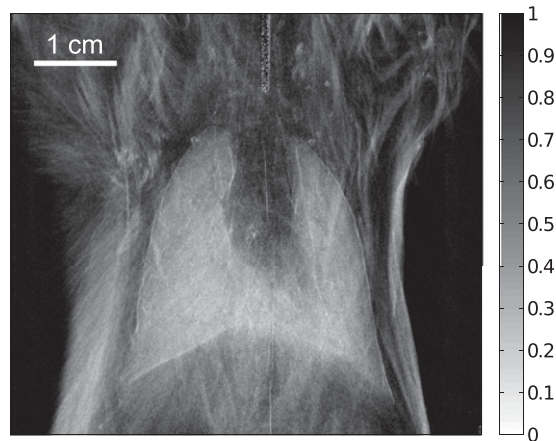


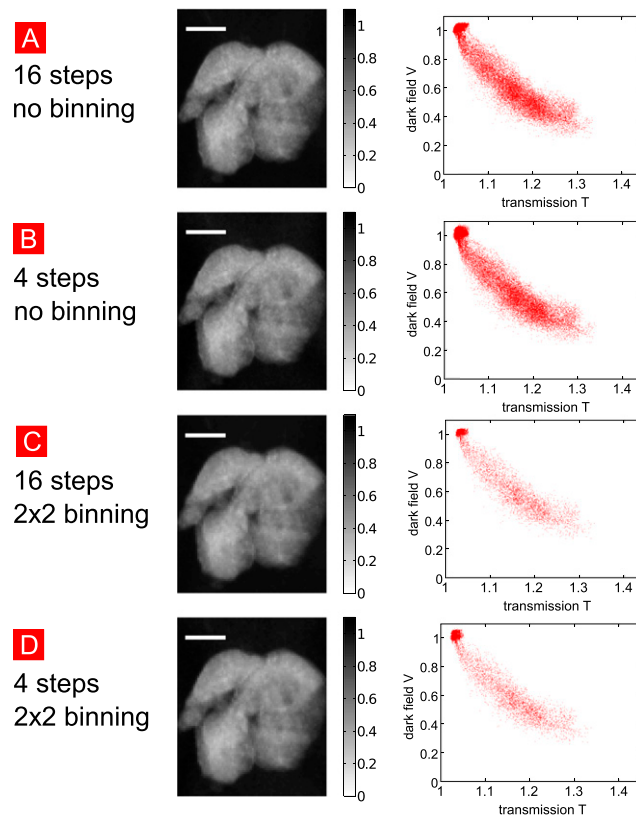
# Supporting Information

Schleede et al. 10.1073/pnas.1206684109



**Fig. S1.** Ex-vivo mouse in which the lung was inflated with 800  $\mu\text{L}$  of air. The image shows a dark-field projection scaled from 0.0 to 1.0, which was taken at a grating-based X-ray tube setup operated at 28 kVp (1). The strong dark-field signal from the lung is not significantly degraded by the overlying structures, such as the ribs and the spine, indicating improved contrast is obtained by dark-field imaging of lungs, even in situ. The animal was half covered by a gel (right half of image) to reduce the scattering signal from the fur.

1. Tapfer A, et al. (2011) Development of a prototype gantry system for preclinical x-ray phase-contrast computed tomography. *Med Phys* 38(11):5910–5915.



**Fig. S2.** Demonstration of dose reduction through decrease of statistics in oversampled dataset. A comparison of dark-field image and scatter plot for single projections of an emphysematous lung is shown using (A) full dataset, (B) only four of the measured 16 phase steps, (C)  $2 \times 2$  binning, and (D) a combination of  $2 \times 2$  binning and four phase steps, resulting in 1/16 of the dose reported for the full dataset. (Scale bars: 5 mm.)