Ocriplasmin in a porcine model for PVD induction

Purpose
To better understand the activity profile of ocriplasmin at the vitreo-retinal interface, the pharmacological activity in the pig model for induction of Posterior Vitreous Detachment (PVD) was evaluated.

Methods
- Thirteen farm pigs were injected mid-vitreally with ocriplasmin (96µg per eye, 29µg/mL vitreous assuming a vitreous volume of 3.3mL; injection volume 100µL) or control (CAM) in the contralateral eye.
- SD-OCT to assess for a PVD on weekly basis for up to 8 weeks. Four (4) volume scans averaging 48 frames per image were taken, focused nasally, temporally, and superior to the optic nerve, as well as on the optic nerve itself.
- Enucleated eyes were processed for detailed histopathological analysis.

Results
- A single injection of 96µg ocriplasmin resulted in a time-dependent induction of PVD, Week 2 onwards resulting at 82% eyes at Week 8. In the CAM group, 8% PVD in the vehicle treated eyes at Week 8 (Figure 1).
- Subretinal lucencies (SRLs) were observed upon ocriplasmin treatment (Figure 1). Although the SRL incidence was high (85% one week post administration), the SRL volume was relatively small; 0.062 ± 0.012mm³ (avg±SEM).
- Incidence and volume of SRLs diminished by Week 2, disappearing completely from Week 3 onwards. SRLs were not observed in vehicle treated eyes. Hyper-reflective spots in the vitreous were observed in both ocriplasmin and CAM eyes, reaching a maximum incidence of 46% and 8% for ocriplasmin and vehicle, respectively. All hyper-reflective spots had resolved by Week 3. IS/OS barrier was not affected.

Conclusions
The present work validated the porcine eye as a model for the induction of PVD. We demonstrated the ability of ocriplasmin to time-dependently induce PVD. The observed side effects such as SRLs and hyper-reflective spots proved to be transient, fully resolved after Week 3.