Description of Additional Supplementary Files

File name: Supplementary Data 1 **Description:** Study overview.

File name: Supplementary Data 2

Description: Significant MVP discovery loci.

File name: Supplementary Data 3

Description: Genome-wide significant loci in the multi-ancestry meta-analysis of Fuchs

Endothelial Corneal Dystrophy (FECD), by individual cohort.

File name: Supplementary Data 4 **Description:** Ocular trait pleiotropy.

File name: Supplementary Data 5

Description: Comparison of corneal effect sizes.

File name: Supplementary Data 6

Description: The source data behind Fig. 3 in the paper.

File name: Supplementary Data 7

Description: Association of FECD status with polygenic scores (PGS).

File name: Supplementary Data 8

Description: Index variant phenome-wide association scans (PheWAS).

File name: Supplementary Data 9 **Description:** Colocalization results.