Electronic Supplementary Material (ESI) for Biomaterials Science.

Supplement 1

Establishment of gut-on-a-chip with controllable oxygen gradients to study the contribution of *Bifidobacterium bifidum* to inflammatory bowel disease

Numerical simulations for the fluid shear stress experienced by the intestinal epithelial cells on the porous membrane. Viscosity (0.000862Pa.s) and density (1.0078g/cm^3) were applied for numerical simulation of shear force.

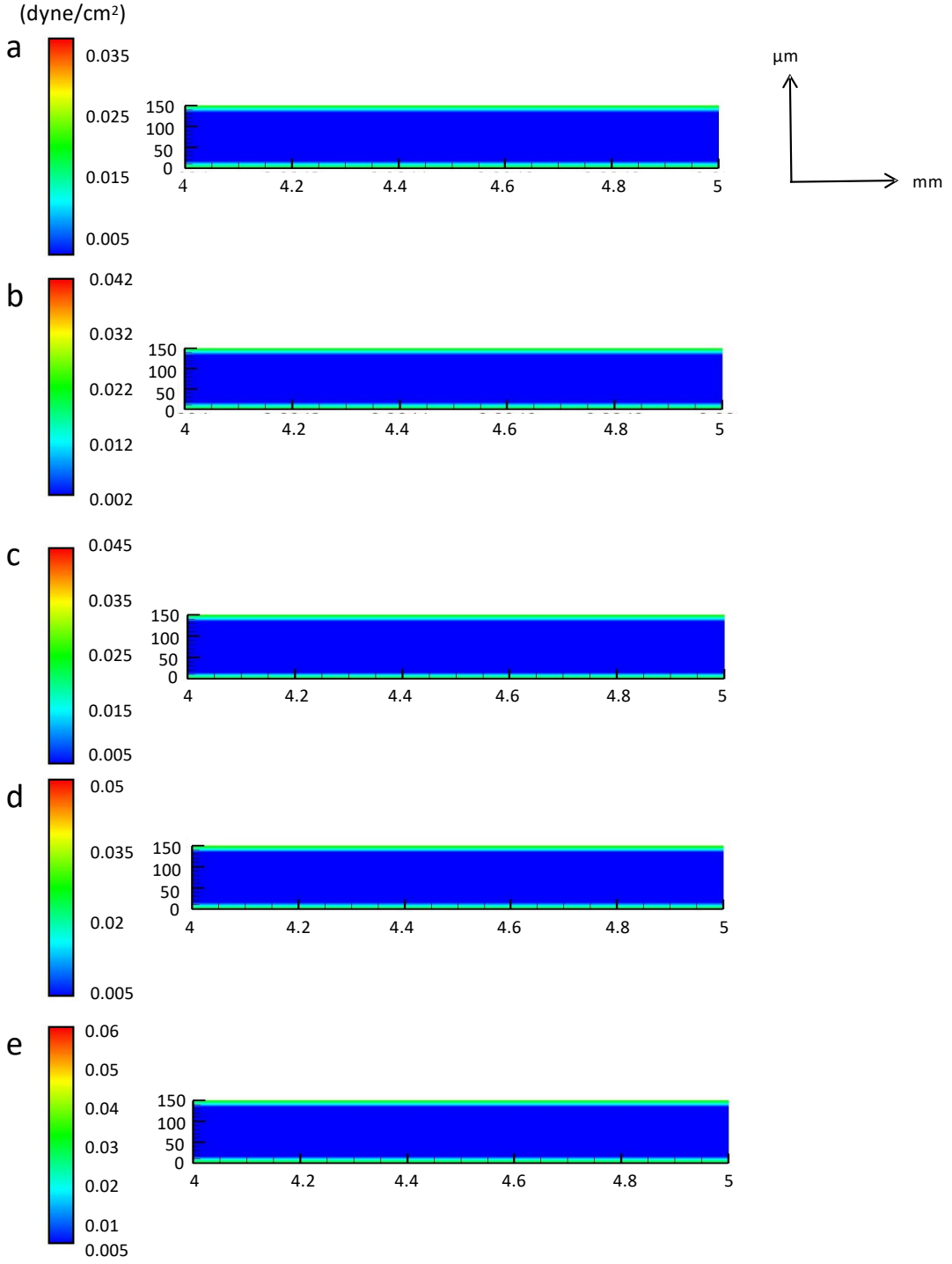

Figure S1. Shear stress experienced by the intestinal epithelial cells on the porous

membrane with the upper channel height 150 µm. Volumetric flow rates (µL/h) were 30 (a), 35 (b), 40 (c), 45 (d), 50 (e), respectively.

