

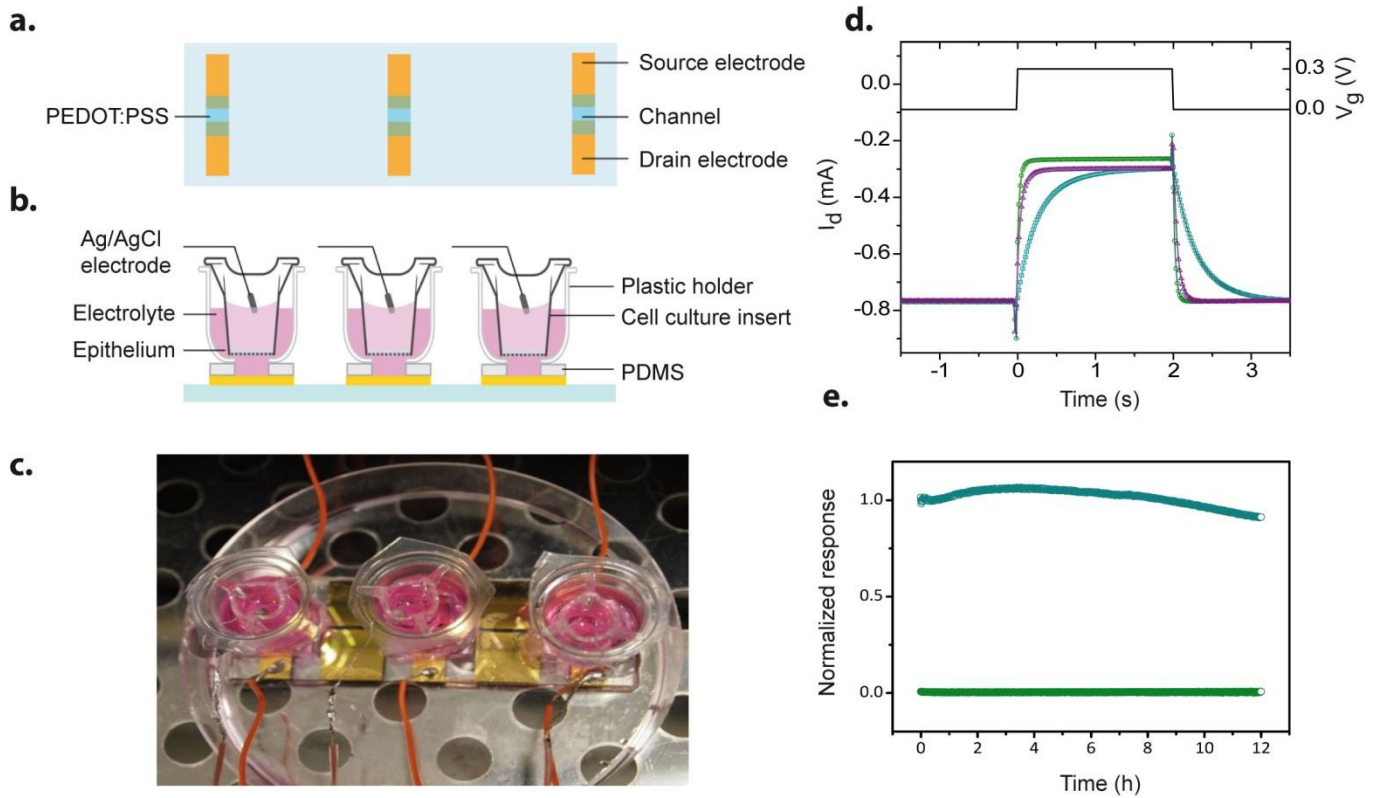


Figure 1: Layout, set-up and characterization of OECT integrated with polarised epithelia. (a) Layout of three OECT devices fabricated on a single glass slide. (b) Cartoon of the 3 OECTs fabricated on the same glass slide integrated with Caco-2 cells grown on Transwell filters. (c) Picture of the multiplex device shown on a Petri dish inside the cell-culture incubator. The cell culture insert is shown suspended in the plastic holder affixed to the glass slide. The Ag/AgCl gate electrode is shown immersed in the apical media, while source and drain cables are attached to their respective positions on the glass slide. (d) OECT current response (green) to a square gate pulse ($V_{GS}=0.3V$), OECT with cells (blue) and OECT with cells after scratch (purple). (e) Normalized response of OECT alone (green) and OECT with cells (blue) for long term device operation. Results shown are from representative devices.

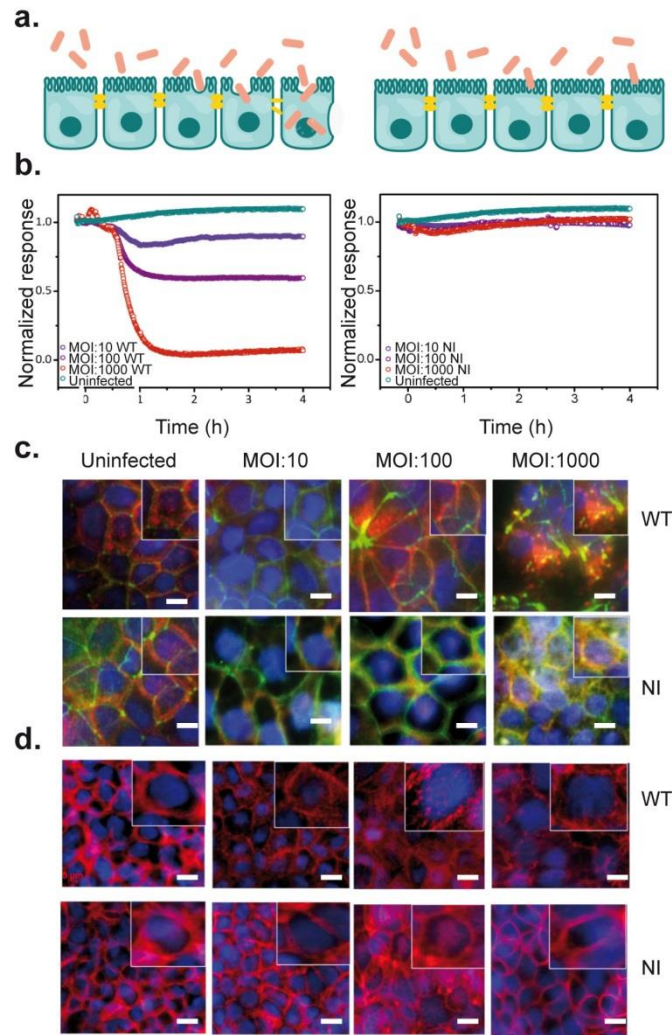


Figure 2: Kinetics of polarized epithelial monolayer infected with *Salmonella typhimurium* (a) Cartoon illustrating infection with WT (left) and NI *Salmonella typhimurium* (right). (b) Mean normalized response of the OECT in the presence of WT (left) and NI *Salmonella typhimurium* (right) at different MOI over 4h, bacteria were added at $t=0$. Non-infected represents OECT + cells with no added bacteria. (c) For clarity individual experiments are shown here, however mean data from multiple experiments with error bars is shown in the supplementary information (Figure S3 and Figure S4). (c) Immunofluorescence of tight junction proteins ZO-1 (green) and claudin-1 (red), and the nucleus (blue) after 4h infection with WT and NI *Salmonella* at different MOI. (d) Immunofluorescence of Actin cytoskeleton (red) and nucleus (blue) after 4h infection with WT and NI *Salmonella* at different MOI.