Electronic Supplementary Material (ESI) for Lab on a Chip.

Comparison between dynamic versus static models and real-time monitoring of neuronal dysfunction in amyloid-β induced neuronal toxic model on a chip platform

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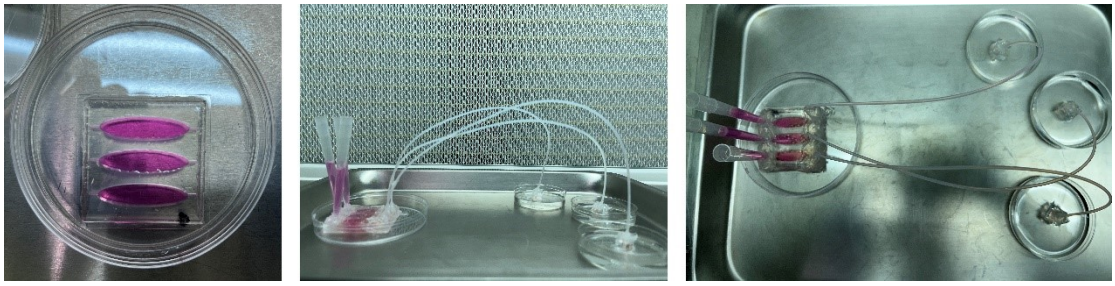
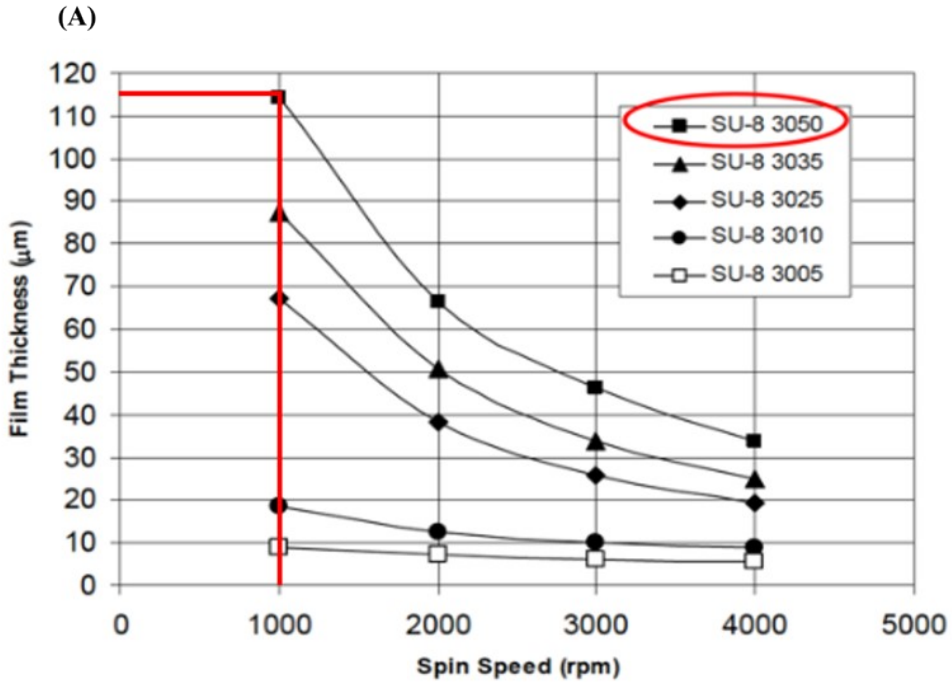
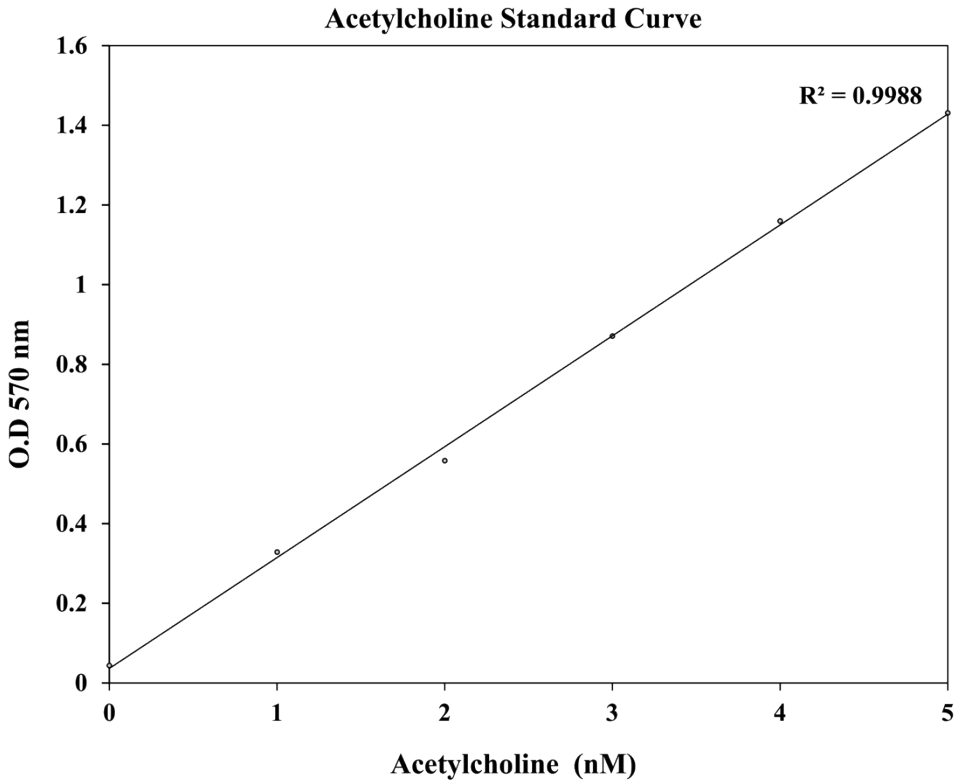


