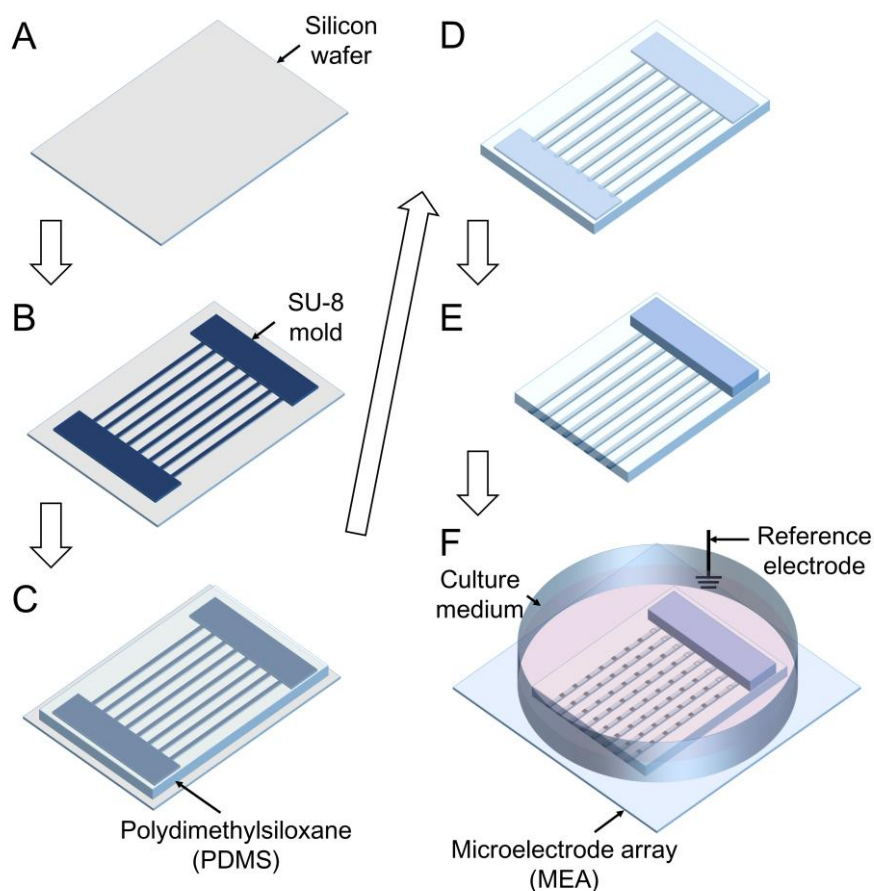


Electronic Supplementary Information



Supplementary Figure S1 Schematic images of device fabrication process. (A, B) An SU-8 mold was developed on a silicon wafer using photolithography. (C) Polydimethylsiloxane (PDMS) pre-polymer was casted on the mold and cured. (D) The cured PDMS was peeled from the mold. (E) A soma compartment was made on only one side by punching and the other side was cut off. (F) The PDMS chamber was mounted on a microelectrode array. During activity recording, a reference electrode was located in the culture medium.