Supplementary Figure 1: CONSORT flowchart for the clinical design of the study detailing number of patients screened, enrolled and assigned to each arm.
Supplementary Figure 2

A

Control 50μg/ml Cyclosporine
10μg/ml IL6 50μg/ml Cyclosporine + IL6

B

** p<0.01 vs IL6
*** p<0.001 vs Control

C

*** p<0.001 vs IL6

D

*** p<0.001 vs IL6
* p=0.05 vs Control
** p=0.01 vs Control

E

Col4A1

F

Col4A1

Relative mRNA expression

Control IL6 30μg/ml IL6 + IL6 50μg/ml IL6 + IL6

Cyclosporin A

Relative mRNA expression

Control IL6 30μg/ml IL6 + IL6 50μg/ml IL6 + IL6

Cyclosporin A

Relative mRNA expression

Control IL6 30μg/ml IL6 + IL6 50μg/ml IL6 + IL6

Cyclosporin A

Relative mRNA expression

Control IL6 30μg/ml IL6 + IL6 50μg/ml IL6 + IL6

Cyclosporin A
Supplementary Figure 2. Acute Treatment of IL6 to human corneal epithelial cells (hTCEpi). Levels of gene expression after inflammatory stimuli (short-term treatment with 10ng/ml IL6) in hTCEpi corneal epithelial cells and effect of CyA (30 and 50 µg/ml) were evaluated. (A) Photomicrographs of hTCEpi cells cultured in the indicated treatment conditions. 100X magnification. Scale bar = 50µm. Expressions of IL6 (B), TNFα (C), MMP9 (D), Collagen 1A1 (E), Collagen 4A1 (F) transcripts with treatments as indicated.
Supplementary Figure 3: Chronic treatment of IL6 to human corneal epithelial cells (hTCEpi). Levels of gene expression after long-term treatment of hTCEpi cells with low doses IL6 (2ng/ml) and CyA (10µg/ml) in hTCEpi corneal epithelial cells were evaluated. Expression of IL6 (A), TNFα (B), MMP9 (C), Collagen 1A1 (D) and Collagen 4A1 (E) transcripts with the treatments as indicated.
A
Tear MMP9 level: 43.5 ng/ml

OD
3.5
OD
3.5

B
Tear MMP9 level: 48 ng/ml

OD
3.5
OD
3.5

C
Tear MMP9 level: 43 ng/ml

OD
3.5
OD
3.5

D
Tear MMP9 level: 63 ng/ml

OD
3.5
OD
3.5

Tear MMP9 level: 44 ng/ml

OD
3.5
OD
3.5

Tear MMP9 level: 44.5 ng/ml

OD
3.5
OD
3.5

Tear MMP9 level: 43 ng/ml

OD
3.5
OD
3.5

Tear MMP9 level: 51.6 ng/ml

OD
3.5
OD
3.5
Supplementary Figure 4: Axial curvature and central corneal thickness maps in patients. The figures show the axial curvature maps of the anterior corneal surface before and after application of CyA in the left and right eyes of three patients, respectively as indicated. These subjects were treated with CyA (Restasis) topically over a period of 6 months. The corresponding tear MMP9 levels are indicated under each map. The red circles indicate examples of areas where the changes in curvature are observed before and after treatment.

Supplementary Table 1: List of real-time qPCR primers used in the study.

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<th>Gene</th>
<th>Accession No.</th>
<th>Forward (5’-3’)</th>
<th>Reverse (5’-3’)</th>
<th>Amplicon Size</th>
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<td>TNF-α</td>
<td>NM_000594.2</td>
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<td>IL-6</td>
<td>M54894.1</td>
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<td>MMP9</td>
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<td>COLIVA1</td>
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<td>cgagcaagcttcgctctt</td>
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Supplementary Table 2: Clinical features of CyclosporineA treated patient cohort

Simulated keratometry and central corneal thickness before and after Cyclosporine treatment. p-value < 0.05 indicates statistically significant difference. K1 and K2 are flat and steep axis keratometry in Diopter, respectively. Km is the mean of K1 and K2.

<table>
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<th>Pre</th>
<th>Post</th>
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<tr>
<td>K1 (D)</td>
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<td>K2 (D)</td>
<td>49.75±5.43</td>
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<td>Km (D)</td>
<td>48.13±4.46</td>
<td>48.15±4.19</td>
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<tr>
<td>Central Corneal Thickness (micrometer)</td>
<td>477±40.7</td>
<td>476±41.7</td>
<td>1.0</td>
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