



**Supplementary Figure 9:** Lobe-specific LRT deposition probability heatmaps based on the number of total inhaled (3y-child, 8y-child, 21y-adult) particles. For lobe-specific analysis, four count median diameters diameter (CMD 1 - 4) for expiration activity vocalization and breathing (0.8 μm, 1.8 μm, 3.5 μm, 5.5 μm) were considered. As lobes have different numbers of generations, the sub-structures were aligned. Common structures are indicated on the far left. Probability is color-coded. Probability of deposition is depicted (A) unweighted, (B) weighted by relative abundance in the exhalation plume (CMD 1 - 4: 72.8 %, 21.0 %, 2.2 %, 3.4 %) and (C) as inoculum quantum heatmap, compensated for age-specific respiratory minutes volume.