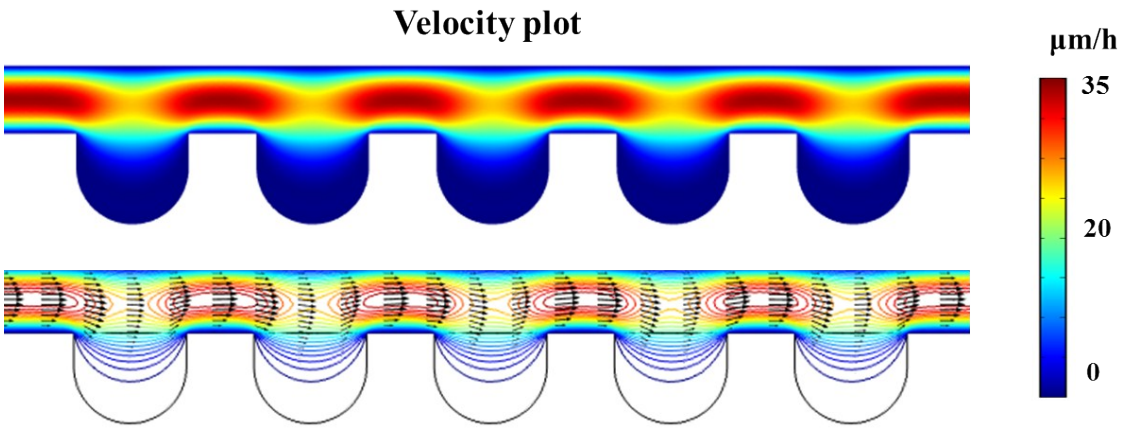

Figure S1. Simulation data of flow velocity in the microchip. For the velocity plot simulation, constant flow rate (µl/h) at the inlet and no-slip boundary condition at the walls were assigned. For the oxygen diffusion simulation, the diffusion coefficient of oxygen in the medium was regarded as that in water (3.29×10^9 m^2/s).

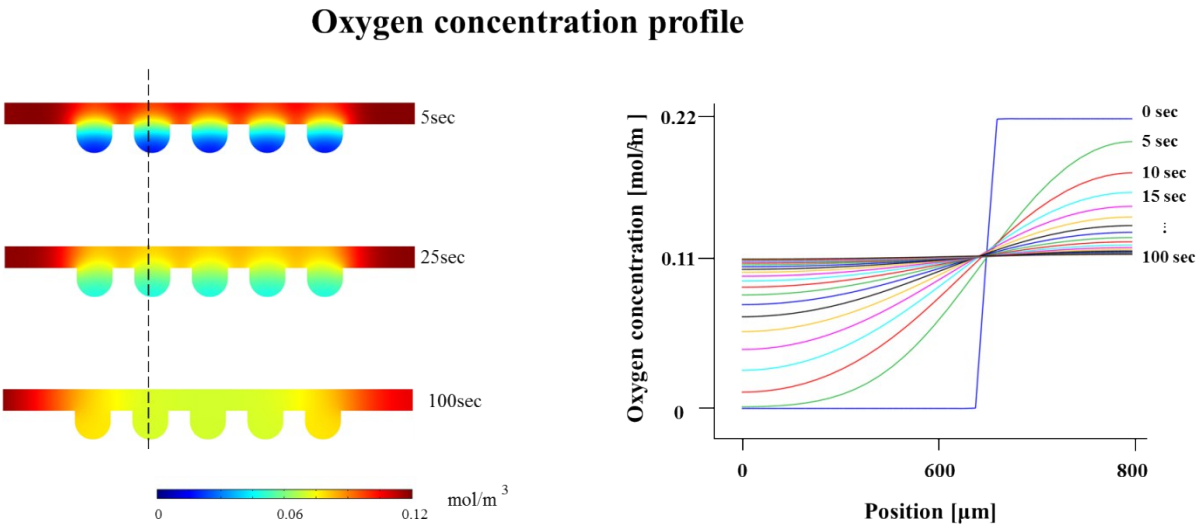

Figure S2. Simulation data of oxygen concentration profile in the microchip. The initial oxygen concentration in the medium in a horizon microchannel and the concave microwells were assumed to be 0.21 mol/m^3 and zero.

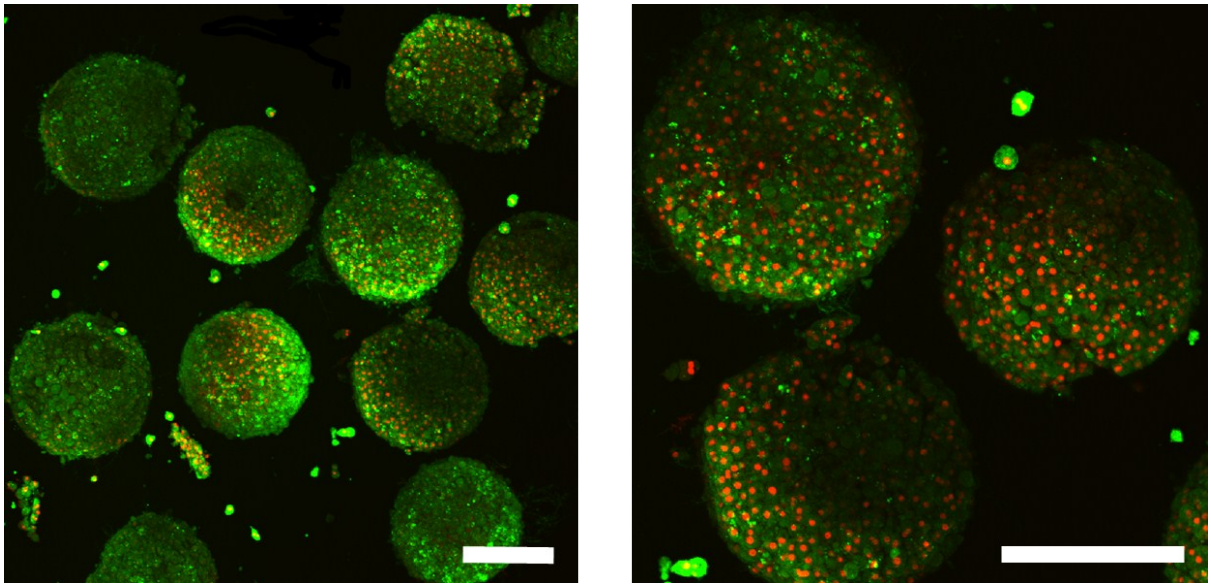

Figure S3. Confocal images of live and dead assay. Spheroids were from control group, 4 days after seeding. Viability of the spheroids were uniform regardless of the height of the microwell. Scale bars are 200μm.