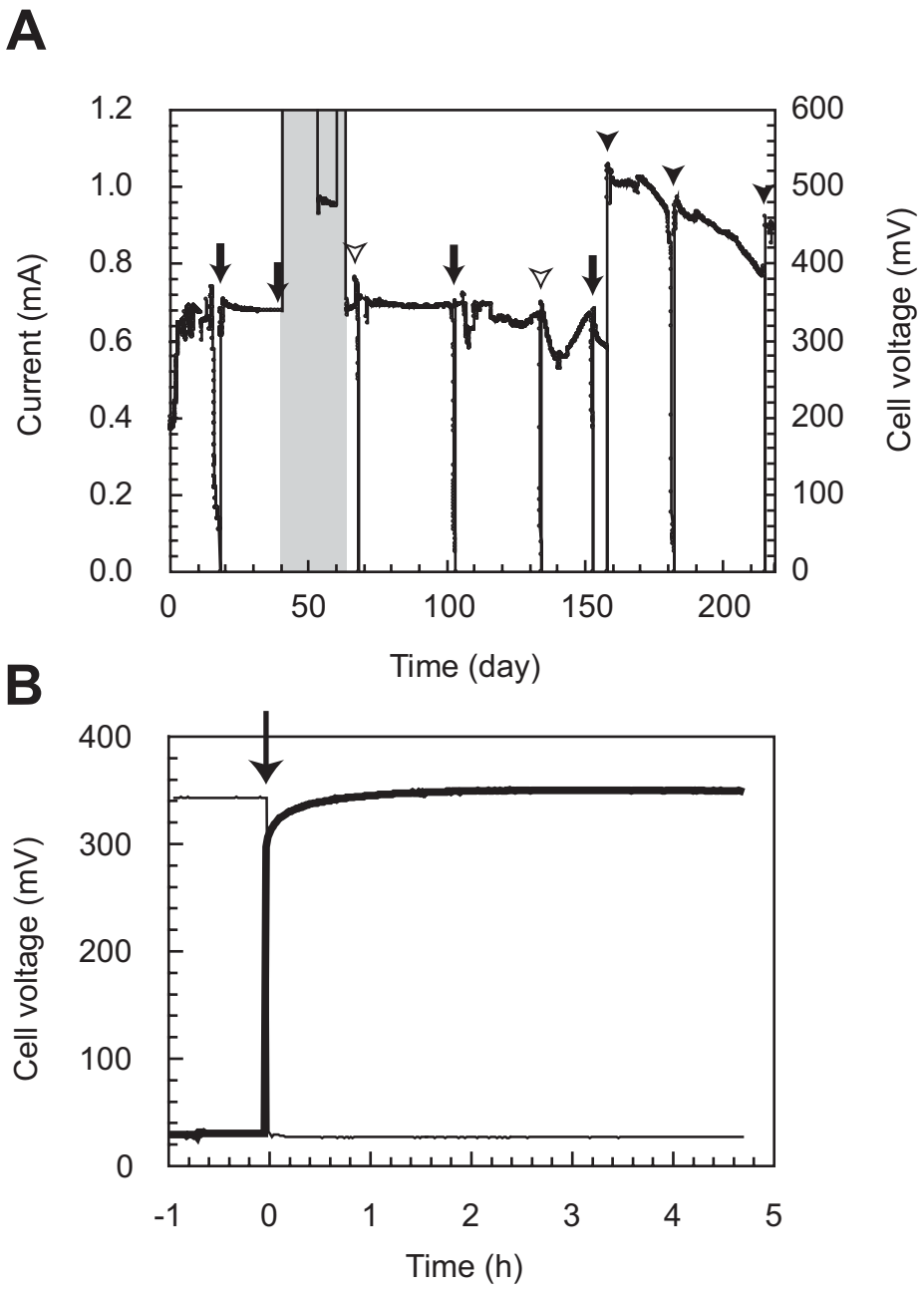

Fig. S1. Electricity generation from *Geobacter sulfurreducens* PCA in air-cathode MFC. **A:** Long-term operation of electricity generation after connection of two electrodes by using 510 Ω of external resistor. Arrow, acetate addition of 10 mM; Open arrowhead, medium replacement with 10 mM acetate; Filled arrowhead, reactor replacement with fresh medium with 20 mM acetate; Gray period, MFC operation with different external resistors. **B:** Transition of electricity generation after switching of external resistor (arrow). Thin line, from 510 Ω to 10 Ω; Bold line, from 10 Ω to 510 Ω.

