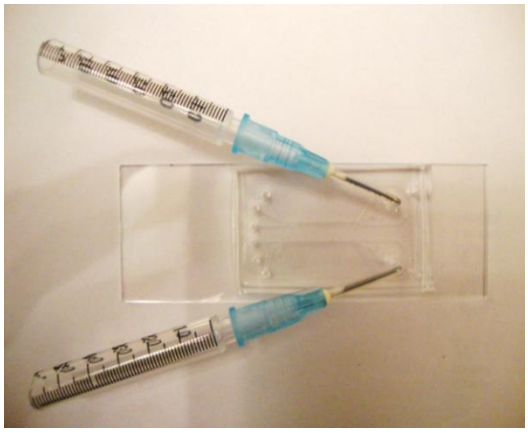
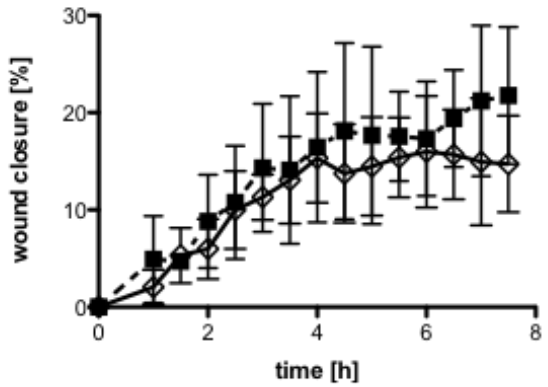
Supplementary Material (Felder M. et al.)

Microfluidic systems differ considerably from conventional cell culture flasks. A conspicuous example is the very small amount of cell culture medium needed to submerge the cells. Consequently the amount of nutrients and oxygen within the culture medium is rapidly depleted and needs to be replaced frequently. To tackle this demand the development of autonomous systems continuously exchanging the depleted medium is unavailable. Therefore, we coupled our microfluidic platform to a peristaltic pump using 0.6mm (inner diameter) Tygon tubings and to a horizontal syringe reservoir containing an adequate amount of fresh medium (Suppl. Fig. 1).



Suppl. Fig. 1*: Horizontal reservoirs used for the perfusion of the microfluidic platforms. Inlet 2, outlet 1 and outlet 3 were plugged using pipette-tip plugs, whereas Inlet 1 was connected to the horizontal syringe reservoir and outlet 2 was connected to the peristaltic pump pulling off the depleted cell culture medium.*

Innate epithelial regeneration involves three virtually independent processes, namely spreading, migration and proliferation of the remaining wound bordering cells. To further investigate the beneficial influence of HGF addition to a wounded monolayer of pulmonary epithelial cells, we pre-treated the A549 cells with mitomycin C (10µg/ml for 2.5 hours at 37°C), a chemotherapeutic antibiotic that intercalates with the cellular DNA and thereby inhibits DNA synthesis, thus completely blocks cell proliferation. Our preliminary experiment reveals that proliferation blockage efficiently reverses wound healing benefit induced by HGF addition (Suppl. Fig. 2). These findings clearly indicate that HGF predominantly exhibits its beneficial effect via induction of cellular proliferation.



Suppl. Fig. 2*: Wound closure of A549 cells pre-incubated with mitomycin C (10ug/ml), exposed to serum-free (■) and serum-free HGF supplemented (◇) medium. The data are shown as means with 95%CI (confidence intervals). (This experiment was performed using A549 cells of lower passages than assays performed in the main article. The wound-healing assays were monitored using an inverted Nikon microscope equipped with an incubator).*