Supplementary materials

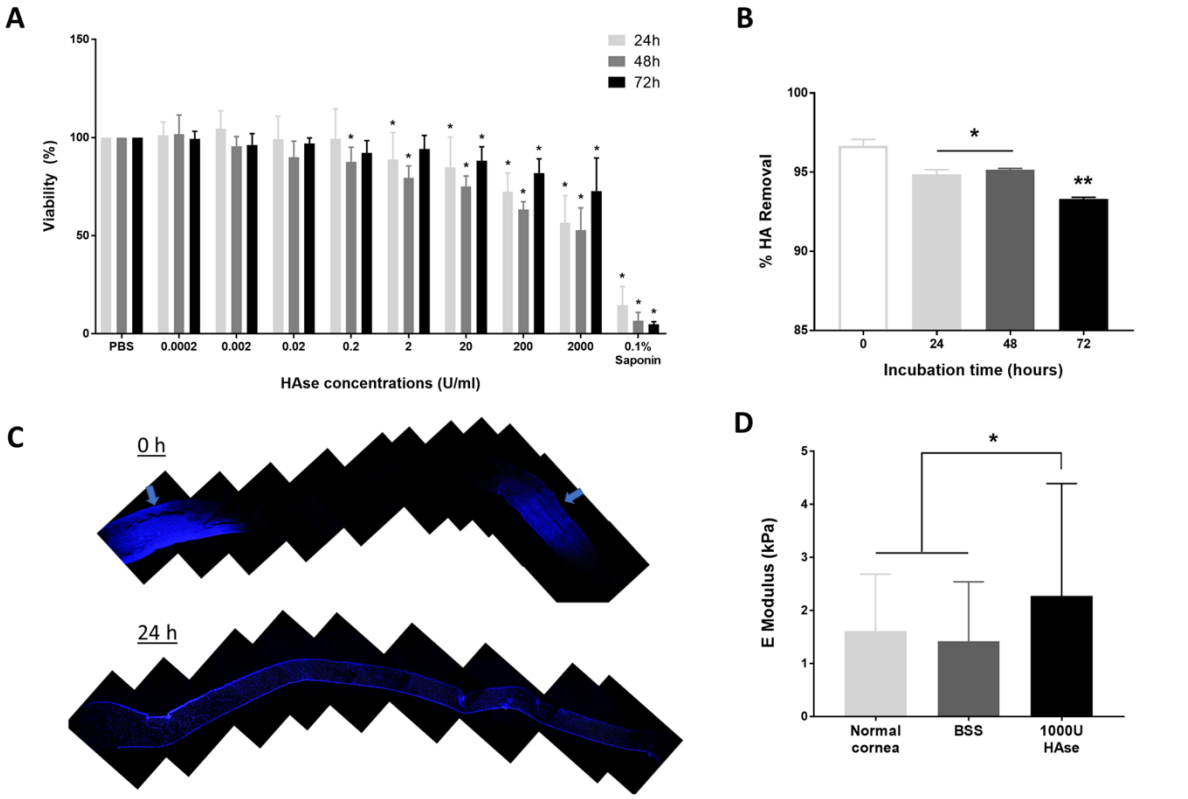

Fig. S1. Toxicity and enzymatic activity of HAse, its diffusion rate in corneal stroma and its effect on corneal stiffness. (A) Cell viability of RCFs incubated with various concentrations of HAse *in vitro*. A dose-dependent toxicity of HAse was observed which was less marked than the positive control (0.1% saponin). Results are expressed as mean ± SD. * $p < 0.05$ between the HAse and PBS-treated (vehicle control) groups at the same time point, One-way ANOVA followed by Tukey's pairwise multiple comparison test. (B) Concentration of HAse over time *in vitro*. Results are expressed as mean ± SD. * $p < 0.05$ between the HAse and BSS-treated groups at the same time point, ** $p < 0.01$, One-way ANOVA, followed by Tukey's pairwise multiple comparison test. (C) The injected DAPI (blue) was visualized at the injection site (blue arrow) in the peripheral cornea only right after the injection. Diffusion of BSS and DAPI mixture 24 hours after intrastromal injection *ex vivo*. (D) Elastic modulus of the corneal stroma following the injection of BSS and HAse *ex vivo*. Stiffness of HAse-injected corneas significantly increased 24 hours after the injection compared to BSS controls and normal corneas. Results are expressed as mean ± SD. * $p < 0.05$ between the HAse and BSS-treated groups at the same time point, One-way ANOVA followed by Tukey's pairwise multiple comparison test.