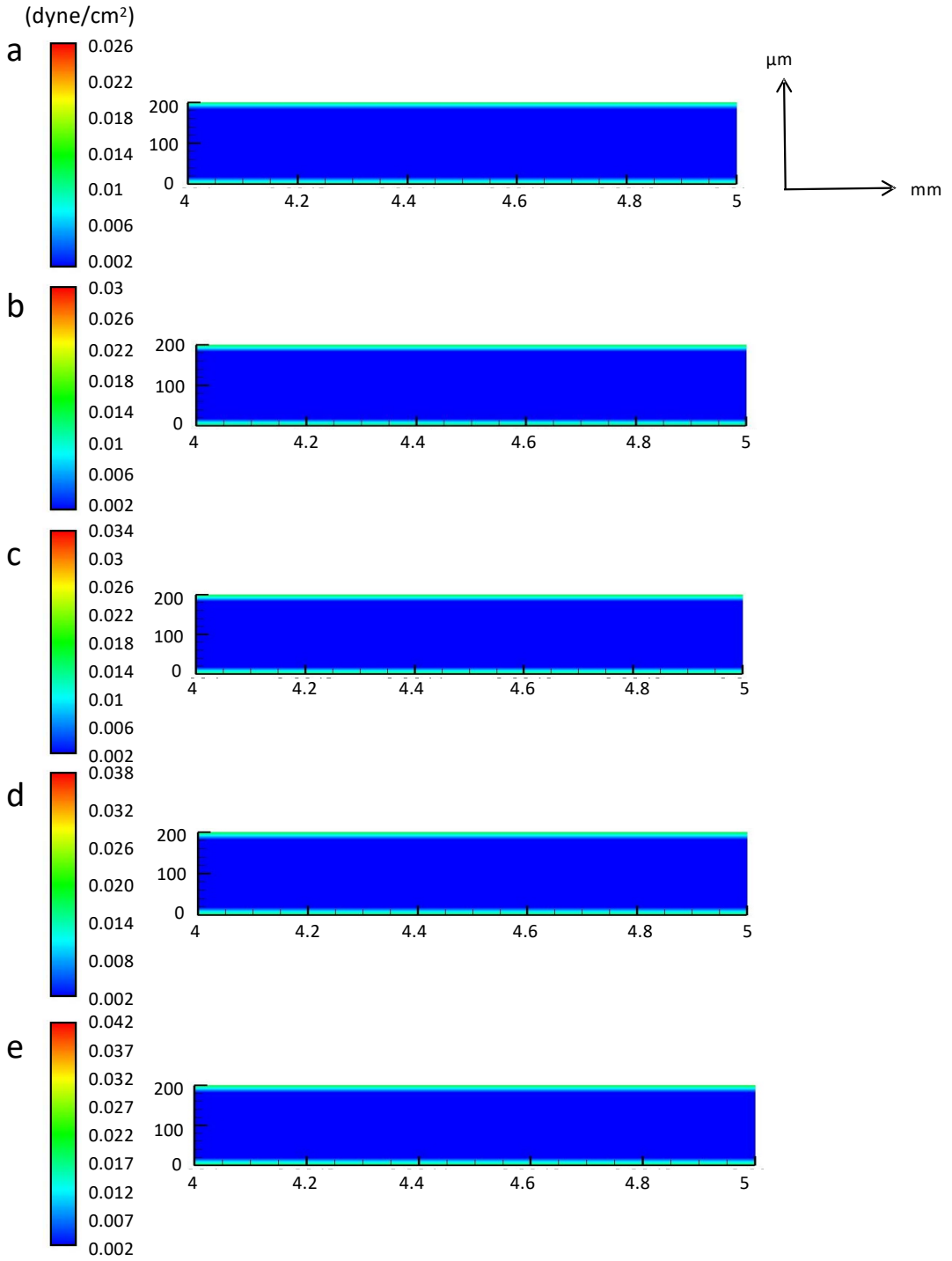

Figure S2. Shear stress experienced by the intestinal epithelial cells on the porous membrane with the upper channel height 200 µm. Volumetric flow rates (µL/h) were 30 (a), 35 (b), 40 (c), 45 (d), 50 (e), respectively.

