Conventional treatments for bronchiolitis obliterans syndrome (BOS) and systemic sclerosis associated interstitial lung disease (SSC-ILD) are poorly effective due to insufficient drug accumulation into the lung, limited efficacy and high toxicity. We have already demonstrated in vitro that drugs loaded into specifically targeted gold nanoparticles (GNP), coated with an antibody which recognizes diseased cells, were more effective in inhibiting their target cells in vitro and did not affect normal airway epithelial cells. The same GNPs administered to normal mice by inhalation, were selectively localized in the lungs with no toxicity to any other organs. When we tested GNPs on a mouse model of pulmonary fibrosis by local delivery, these nano-vectors were effective in preventing pulmonary fibrosis. However, long-term treatment may result in accumulation of GNPs in lung macrophages, suggesting that chronic administration may cause excessive storage of gold in the alveoli. Therefore, we aim in this project to engineer novel, fully biocompatible, targeted nano-vectors made of lipids (liposomes) that would be safely and repeatedly administered by inhalation.