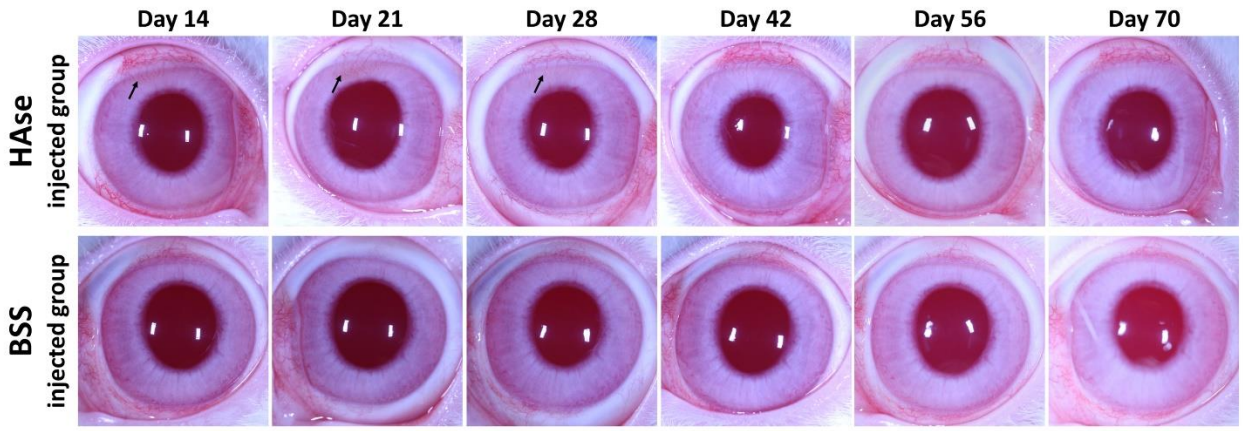

Fig. S2. HAse-injected corneas demonstrated transient corneal neovascularization *in vivo*. In anterior segment photographs of representative animals in each group, transient corneal neovascularization less than 2 mm in length (black arrows) was observed in HAse-injected corneas from day 14 to 28 compared to BSS controls.

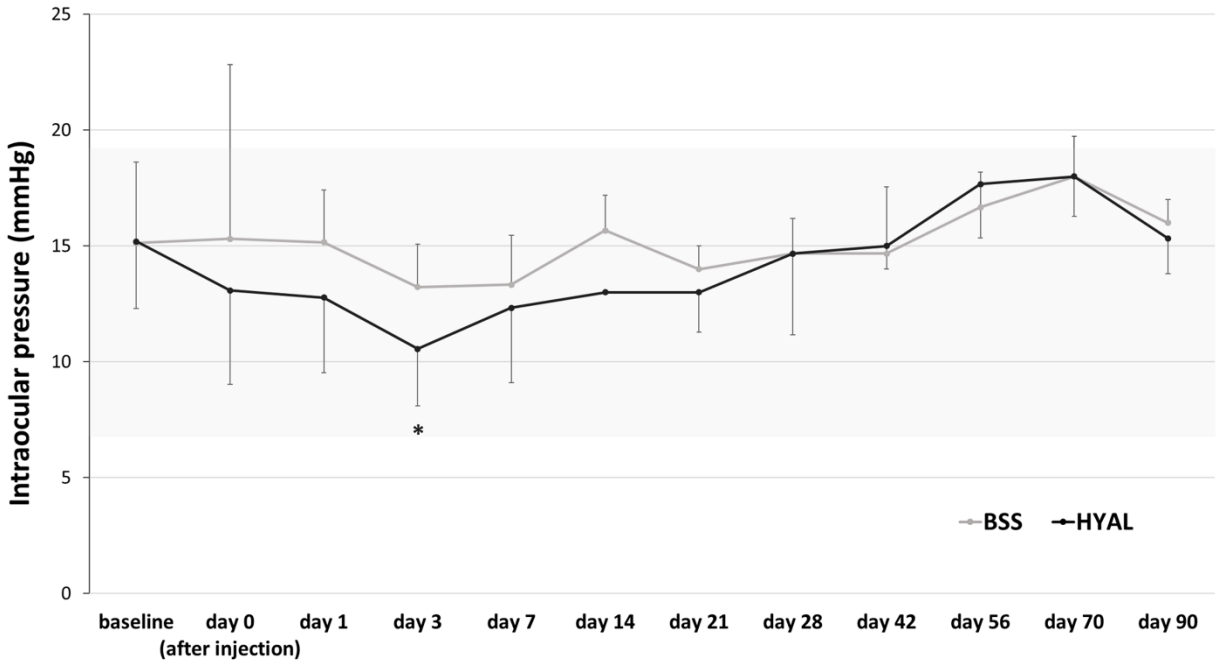

Fig. S3. Intraocular pressure was maintained within the normal range in both HAse- and BSS-injected corneas. Intraocular pressure significantly decreased 3 days after HAse-injection compared to BSS controls but was still within the normal range reported for rabbits (13 ± 6 mmHg[26]; indicated with grey area). Results are expressed as mean ± SD. * $p < 0.05$ between the HAse and PBS-treated groups at the same time point, One-way ANOVA, followed by Tukey's pairwise multiple comparison test.