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Stem cell treatments for lung disease

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Cell therapy has the potential to cure disease through replacement of malfunctioning cells. While the tissue stem cell (TSC) is thought to be the optimal therapeutic cell, transplantation of TSC/progenitor cell mixtures has saved lives. We previously purified the mouse tracheobronchial epithelial TSC and reported that *in vitro* amplification generated numerous TSC. However, these cultures also contained TSC-derived progenitor cells and TSC re-purification by flow cytometry compromised TSC self-renewal. These limitations forced us to determine if a TSC/progenitor cell mixture would repopulate the injured airway epithelium. We developed a clinically-relevant transplantation protocol and demonstrate that transplanted mouse and human tracheobronchial epithelial TSC/progenitor cell mixtures are 20-25% of airway epithelial cells, actively contribute to epithelial repair and persist for at least 43 days. Two weeks after transplantation, TSC/progenitor cells differentiated into the three major epithelial cell types: Basal, secretory, and ciliated. We concluded that adult tracheobronchial TSC/progenitor cell is an effective cell therapy.

Biography

Susan D Reynolds has completed her PhD in 1992 from the University of Rochester with a Specialization in Developmental Biology and Post-doctoral studies in Lung Stem and Progenitor Cell Biology from the University of Rochester, School of Medicine. She is currently a Principal Investigator at Nationwide Children's Hospital. She has published more than 70 papers in reputed journals and has been serving as a Reviewer for multiple scientific journals and granting agencies.

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