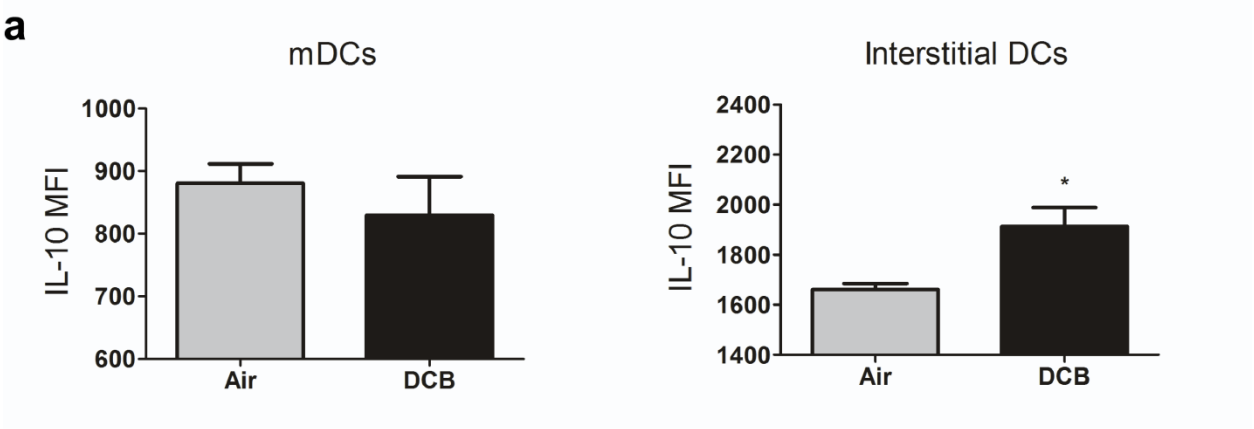

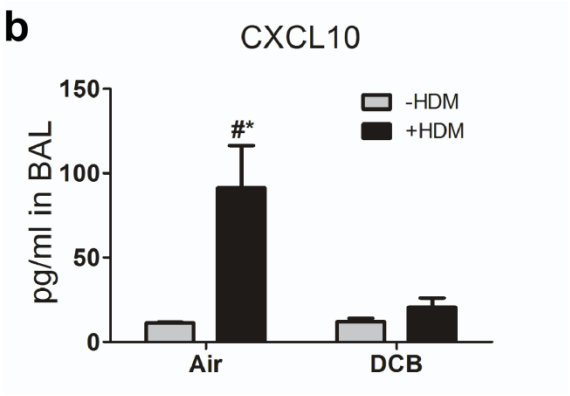

Figure S1: IL-10 responses in DC subsets and CXCL10 expression in BAL. (**a**) Expression of IL-10 in DCs ($CD11c^{+}$ $F4/80^{-}$) further subdivided into mDCs ($MHCII^{hi}$ $CD11b^{+}$) and interstitial DCs ($MHCII^{hi}$ $CD11b^{-}$). All DC expression measured by flow cytometry. Data plotted as means ± SEM. *p<0.05 vs control; t-test. (**b**) Levels of CXCL10 chemokine in BAL measured by multiplex assay (Millipore). Data plotted as means ± SEM. *p<0.05 compared within ±DCB exposure group, #p<0.05 compared within ±HDM groups; Two-way ANOVA with Bonferroni post-tests.

Supplemental Methods

Particle mass median aerodynamic diameter (MMAD) characterization

The aerosol droplet size distribution and number density of the airborne CDPM in our animal exposure chamber were determined with a Differential Mobility Analyzer (TSI Electrostatic Classifier Model 3080L) coupled to an Ultra-fine Condensation Particle Counter (TSI UCPC Model 3776). MMAD of aerosolized particles was 287.9 ± 12.52 nm. All flows were maintained and calibrated with a DryCal DC-2 (Gilibrator).

Use of Multiple Path Particle Dosimetry (MPPD) to calculate human equivalent concentration from a mouse exposure scenario

Human modeling data from the MPPD program (version 2.0) using the 5-Lobe symmetric model in a nasal breather under constant exposure were selected. Mouse modeling data were obtained from the literature and the default rat lung data overwritten to correct for the mouse physiological parameters. The mouse parameters used are summarized below:

a. Functional residual capacity = 0.25 ml (Bozanich, Janosi et al. 2007)
b. Assumed upper respiratory tract volume = 0.01 ml
c. Breathing frequency = 150 breaths/min as measured by our lab in unconscious mice of this age
d. Tidal volume = 0.25 ml (Hsieh 1999)
e. Inspiratory fraction = 0.83 (van Schaik, Enhorning et al. 1998)
f. Number of rat lung branches = 24,039. (Metzger, Klein et al. 2008) suggest there are 5,051 branches in a developing mouse lung. Therefore, rat values were adjusted by this factor (24,039 / 5,051)
g. Determine the number of alveoli in the mouse lung. We assume that terminal bronchioles in the rat and mouse lungs divide into the same number of alveoli on average. We have good estimates for the number of terminal bronchioles in the rat (Raabe, Boyd et al. 1975) and mouse (Oldham and Robinson 2007). With knowledge of the total number of alveoli in the rat (~$2x10^7$) (Hyde, Tyler et al. 2004), we can estimate the number of alveoli in the mouse lung by correcting for the difference in the number of terminal bronchioles between the two species. (1,582 / 2,404) x ($2x10^7$) = ~$1.3x10^7$

Eventually, the target aerosol concentration was found which yields results that closely match the dose metrics predicted by the mouse model. This target concentration is the human equivalent concentration for the given dose metric of interest.

Bozanich, E. M., T. Z. Janosi, et al. (2007). "Methacholine responsiveness in mice from 2 to 8 wk of age." J Appl Physiol **103**(2): 542-546.

Hsieh, C. L. (1999). "In vivo activity of murine de novo methyltransferases, Dnmt3a and Dnmt3b." Mol Cell Biol **19**(12): 8211-8218.

Hyde, D. M., N. K. Tyler, et al. (2004). "Total number and mean size of alveoli in mammalian lung estimated using fractionator sampling and unbiased estimates of the Euler characteristic of alveolar openings." Anat Rec A Discov Mol Cell Evol Biol **277**(1): 216-226.

Metzger, R. J., O. D. Klein, et al. (2008). "The branching programme of mouse lung development." Nature **453**(7196): 745-750.

Oldham, M. J. and R. J. Robinson (2007). "Predicted tracheobronchial and pulmonary deposition in a murine asthma model." Anat Rec (Hoboken) **290**(10): 1309-1314.

Raabe, O. G., H. A. Boyd, et al. (1975). "Development and use of a system for routine production of monodisperse particles of 238 PuO2 and evaluation of gamma emitting labels." Health Phys **28**(6): 655-667.

van Schaik, S. M., G. Enhorning, et al. (1998). "Respiratory syncytial virus affects pulmonary function in BALB/c mice." J Infect Dis **177**(2): 269-276.