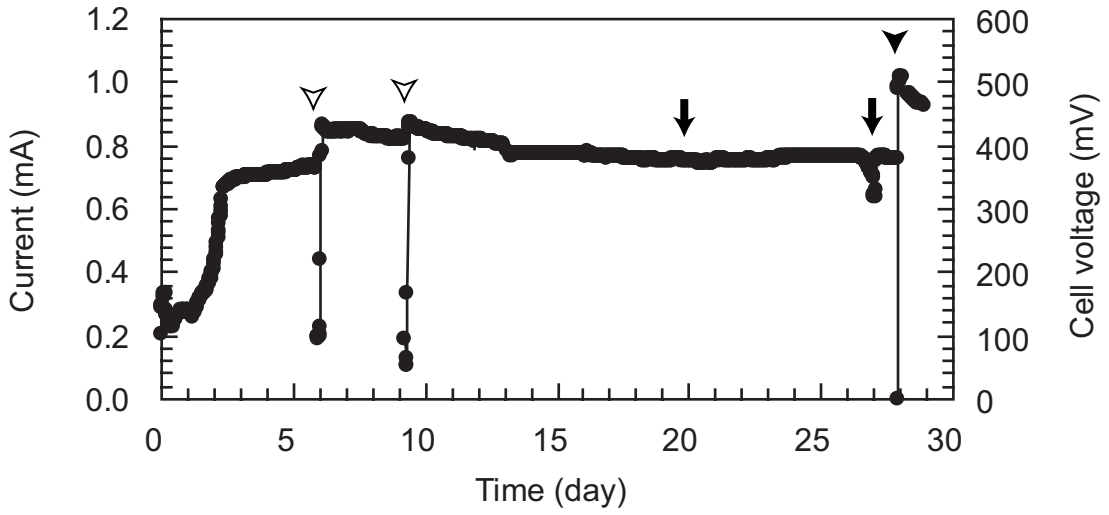

Fig. S2. Electricity generation from a consortium in air-cathode MFC under long-term operation of electricity generation after connection of two electrodes by using 510 Ω of external resistor. Arrow, acetate addition of 10 mM; Open arrowhead, medium replacement with 20 mM acetate; Filled arrowhead, reactor replacement with fresh medium with 20 mM acetate.

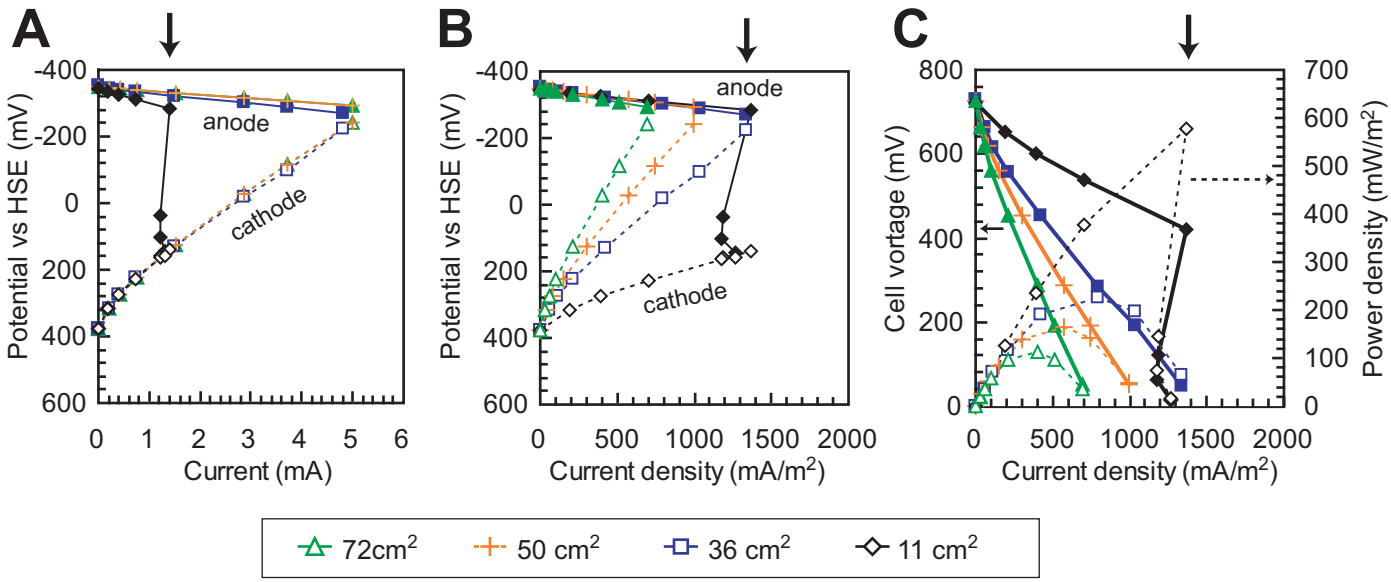

Fig. S3. Polarization and power curves for various anode surface areas in an air-cathode MFC with the enriched consortium on day 28. Cell voltages (thick lines in C), anode potential (thin lines in panel A and B), and cathode potential (broken lines in panel A and B) were measured at various external resistances, plotted versus electrical current (A) or current density (B, C) calculated from Ohm's law and projected anode surface area. Reactor performance of the MFC was represented by power density per anode surface area (broken line in panel C). Arrows indicate anodic reaction-limiting conditions.