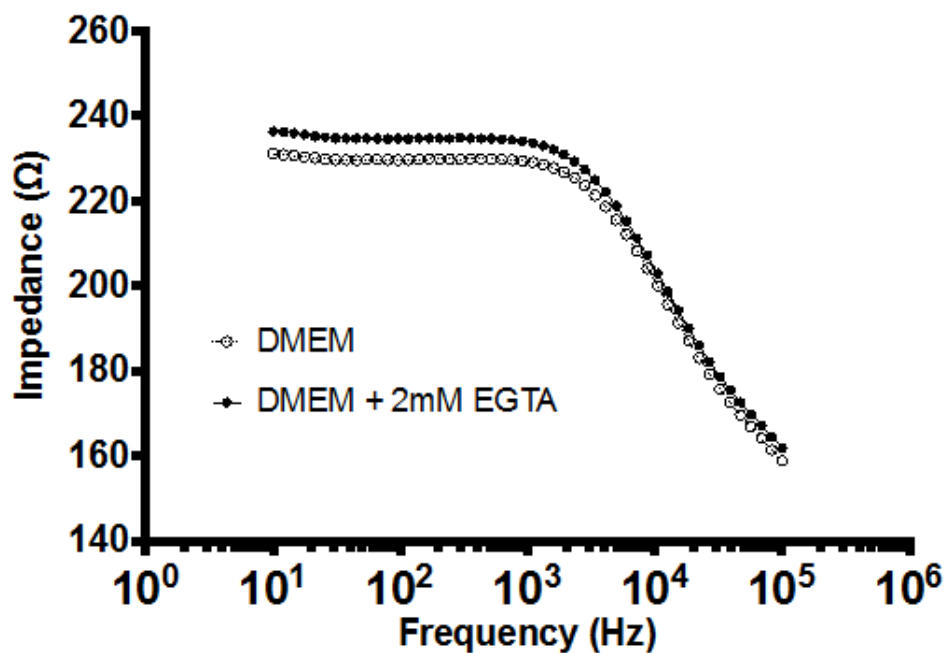
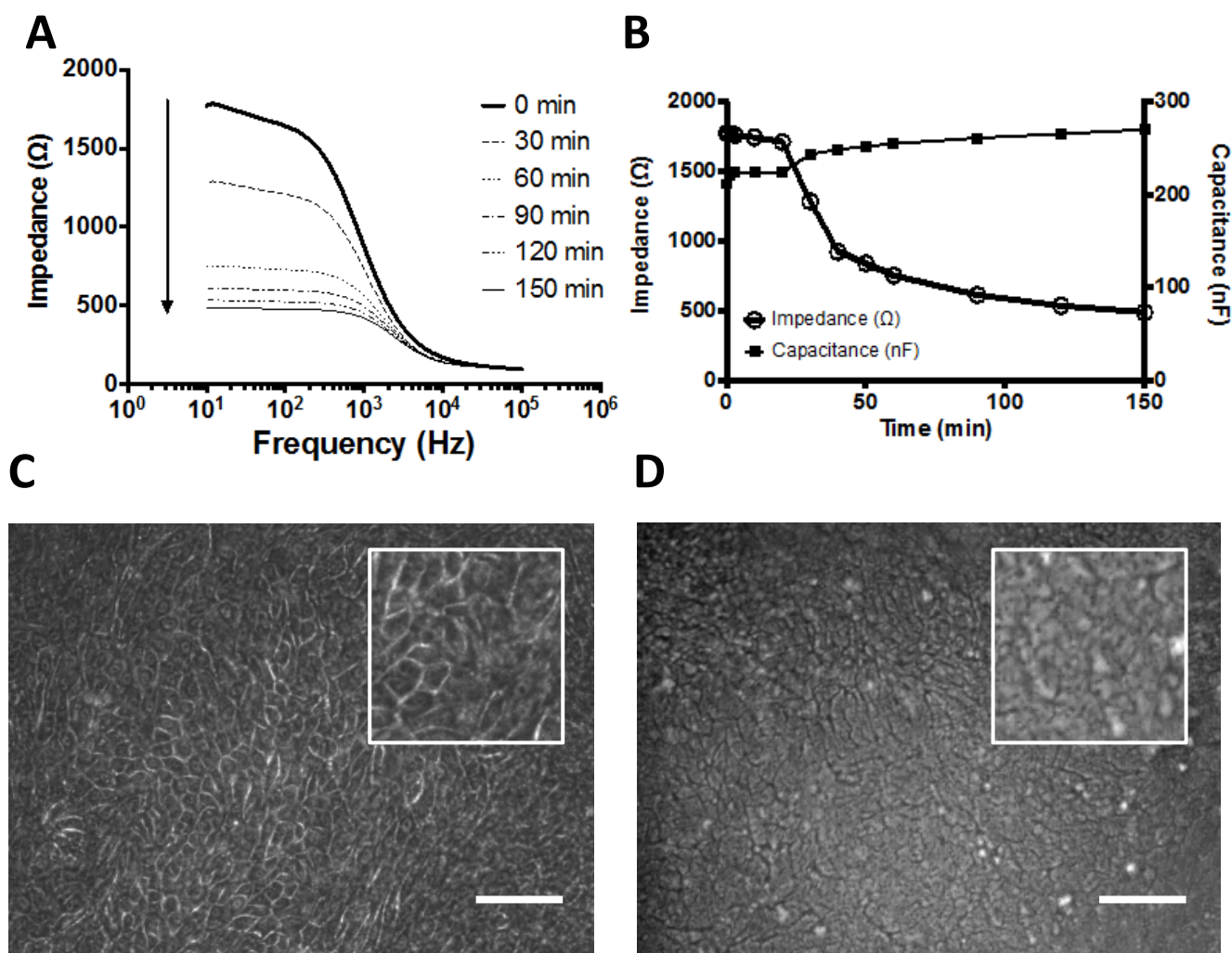


Supplementary Figure S1 - Impedance response recorded for solutions of varying conductivity (DMEM culture medium versus 1, 10 or 100 mM NaCl).



Supplementary Figure S2 - Background electrochemical impedance spectroscopy in DMEM culture medium in the presence and absence of 2 mM EGTA.



Supplementary Figure S3 – **A**. Overlay of impedance values recorded during exposure of the Airway-on-Chip to 2 mM EGTA at different time points post treatment (N=2 chips/condition). **B**. TEER and capacitance values extracted from **A**. recorded over the course of the experiment. Phase contrast image of well differentiated human primary airway epithelial cells (**C**) before and (**D**) after treatment with 2mM EGTA (original magnification, x20; scale bar: 100 μ m).