# European Respiratory Society
# Annual Congress 2013

**Abstract Number:** 7073

**Publication Number:** 1520

**Abstract Group:** 12.3. Genetics and Genomics

**Keyword 1:** Epigenetics **Keyword 2:** Airway smooth muscle **Keyword 3:** Asthma - mechanism

**Title:** The long intergenic non-coding RNA, PVT1, regulates the TGF-β-induced proliferative response in airway smooth muscle cells from severe asthmatics

Dr. Mark 793 Perry m.perry@imperial.ac.uk [1], Mr. Phillip 794 Austin philip.austin12@imperial.ac.uk [1], Prof. Ian 795 Adcock ian.adcock@imperial.ac.uk [1] and Prof. Kian 796 Fan Chung f.chung@imperial.ac.uk [1]. [1] Airway Disease, NHLI, Imperial College London, London, United Kingdom, SW36LY .

**Body:** Rationale Only 2% of the nucleotides in the human genome code for protein. The overwhelming majority of the human genome is transcribed into non-coding RNA that are divided into house-keeping, short and long non-coding RNA (lncRNA), with the majority being lncRNAs (>200 nucleotides). lncRNAs are classified according to their function and/or their position relative to the transcription of protein-coding RNA and include the antisense, pseudogenes and long intergenic non-coding RNAs (lincRNAs). Asthma is characterised by chronic airflow obstruction, chronic airway inflammation and remodelling. Airway smooth muscle (ASM) cells cultured from the biopsies of patients with asthma are of a hyperproliferative phenotype and release greater amounts of chemokines when compared to non-asthmatic subjects. We have previously found that PVT1 was differentially expressed in asthmatic ASM by TGF-β. We hypothesise that by inhibiting this lincRNA in ASM cells from severe asthmatics, we may reverse the hyperproliferative phenotype. Methods Human ASM cells were transfected with a pool of siRNAs designed to target PVT1. Cells were then stimulated with TGF-β. Cellular proliferation and IL-6 release were measured by BrdU incorporation and ELISA, respectively. Results Inhibiting PVT1 in ASM cells from severe asthmatics reduced both the hyperproliferation and the increased IL-6 release. Conclusions This is the first time that the lincRNA, PVT1, has been demonstrated to be fundamental in controlling the hyperproliferative state of ASM cells from severe asthmatics. PVT1 may prove to be a novel target for treatment.