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Title: ADAM33 protein found in bronchial brushings and biopsies is increased in bronchial carcinomas

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Body: Background The asthma and COPD susceptibility gene, ADAM33, is selectively expressed in mesenchymal cells and the activity of soluble ADAM33 has been linked to angiogenesis and airway remodeling. Aims We hypothesized that ADAM33 mRNA & protein are differentially expressed in bronchial biopsies from healthy airways and bronchial carcinomas. Methods Paired primary bronchial fibroblasts (n=4) from healthy and tumor tissue were grown +/-TGFβ2 to induce myofibroblast differentiation. Fibroblasts, bronchial biopsies (n=12) and brushings (n=12) were analysed for ADAM33 expression using quantitative RT-PCR and western blotting. Immunohistochemistry for ADAM33 was performed on bronchial biopsies. Results TGFβ2 caused induction of α-SMA and suppression of ADAM33 mRNA expression in normal and tumor fibroblasts. ADAM33 mRNA expression tended to be decreased in tumor biopsies whereas ADAM33 protein expression was significantly increased (bands of 45 and 75 kDa). In bronchial brushings ADAM33 mRNA was not detectable. However, there was a single band at ~75kDa for ADAM33 and also specific staining for ADAM33 in the epithelium of bronchial biopsies. Conclusions Similar to cells from healthy and asthmatic volunteers TGFβ suppressed expression of ADAM33 mRNA in normal and tumor fibroblasts. ADAM33 protein was increased in bronchial tumor biopsies suggesting potential roles in tumorigenesis and growth. The presence of ADAM33 protein in bronchial brushings and biopsies in the absence of ADAM33 mRNA expression in brushings suggests that the mesenchyme is the source for ADAM33 protein in the epithelium. * R.M. was supported by an ERS short-term research training fellowship in 2010/2011 in Southampton, UK.