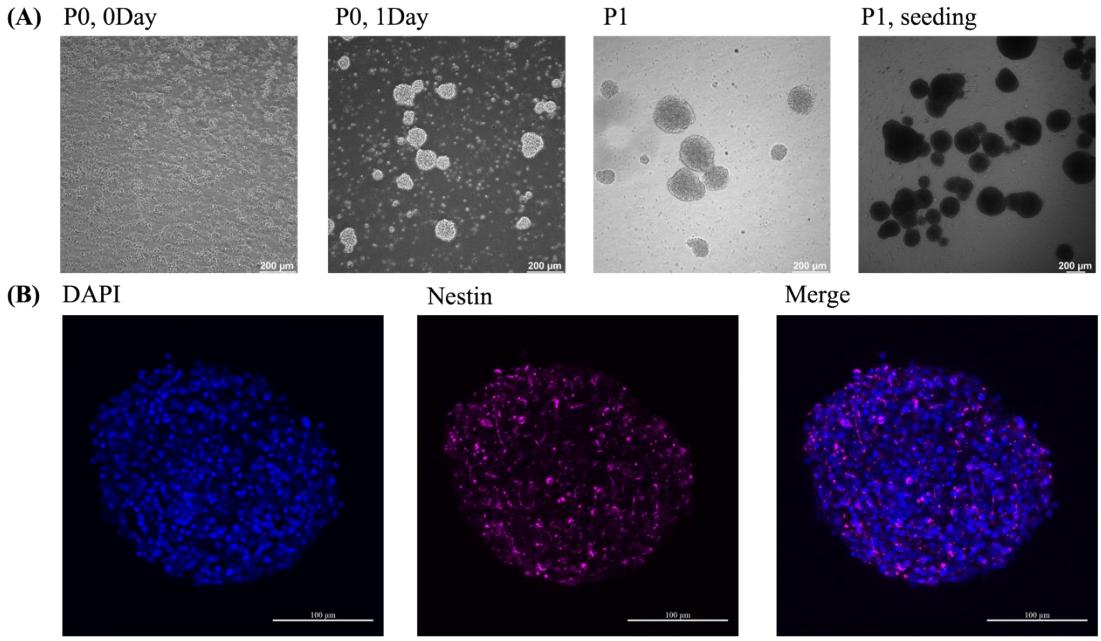
S1. Image of the experimental setup of osmotic micropump. The osmotic micropump was composed of patterned PDMS chambers. The dimensions of the PDMS chambers (10 × 10 × 10 mm) with a cellulose membrane window (5 × 5 mm) were fabricated. The optimized parameters, 0.05 M PEG, PTFE tube (inner diameter, 1.0 mm; outer diameter, 1.5 mm) and 10 ml PEG, were chosen to control the flow rate within 0.15~0.20 μL/min.