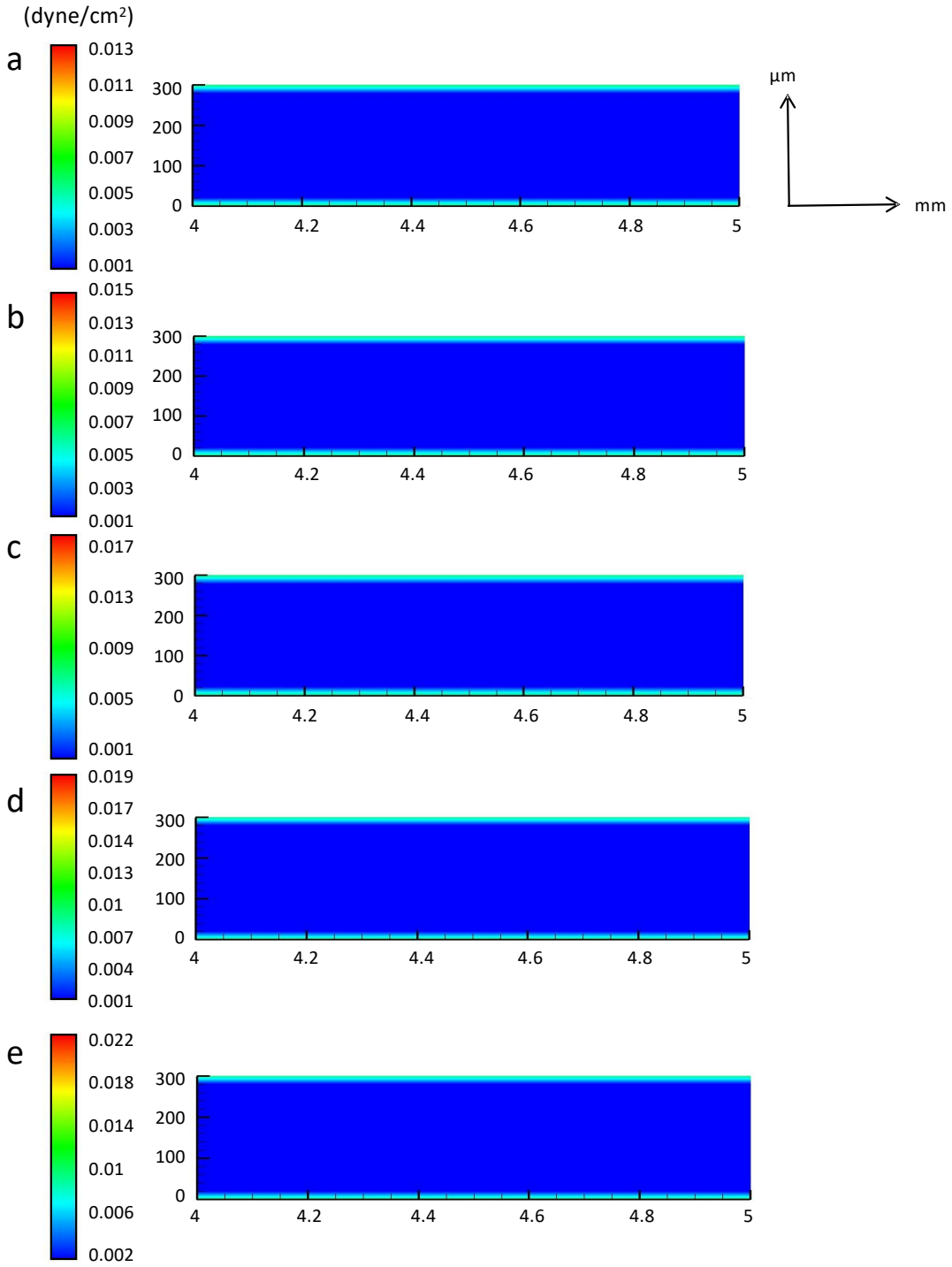

Figure S3. Shear stress experienced by the intestinal epithelial cells on the porous membrane with the upper channel height 300 µm. Volumetric flow rates (µL/h) were 30 (a), 35 (b), 40 (c), 45 (d), 50 (e), respectively.

