European Respiratory Society
Annual Congress 2012

Abstract Number: 4924

Publication Number: P3759

Abstract Group: 3.3. Mechanisms of Lung Injury and Repair

Keyword 1: Cell biology **Keyword 2:** Lung injury **Keyword 3:** Epithelial cell

Title: Proliferation of alveolar type II pneumocytes is stimulated by Jagged-1 in vitro

Mr. Rainer 16769 Zembacher rainer.zembacher@student.i-med.ac.at [1], Dr. Susanna 16770 Desole susanna.desole@i-med.ac.at MD [1], Ms. Caroline 16771 Linhart Linhart.Caroline@i-med.ac.at [1], Ms. Kathrin 16772 Watzinger kathrin.watzinger@gmail.com [1] and Prof. Christian M. 16773 Kähler c.m.kaehler@i-med.ac.at MD [1]. [1] Department for Internal Medicine I - Pneumology, Medical University Innsbruck, Austria, 6020 .

Body: Notch is an ancient cell-signaling system that regulates the specification of cell fate. Recently, Notch was found to confer antigen presenting cell function on mast cells, induce histamine release in human basophils and regulate migration and survival of eosinophils. In acute lung injury, alveolar type II cells activate macrophages, secrete soluble mediators, migrate and spread in response to the injury. Additionally, Notch stimulated myofibroblast differentiation and migration of cultured RLE-6TN cells. However, until now, nothing is known on the role of Notch activation regarding proliferation of rat alveolar type II cells. Rat alveolar type II cells (RLE 6TN) were obtained from the American Type Culture Collection (ATCC no. CRL-2300; Manassas, VA, USA) and were cultured in DMEM/Ham's F12 containing 10% fetal calf serum and L-glutamine. Cell proliferation was measured by direct cell count and the fluorometric proliferation assay EZ4U basing on tetrazolium salt reduction. Cells were incubated with the test substances in medium containing 0.5% fetal calf serum for 24h at 37°C and 5% CO_2. Jagged-1 significantly stimulated proliferation of alveolar epithelial cells within a wide concentration range [5µg/ml to 100pg/ml]. The maximum effect was observed at 100ng/ml. To show specificity of the observed effect, rat alveolar type II cells were preincubated (45 min) and co-incubated with the specific gamma secretase inhibitor DAPT [10^{-4} M] which completely abolished the effect of Jagged-1 [ng/ml]. Herewith, we report for the first time that the Jagged-1/Notch signalling pathway is affecting rat alveolar type II cell proliferation in vitro.