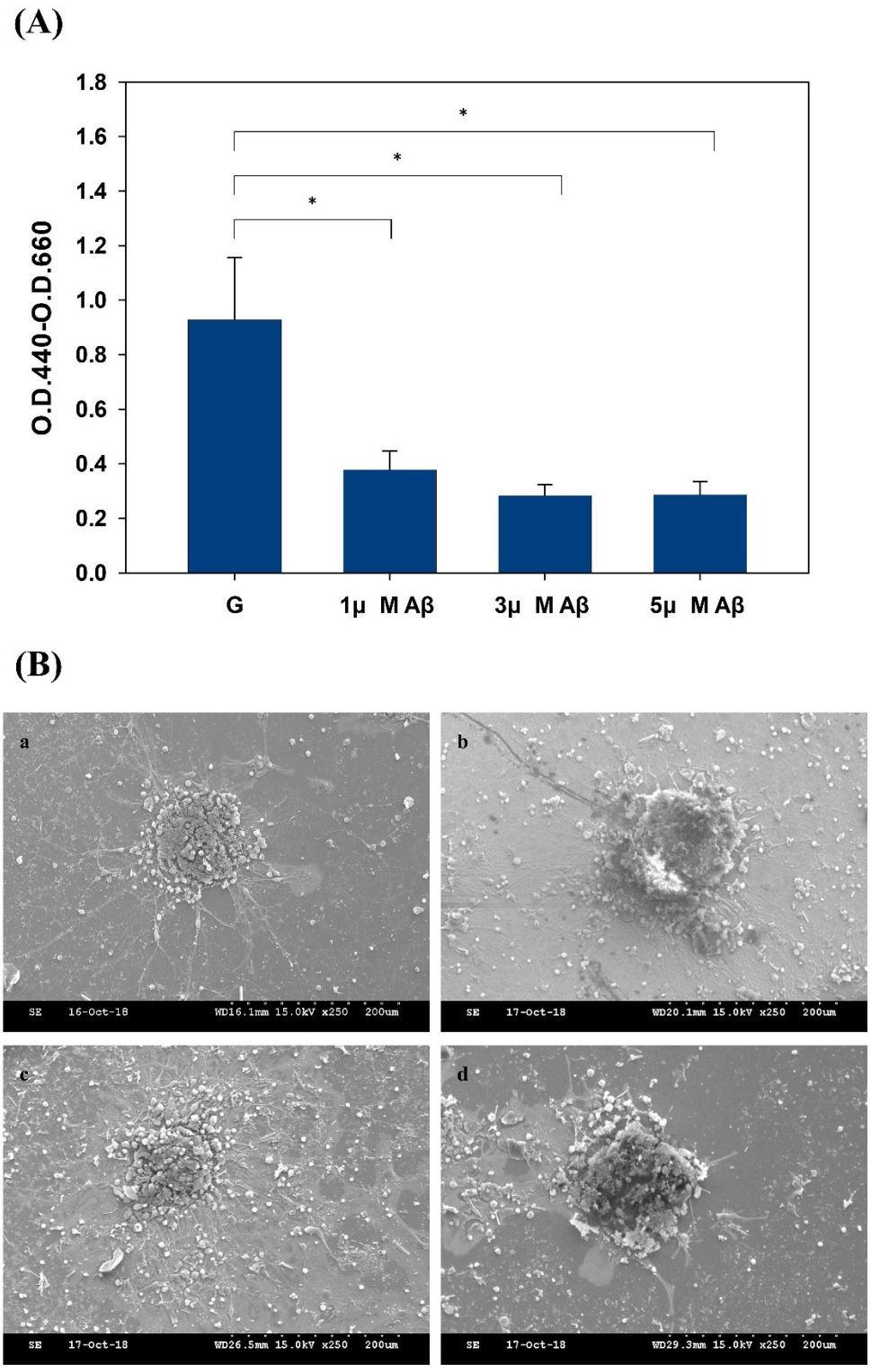
S2. (a) Thickness of different SU8 used and rotation speed.



