

Wearable Multi-Channel Microelectrode Membranes to Reveal Injured Cardiac Electrical Signals of Small Vertebral Animals

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Fig. S1. Micro-fabrication of the flexible MEA membrane. (a) Step-by-step fabrication processes resulted in a 4-lead ECG. (b) Schematic diagram of the MEA membrane highlighted 4 working electrodes A, B, C and D, respectively, in the MEA head, the reference electrode and contact pads in the rear.

Fig. S2. Characterization of the MEA impedance. (a) The flexible MEA membrane was placed on the chest of the zebrafish. (b) Equivalent circuit model consisted of 1) the front-end planar metal electrodes in contact with contracting heart (signal source), and 2) the rear-end instrumentation amplifier associated with high input impedance. (c) Characterization set-up. (d) Impedance increased in response to a decrease in the diameter of the electrode.

Fig. S3. ECG of fish sham – before injury (a) and (b) at 8 weeks after injury showing ST segment failed to normalize to baseline.

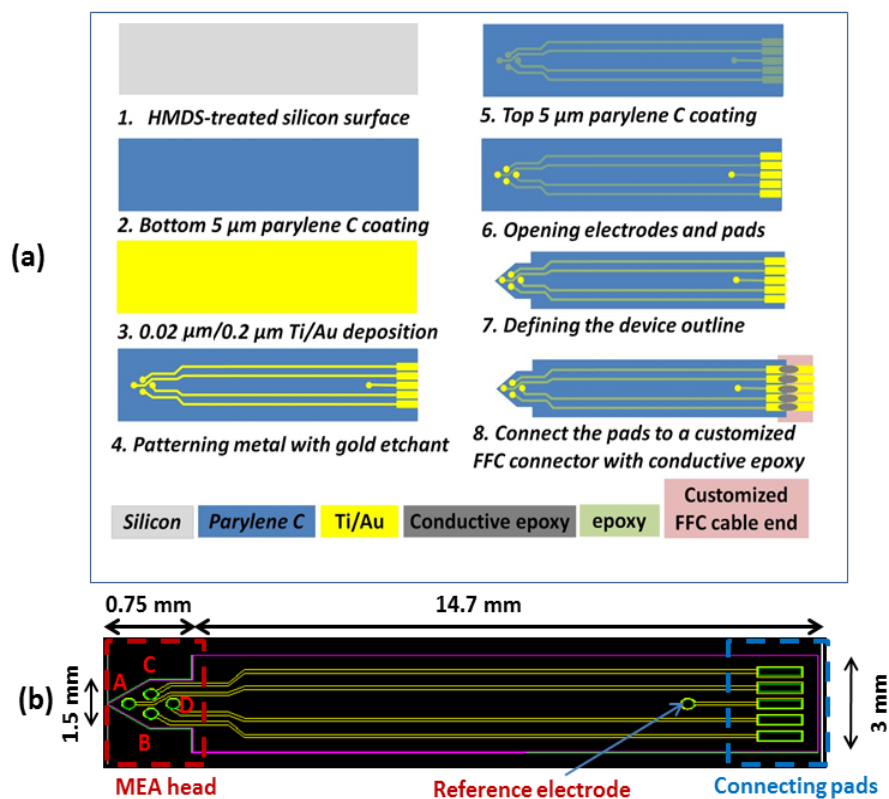


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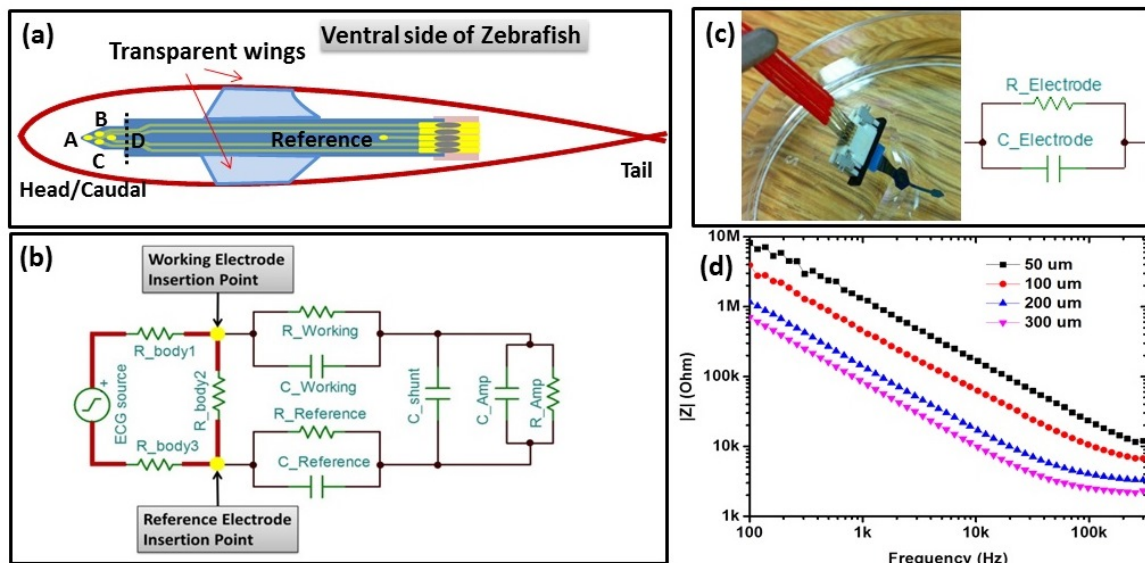
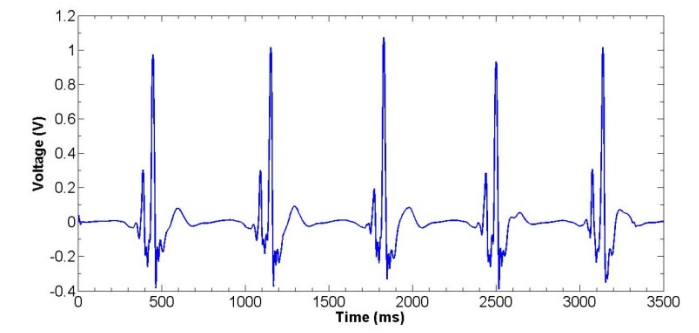
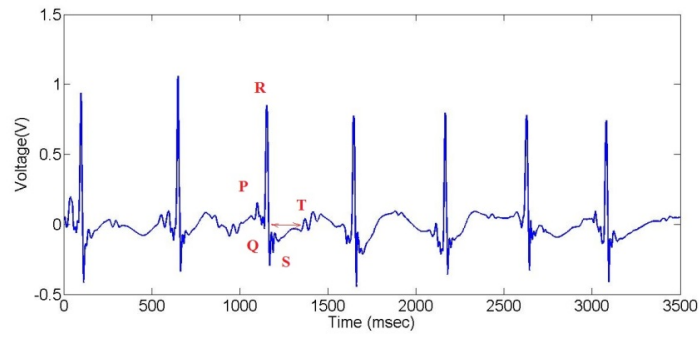


Fig. S2. Characterization of the MEA impedance. (a) The flexible MEA membrane was placed on the abdomen of the zebrafish. (b) Equivalent circuit model consisted of 1) the front-end planar metal electrodes in contact with contracting heart (signal source), and 2) the rear-end instrumentation amplifier associated with high input impedance. (c) Characterization setup. (d) Impedance increased in response to a decrease in the diameter of the electrode.



(a)



(b)

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