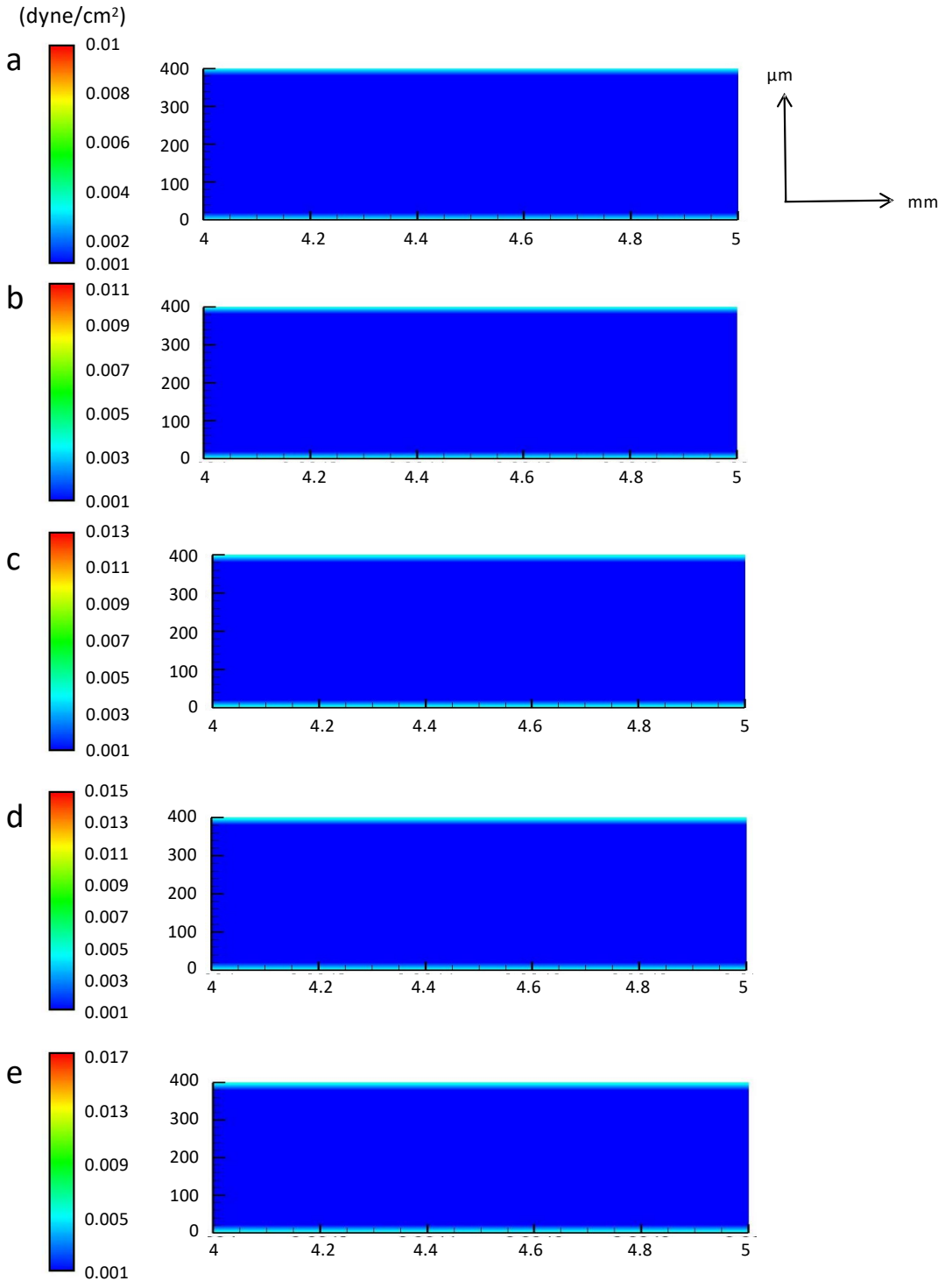

Figure S4. Shear stress experienced by the intestinal epithelial cells on the porous membrane with the upper channel height 400 µm. Volumetric flow rates (µL/h) were 30 (a), 35 (b), 40 (c), 45 (d), 50 (e), respectively.

