



Conditions Treated:

Research Areas:

- *Regenerative Medicine*
- *Mesenchymal Stem Cells*
- *Microvascular Remodeling & Regeneration*

Programs & Services:

- *Department of Medicine*
- *Department of Immunology and Genomic Medicine*
- *Division of Pulmonary, Critical Care and Sleep Medicine (Adult)*

The focus of the work in the Majka laboratory is to understand how the normal and reparative function of resident lung mesenchymal progenitor cells (MPC) is altered during the development and course of lung diseases (including pulmonary hypertension, fibrosis, emphysema and TSC/LAM). In order to define a role for lung MPC during lung disease we employ model systems. We use patient derived MPC and induced pluripotent stem cells (iPS) as cell based models to understand changes in which occur in MPC as a result of disease specific gene mutations. There is an increasing emphasis on the development of cell-based therapies to address chronic lung conditions, but to date the lung is a recalcitrant candidate for these strategies because of the lack of understanding of how chronic disease processes affect progenitor cell differentiation. Therefore, prior to testing cell-based therapy, it is desirable to use pre-clinical models of lung injury and chronic disease to determine how changes in the lung tissue during the development of disease affect resident stem cell differentiation and function.

Our laboratory has identified and characterized the novel cell population of lung MPC. We have demonstrated that these cells are present in the distal lung associated with the smallest blood vessels that promote gas exchange in both mouse and human tissue. Recent studies in our lab have shown that normal function of the lung MPC is to maintaining the function of the smallest blood vessels in the lung. When compromised in disease these cells become abnormal and participate in remodeling, causing loss of blood vessel function. Understanding what regulates MPC function under normal and disease processes will help us to promote lung repair.

Education

- 1992 - University of New Mexico, Albuquerque, NM, PhD, Biomedical Sciences, Cell & Molecular Biology
- 1988 - Rutgers University, New Brunswick, NJ, BS Biotechnology/BS Animal Science
- 1992

Affiliations with the University of Colorado Denver

Professor of Medicine, Division of Pulmonary & Critical Care
Gates Center for Regenerative Medicine and Stem Cell Biology
University of Colorado Health Sciences Center, Aurora CO

Professional Memberships

NAVBO
ATS
AHA
ISSCR

Awards & Recognition

2000: NIH Postdoctoral Fellow, Baylor College of Medicine
2001: Pediatric Postdoctoral Fellow Research Award, Baylor College of Medicine
2005: Mentor: Poster Award Department of Medicine Research Day; CU SOM, Denver, CO
2007: Finalist The Courmand & Comroe Young Investigator Prize In CPCC-AHA
2008: Mentor: UCD Chancellors Award for Excellence in Undergraduate Research
2013: Mentor: Abstract Award-Platform presentation. Vermont Lung Stem Cell Conference
2014: Mentor: Poster Award FASEB conference. Lung Epithelium in Health & Disease

Doctor's Contact Information

Office: 303.398.1087

Locations

National Jewish Health Main Campus
1400 Jackson St.

Denver, CO 80206