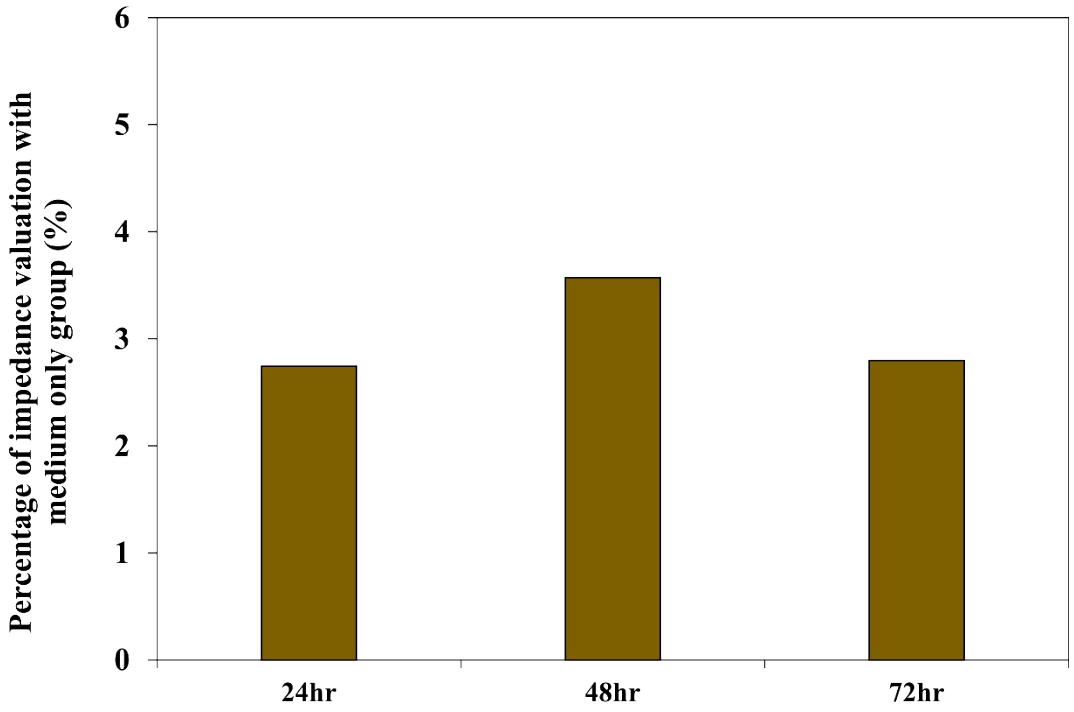
S3. Standard curve of ACh concentration versus OD value.



S4. The image of NSCs spheroid and the immunostaining of nestin. (A) Phase contrast image. (B) Nestin expression.



S5. (A) Cell viability assay of NSCs incubated with different concentrations of Aβ (1 μM, 3 μM and 5 μM) for 3 days of incubation. (B) SEM morphologies of NSCs incubated with (a) 0, (b) 1 μM, (c) 3 μM and (d) 5 μM of Aβ for 3 days of incubation.



S6. The percentage variance in impedance values relative to the control group (medium only group) in response to incubation with Aβ for durations of 1, 3, and 5 days at 37 °C under 5% CO_2 conditions.