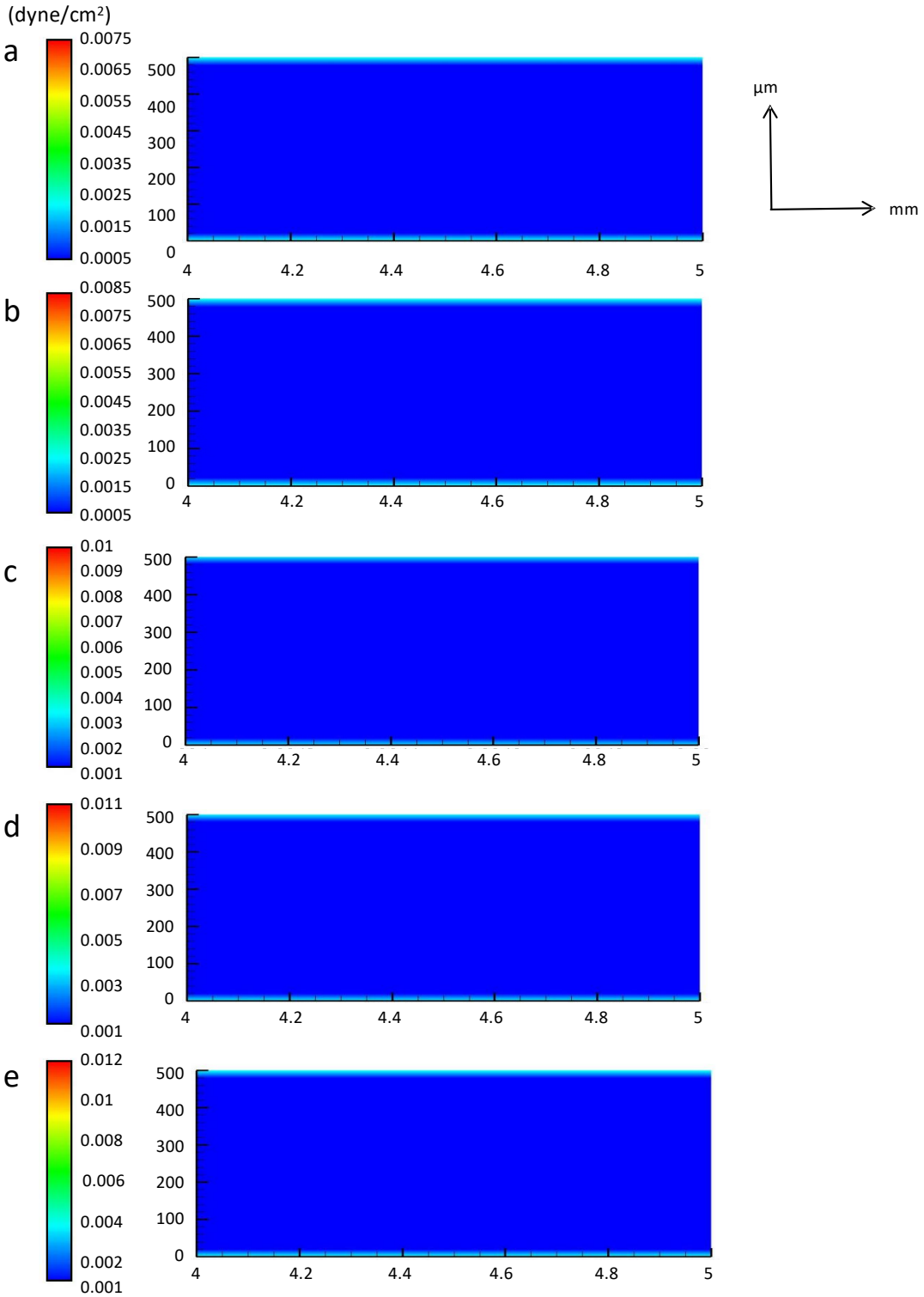

Figure S5. Shear stress experienced by the intestinal epithelial cells on the porous membrane with the upper channel height 500 µm. Volumetric flow rates (µL/h) were 30 (a), 35 (b), 40 (c), 45 (d), 50 (e), respectively.