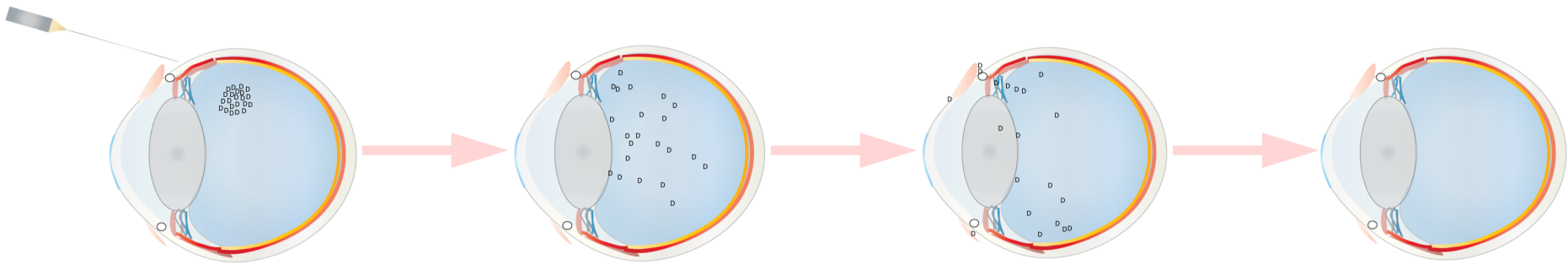
OPTCEUTICS
RESEARCH • INNOVATE • DEVELOP

Intraocular use of biologics

- The intraocular use of biologicals has revolutionised the treatment of blinding diseases, especially in our ageing population.
- Preclinical development is hampered by anti-drug antibodies (ADAs) that form in animal models against human candidate medicines. ADAs limit development of products designed for longer duration of action.
- The PK-Eye™ replicates the human clearance times of intraocular protein medicines.
- The PK-Eye™ makes it more feasible to determine intraocular clearance times, dose escalation PK effects and stability profiles of biologicals during preclinical development.

The PK-Eye™ replicates the human clearance times of biologics

- Biologics such as antibody based medicines and other proteins are large, charged molecules that are NOT permeable through the back of the eye (RCS pathway).
- Aqueous outflow is through the front of the eye (anterior chamber) and is the primary means of mass transfer in the eye needed to nourish the cornea and lens.
- Protein-based medicines primarily clear from the front of the eye (anterior pathway) due to aqueous outflow. Large molecules diffuse more slowly than small molecules in the vitreous.



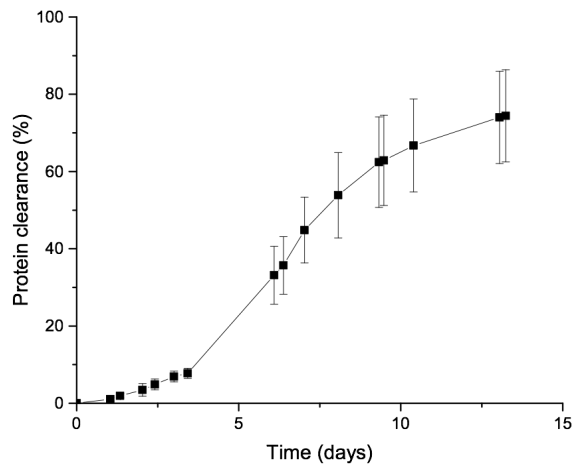
Intraocular injection of an antibody drug

As the protein drug diffuses within the vitreous, it also clears anteriorly due to aqueous outflow

Drug clears

❑ Using simulated vitreous (SV), the PK-Eye™ shows the clearance half-life ($T_{1/2}$) for ranibizumab (Lucentis®) is very similar to what is observed in humans.

Ranibizumab dose of 0.5 mg, 50 uL	
The PK-Eye™ (SV)	Humans
8.0 ± 3.1 days	7-9 days



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