Cellular crosstalk linked to lung disease

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Crosstalk between cells lining the lung (epithelial cells) and airway smooth muscle cells is important in lung development. However, it has also been shown to contribute to several lung diseases, including asthma and pulmonary hypertension.

A team of researchers, at the University of Pennsylvania, Philadelphia, has now molecularly characterized one crosstalk pathway in mice, providing potential new therapeutic targets for treating individuals with lung diseases, such as asthma and pulmonary hypertension, which are caused, at least in part, by affects on airway smooth muscle cells.

The team, led by Edward Morrisey and Ethan David Cohen, used numerous in vivo gain- and loss-of-function approaches to demonstrate that a Wnt7b/Tnc/Pdgfr crosstalk pathway was important for mouse smooth muscle development, with Wnt7b being exclusively expressed by lung epithelial cells and Pdgfr being expressed by the developing airway smooth muscle cells. Importantly, expression of the components of this crosstalk pathway was upregulated in a mouse model of asthma and humans with pulmonary hypertension, thereby indentifying the Wnt/Tnc/Pdgfr crosstalk pathway as important in both lung development and adult lung disease.

More information: Wnt signaling regulates smooth muscle precursor development in the mouse lung via a tenascin C/PDGFR pathway, Journal of Clinical Investigation, www.jci.org/

Source: Journal of Clinical Investigation