Supplementary Figure 1. Generation of hiPSC-RPE and non-synthetic scaffold hiPSC-RPE cell sheet from hiPSCs

(A) Phase-contrast image of hiPSCs. Scale bar, 100 μm.

(B) Low-power image of a 6-cm dish containing hiPSCs three weeks after initiating differentiation (left panel). Phase-contrast image of pigmented colonies with a typical RPE cobblestone appearance.
(C) Low-power (left panel) and phase-contrast (right panel) images of a culture flask containing hiPSC-RPE four weeks after seeding. Scale bar, 50 μm.

(D-H) Immunostaining for typical RPE markers (Pax6, Mitf; scale bar, 50 μm, BEST1; scale bar, 20 μm, RPE65; scale bar, 10 μm) and cellular adhesion marker (ZO-1; scale bar, 10 μm) in hiPSC-RPE.

(I) Low-power image of the hiPSC-RPE cell sheet curls up upon pinching.
Supplementary Figure 2. Graft viability of the hiPSC-RPE cell sheets

Left panel: Cell density of hiPSC-RPE cell sheet (454E2, n = 3). White bar is the average number of live cell (left: 46300 ± 610 cells, center: 45038 ± 374 cells, right: 43800 ± 230 cells, n = 4 for each), black bar is the average number of dead cell (left: 3613 ± 120 cells, center: 3613 ± 120 cells, right: 3200 ± 117 cells, n = 4 for each).

Right panel: Cell viability of the graft (454E2). Black line is the graft viability in post-confluent medium and red line is the graft viability in xeno-free stock solution. Solid line is average number of live cell (black line; 2 hr: 45300 ± 685 cells, 5 hr: 39775 ± 394 cells, 8 hr: 41100 ± 268 cells, red line; 2 hr: 45488 ± 644 cells, 5 hr: 40813 ± 622 cells, 8 hr: 23225 ± 757 cells, n = 4 for each) and dashed line is average number of dead cell (black line; 2 hr: 2900 ± 91 cells, 5 hr: 3513 ± 172 cells, 8 hr: 4675 ± 60 cells, red line; 2 hr: 2900 ± 91 cells, 5 hr: 5100 ± 233 cells, 8 hr: 5850 ± 621 cells, n = 4 for each).
Supplementary Figure 3. H&E section, confocal image and SD-OCT image of folded graft

Supplementary Figure 4. Confocal image of shrunken graft

Rhodopsin- (red), EMMPRIN- (green) and DAPI- (blue) stained shrunk graft. Scale bar, 50 μm.