pelayo R**. Normal vs. Malignant hematopoiesis: the complexity of acute leukemia through systems biology. *Front Genet*. 2015 Sep 11;6:290. doi: 10.3389/fgene.2015.00290.

Vilchis-Ordoñez A, Contreras-Quiroz A, Vadillo E, Dorantes-Acosta E, Reyes-López A, Quintela-Núñez del Prado HM, Venegas-Vázquez J, Mayani H, Ortiz-Navarrete V, López-Martínez B, **Pelayo R**. Bone Marrow Cells in Acute Lymphoblastic Leukemia Create a Proinflammatory Microenvironment Influencing Normal Hematopoietic Differentiation Fates. *Biomed Res Int*. 2015;2015:386165. doi: 10.1155/2015/386165.

Vadillo E, Dorantes-Acosta E, Arriaga-Pizano L, Chavez-Gonzalez A, Reyes-Maldonado E, Garrett KP, Mayani H, Kincade PW, **Pelayo R**. Adult, but not neonatal, human lymphoid progenitors respond to TLR9 ligation by producing functional NK-like cells. *Exp Hematol*. 2014 Jul;42(7):562-73.e3. doi: 10.1016/j.exphem.2014.03.008.

Purizaca J, Contreras-Quiroz A, Dorantes-Acosta E, Vadillo E, Arriaga-Pizano L, Fuentes-Figueroa S, Villagomez-Barragán H, Flores-Guzmán P, Alvarado-Moreno A, Mayani H, Meza I, Hernandez R, Huerta-Yepez S, **Pelayo R**. Lymphoid progenitor cells from childhood acute lymphoblastic leukemia are functionally deficient and express high levels of the transcriptional repressor Gfi-1. *Clin Dev Immunol*. 2013;2013:349067. doi: 10.1155/2013/349067.

Early lymphoid development and microenvironmental cues in B-cell acute lymphoblastic leukemia. Purizaca J, Meza I, **Pelayo R**. *Arch Med Res*. 2012 Feb;43(2):89-101. doi: 10.1016/j.arcmed.2012.03.005.

Xu J Zhang X, **Pelayo R**, Monestier M, Ammollo CT, Semeraro F, Taylor FB, Esmon NL, Lupu F, Esmon CT. Extracellular histones are major mediators of death in sepsis. *Nat Med*. 2009 Nov;15(11):1318-21.

Welner RS*, **Pelayo R***, Nagai Y, Garrett KP, Wuest TR, Carr DJ, Borghesi LA, Farrar MA, Kincade PW. Lymphoid precursors are directed to produce dendritic cells as a result of TLR9 ligation during herpes infection. *Blood*. 2008 Nov 1;112(9):3753-61. doi: 10.1182/blood-2008-04-151506. *equal contribution.

Welner RS, **Pelayo R**, Kincade PW. Evolving views on the genealogy of B cells. *Nat Rev Immunol*. 2008 Feb;8(2):95-106. doi: 10.1038/nri2234

Welner RS*, **Pelayo R***, Garrett KP, Chen X, Perry SS, Sun XH, Kee BL, Kincade PW. Interferon-producing killer dendritic cells (IKDCs) arise via a unique differentiation pathway from primitive c-kit^{hi}CD62L⁺ lymphoid progenitors. *Blood*. 2007 Jun 1;109(11):4825-931. Epub 2007 Feb 22. *equal contribution.

Pelayo R, Miyazaki K, Huang J, Garrett KP, Osmond DG, Kincade PW. Cell cycle quiescence of early lymphoid progenitors in adult bone marrow. *Stem Cells*. 2006 Dec;24(12):2703-13.

Pelayo R, Welner RS, Nagai Y, Kincade PW. Life before the pre-B cell receptor checkpoint: specification and commitment of primitive lymphoid progenitors in adult bone marrow. *Semin Immunol*. 2006 Feb;18(1):2-11.

Pelayo R, Welner R, Perry SS, Huang J, Baba Y, Yokota T, Kincade PW. Lymphoid progenitors and primary routes to becoming cells of the immune system. *Curr Opin Immunol*. 2005 Apr;17(2):100-7.

Pelayo R, Hirose J, Huang J, Garrett KP, Delogu A, Busslinger M, Kincade PW. Derivation of 2 categories of plasmacytoid dendritic cells in murine bone marrow. *Blood*. 2005 Jun 1;105(11):4407-15

Baba Y, **Pelayo R**, Kincade PW. Relationships between hematopoietic stem cells and lymphocyte progenitors. Trends Immunol. 2004 Dec;25(12):645-9

D. Research Support

Ongoing Research Support

National Council of Science and Technology (CONACYT) 2015. Principal Investigator. Project: "Personalized tridimensional platforms for drug sensitivity screening in acute lymphoblastic leukemia".

Completed Research Support

National Council of Science and Technology (CONACYT) 2010. Principal Investigator. Project: "Reprogramming of early lymphoid progenitors by TLR in acute lymphoblastic leukemia"

National Council of Science and Technology (CONACYT) 2006. Principal Investigator. Project: "Influence of microbial components that signal via TLR in development and fate of early lymphoid progenitors".