

P015 The anti-elastase/anti-microbial elafin regulates antigen-presenting cells and adaptive immunity in the lung
Ali Roghanian,¹ Steven E. Williams,¹ Tara A. Sheldrake,¹
Tom I. Brown,¹ Karen Oberheim,¹ Zhou Xing,²
Sarah E.M. Howie,¹ and Jean-Michel Sallenave¹
¹MRC Centre for Inflammation Research, Queen's Medical
Research Institute, Edinburgh University, UK; and ²Centre for
Gene Therapeutics, McMaster University, Canada

Elafin has multiple important roles at sites of inflammation. These include anti-protease and anti-microbial activity as well as modulation of the response to LPS stimulation. Elafin is secreted predominantly at mucosal sites, and is up-regulated by alarm signals such as LPS and early cytokines. We show here that elafin also increases adaptive immunity in the lung. By over-expressing human elafin in lungs of WT mice and using elafin transgenic mice, we show that this molecule is able to significantly increase the number of pulmonary antigen presenting cells (APC), with increased levels of co-stimulatory molecules (CD80 and CD86), *in vivo*. Elafin over-expression also increased the levels of type 1-biased antibodies and cytokines (IgG2a, IL-12 and INF- γ) in the lung and spleen. Furthermore, over-expression of elafin in the lung was able to vaccinate mice against further challenge with Ad-LacZ, as assessed by antibody levels and neutralisation titers, as well as LacZ expression in lung tissue. These findings demonstrate for the first time that the pleiotropic molecule elafin has significant potential in mucosal vaccination strategies.