Zea Borok, M.D.

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Dr. Zea Borok is Professor of Medicine and Biochemistry and Molecular Medicine, Chief of the Division of Pulmonary, Critical Care and Sleep Medicine (DPCCSM) at the University of Southern California in Los Angeles. She received her MD degree at the University of Cape Town. She completed internship and residency at the University of Pittsburgh and postdoctoral training at the University of Pittsburgh and the National Institutes of Health and has been on the faculty at USC since 1991, rising through the ranks to her current position as Chief of the Division of Pulmonary, Critical Care and Sleep Medicine and Director of the recently established Hastings Center for Pulmonary Research.

Dr. Borok's research program focuses on function and differentiation of alveolar epithelium in health and disease. The former includes regulation of alveolar epithelial barrier function and especially the contribution of alveolar epithelial type I (AT1) cells to ion transport and barrier properties, as well as the role of tight junction proteins in cellular homeostasis and signaling. The latter includes investigation of transcriptional and epigenetic regulation of alveolar epithelial cell (AEC) growth, differentiation and plasticity in the context of lung injury, regeneration and fibrosis as well as the contributions of Wnt/β-catenin, transforming growth factor-β, and Hippo/YAP signaling to these processes. Her focus has more recently extended to regulation of endogenous lung stem/progenitor cell function. Since type II (AT2) cells serve as stem/progenitor cells for adult alveolar epithelium, understanding mechanisms that regulate their self-renewal and transdifferentiation to an AT1 cell phenotype are key to understanding mechanisms of repair following injury, as well as aberrant AEC differentiation in the context of fibrosis. She has been continuously funded by the NIH since 1993 for studies of transcriptional regulation of AEC differentiation by the forkhead transcription factor, FOXO1 (MERIT award), the role of Wnt signaling in AEC plasticity in the context of pulmonary fibrosis, characterization of epigenetic and transcriptomic profiles of normal and diseased AEC and the role of claudin-18 in regulation of distal lung progenitors. She recently received an R35 Outstanding Investigator Award for studies of the alveolar epithelium in health and disease.

CLINICAL INTERESTS

Acute lung injury, critical illness and pulmonary fibrosis

RESEARCH INTERESTS

Role of alveolar epithelium in lung injury, repair and fibrosis. Transcriptional and epigenetic regulation of alveolar epithelial cell function and differentiation. Pulmonary alveolar epithelial cell plasticity and epithelial-mesenchymal transitions. Characterization of endogenous lung stem cells. Functional and phenotypic characterization of alveolar epithelial type I cells. Transport and barrier properties of pulmonary alveolar epithelium.