

LTRC Concept Sheet # 09-01-0002

Dendritic Cell Gene Expression in COPD

ABSTRACT

In ongoing studies performed in collaboration with Dr Andrew Limper MD, we have identified that COPD is associated with accumulation of dendritic cells. Utilizing immunohistochemistry on previously acquired COPD and control tissues from the LTRC, we performed quantitative measures of expression for both CD83 and CD1a - cell surface markers restricted to mature dendritic cells and Langerhans cells respectively - and identified a statistically significant increase in CD83+ staining cells in COPD tissues compared to control tissues (Mann Whitney U $p=0.049$). The extent of CD83 staining on tissue slides correlated highly with intensity of CD1a expression (Spearman R 0.566, $p=0.002$). Quantitative total tissue expression of CD1a did not show a statistically significant difference between control and COPD tissue (Mann Whitney U $p=0.301$).

A potential limitation of those studies relates to the use of immunohistochemical techniques used to identify dendritic cells, which may have some limitations in specificity. To determine with greater specificity whether COPD is associated with accumulation of dendritic cells, we wish to determine the level of Langerin gene expression in COPD tissues compared to controls. Langerin is specifically expressed by epithelial and airway-associated dendritic cells (Langerhans cells). RNA will be extracted from tissue samples using standard techniques, and Langerin mRNA levels will be measured using quantitative PCR and normalized to an actin internal control. These studies will provide important insight into the potential role of dysregulated immunity in COPD.