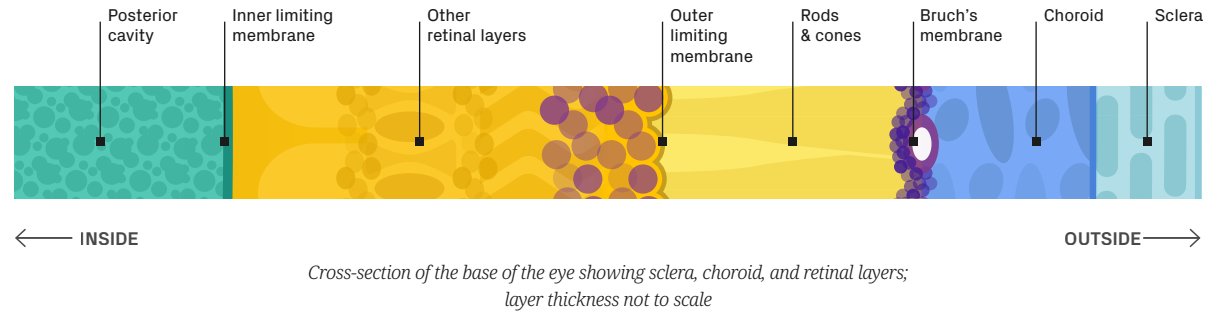


Drug delivery to the eye

Anatomy, drugs, and approaches

Ocular drug delivery is rapidly evolving, driven by new drugs and emerging therapeutic classes. The focus is shifting toward the back of the eye and increasingly large molecules, stretching the limits of existing delivery approaches. This sheet is designed to support development engineers navigating these new demands, highlighting key challenges, exploring delivery options, and helping identify viable pathways quickly.



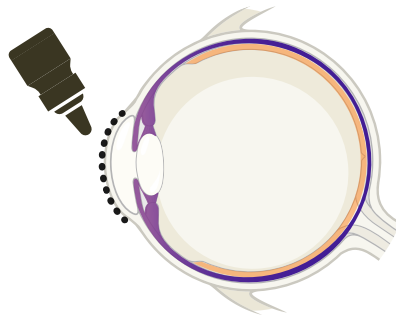
	Small molecules	Proteins	Fusion proteins	Monoclonal antibodies	mRNA	Gene therapies	Cell therapies
Mass of therapeutic	100-1000Da	5-70kDa	50-150kDa	~150kDa	1-2MDa	1-5MDa	>1GDa
Description	Low molecular weight organic compounds; often inhibit enzymes or receptors; penetrate tissues easily	Polypeptides or proteins; act as enzymes, inhibitors, or signalling molecules	Engineered proteins combining functional domains (e.g. receptor fused to antibody fragment)	Large antibodies; highly specific binding to target antigens (e.g. VEGF)	Messenger RNA encoding proteins; induces cells to produce therapeutic proteins	Vectors delivering genetic material for long-term protein expression or gene editing	Live cells administered to replace/repair damaged tissue or modulate immune responses
Target location	Uvea	■ ■ ■	□ ■	■	■	■	■
	Choroid	■ ■ ■	■ ■ ■	□ ■ ■	■	■	■
	Retina	■ ■ ■	■ ■ ■	□ ■ ■	■ ■	■	■

About the table

The coloured squares show which delivery approaches can get each drug type to each target location; for example, proteins can be delivered to the retina suprachoroidally (■), intravitreally (■), or subretinally (■). □ shows partial delivery.

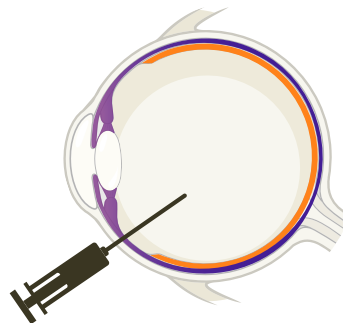
Topical

Liquid delivery to the cornea; highly mature; preservative-free devices are newer but growing.



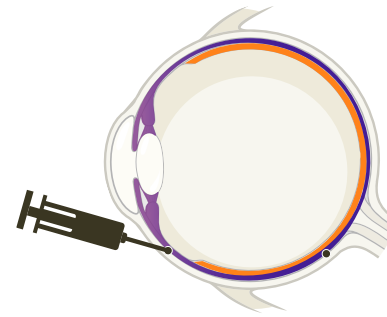
Intravitreal

Both PFS and vial-and-syringe based systems are highly mature and efficient; proprietary solid delivery devices also exist.



Suprachoroidal

Exploratory devices for delivery to the front or back of the suprachoroidal space exist; market maturity is low.



Subretinal

Surgical tools - often building on existing vitrectomy towers - are the state of the art.

