Supplementary Figure 1: Differentiation of human peripheral blood mononuclear cell (PBMC)-originated, induced pluripotent stem cell (iPSC)-derived corneal endothelial cells (CECs). a. Gene expression analysis of two neural crest associated markers, NGFR, and SOX10 were analyzed by quantitative real-time PCR (qRT-PCR) on days 4 (D04) and 6 (D06) of CECs differentiation. b. Phase contrast microscopy of CECs differentiation exhibiting progenitor-like colony (pointed by the arrow) at day 20. Note: The image is of 10× magnification and the scale bar represents 50 µm.
Supplementary Figure 2: Characterization of cryopreserved corneal endothelial cells (CECs) by immunocytochemistry. **a-c.** Immunostaining for N-cadherin exhibiting typical hexagonal/polygonal morphology of CECs. **d-f.** Immunostaining for Na⁺/K⁺-ATPase α1. Cell nuclei were counterstained with DAPI. **Note:** The images are of 60× magnification and the scale bars represent 10 μm.
Supplementary Figure 3: Specular microscopy images of the human corneal endothelium (hCE) tissues obtained from a 62-year-old Caucasian female donor (postmortem) used for mass spectrometry-based label-free quantitative proteomics. OD (oculus dextrus: right eye) and OS (oculus sinister: left eye) are marked a and b, respectively.
**Supplementary Table 1:** A complete list of proteins identified in human peripheral blood mononuclear cell (PBMC)-originated, induced pluripotent stem cell (iPSC)-derived corneal endothelial cell (CEC) proteome at day 20.

**Supplementary Table 2:** A complete list of proteins identified in the mass spectrometry-based protein sequencing of human corneal endothelium (hCE).

**Supplementary Table 3:** A complete list of biological process, cellular component and molecular function gene ontology (GO) terms associated with proteins identified in human peripheral blood mononuclear cell (PBMC)-originated, induced pluripotent stem cell (iPSC)-derived corneal endothelial cells (CECs).