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International Conference on
Immunology and Immunotechnology

November 1-3, 2017 Barcelona, Spain

Transcriptomic and Epigenetic Analysis in Human Neonate T Cells

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Human neonates have a poor response to intracellular pathogens, despite a high inflammatory response. This leads to a high morbidity and mortality rates, reaching 37% of deaths of children under 5 years of age. A major cause of death is infections and inflammatory syndromes, like sepsis. To better understand this phenomenon, we evaluated the transcriptome and epigenomic landscape of naive CD8+- and CD4+- T cells from neonate and adult blood. We show that neonatal T cells have a specific genetic program established by epigenetic mechanisms, biased towards innate immunity. Functional studies corroborated that CD8+ T cells are less cytotoxic and transcribe antimicrobial peptides. CD4+ T cells have a high expression of negative TCR signalling molecules and a low expression of positive signalling molecules, explaining the high threshold of activation of these cells. Altogether, these properties could explain the high susceptibility of neonates to infections and inflammation and will contribute to a better diagnosis and management of the neonatal immune response.

Biography:

Dr. Santana studied her B.Sc. at the Autonomous University of Metropolitan in Mexico City. She obtained her PhD degree from University Louis Pasteur in Strasbourg, France and did post doctorate work at the Medical School of The University of Manchester and at the Institute of Biotechnology, National Autonomous University of Mexico. She now directs the Laboratory of Cellular Immunology at the Centro de Investigation in Cellular Dynamics, Autonomous University, State of Morelos in Mexico. She has over 30 publications and has been responsible for national and international projects.