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ASIA EDITION

Seeing Opportunity in Ophthalmology

January 3, 2026 | Analysis | By Ayesha Siddiqui

Asia-Pacific is emerging as one of the most active regions for ophthalmology innovation. In recent months, a wave of cross-border partnerships and licensing deals has underscored both the scale of unmet need in eye disease and the region's growing ambition to play a larger role in treatment development. From glaucoma and retinal disorders to dry eye disease and childhood myopia, companies across pharma, biotech, and medtech are increasingly accelerating clinical progress.



The World Health Organization (WHO) estimates that more than 2.2 billion people worldwide live with some form of vision impairment or blindness. Asia accounts for over 60 per cent of global cases, according to the Global Burden of Disease report. This reflects not only population size, but also rapidly rising risk factors such as ageing and diabetes. Vision impairment is a leading contributor to years lived with disability and costs the global economy an estimated $411 billion annually in lost productivity. In Asia-Pacific, where populations are ageing rapidly and diabetes prevalence continues to rise, the stakes are even higher. Without targeted intervention, retinal diseases alone, including age-related macular degeneration (AMD) and diabetic macular edema (DME), could contribute to $715 billion in lost productivity and 13 million healthy life years lost over this decade across ten major economies, according to World Economic Forum report.

This burden is spread across a wide spectrum of eye conditions. There are more than 100 types of eye diseases, ranging from common and largely self-limiting conditions such as conjunctivitis to complex, chronic disorders that can lead to permanent vision loss. While many minor eye conditions are well managed with existing therapies, the scale and severity of vision loss are overwhelmingly driven by retinal diseases, glaucoma, and age-related eye disorders. As a result, the majority of research and development activity is focused on these areas, where unmet medical need, long-term disability, and economic impact are greatest.

The rising clinical and economic burden has driven a flurry of ophthalmology-focused activity across APAC in recent months. In December 2025, Japan’s Santen Pharmaceutical and the Singapore Eye Research Institute (SERI) launched SONIC 2.0, a next-generation open innovation centre focused on accelerating the translational development of disease-modifying therapies for vision-threatening eye diseases. Research priorities span glaucoma, myopia control, anti-scarring therapies, and new

nonclinical models for presbyopia.

A month earlier, 4D Molecular Therapeutics partnered with Otsuka Pharmaceutical to develop and commercialise 4D-150, a gene therapy candidate for wet AMD and DME across major Asia-Pacific markets. The collaboration combines genetic medicine expertise with regional regulatory and commercial capabilities, aiming to deliver durable disease control in retinal vascular conditions.

China-based Everest Medicines has also expanded its ophthalmology pipeline through an exclusive licensing deal with Visara, a subsidiary of NovaBridge Biosciences, for VIS-101, a bifunctional biologic targeting VEGF-A and ANG-2. The asset, currently in Phase 2 trials in China, is expected to be Phase 3-ready in 2026 and is designed to provide more durable benefits than existing retinal therapies.

Big pharma companies are jumping in this space too. REGENXBIO, in partnership with AbbVie, is advancing ABBV-RGX-314, a Phase 3 one-time gene therapy for wet AMD aimed at reducing the burden of frequent eye injections. Eli Lilly has moved to acquire Adverum Biotechnologies, while Sanofi received US FDA fast-track designation for its macular degeneration gene therapy SAR446597.

New operating models are also emerging. In September 2025, Eyexora launched with a hub-and-spoke model to accelerate ophthalmology innovation, establishing co-headquarters in Singapore as part of its global expansion. The company is building its initial portfolio through collaborations in Singapore and Europe, with early programmes in-licensed from the SERI.

Evolving treatments

From biologics and gene therapy to devices and cell-based approaches, ophthalmology treatments are evolving to address both clinical need and real-world delivery challenges.

Gene Therapy

Gene therapy is reshaping ophthalmology by addressing disease at its genetic root rather than managing symptoms over time. The approach was clinically validated in 2017 by Luxturna, the first FDA-approved gene therapy for an inherited retinal disease, which delivered sustained vision improvement in patients with Leber congenital amaurosis and helped catalyse a broader wave of retinal gene therapy development. Today, a DelveInsight report says that more than 55 companies are advancing over 125 ophthalmology gene therapy programmes, reflecting the scale and momentum building across the field.

Asia-Pacific is increasingly part of this global push. Pharma players such as Astellas Pharma are partnering with platform developers like 4D Molecular Therapeutics to advance treatments for rare monogenic eye diseases. Otsuka Enters into Licensing Agreement for Ophthalmic Gene Therapy Drug Candidate 4D-150 (Anti-VEGF agent).

In China, Neurophth Therapeutics, which positions itself as the country's first gene therapy company focused on ophthalmic diseases, has advanced multiple inherited eye disease programmes into pivotal clinical studies, signalling growing domestic capability and a pipeline of more than 10 ophthalmic gene therapy drug candidates.

Beyond rare genetic disorders, gene therapy is also being explored for high-burden retinal diseases. "High durability treatments for chronic retinal diseases like diabetic retinopathy and age-related macular degeneration (fewer injections/visits, similar vision), particularly gene-therapy-based agents like 4D-150 that provide long-term delivery of a therapeutic agent after a single clinic-based injection. This contrasts with current approaches that require regular injections," said **Dr Beau Fenner, Consultant, Medical Retina Department, and Clinical Director, Ocular Genetics Service, Singapore National Eye Centre.**

He added, "Longer-acting anti-VEGF options like gene therapy-based treatments may improve outcomes by reducing missed/late injections and keeping disease under control. Gene therapy could shift to 'treat once, rescue as needed.' If pivotal programmes land with good safety and predictable rescue thresholds, the biggest outcome change may be stabilisation with far fewer treatment events (less cumulative risk, less burden)."

Biologics and Long-Acting Injectables

Biologics and long-acting injectables continue to anchor near-term innovation in ophthalmology, particularly in retinal disease, where extending durability and reducing treatment burden remain key goals. Alongside next-generation anti-VEGF therapies,

complement inhibitors are emerging as a distinct biologic class in late-stage dry AMD.

“Complement inhibitor drugs for late-stage dry AMD are already in clinical use in the US and may become available in other markets in the coming few years. These medications offer very modest benefits to patients, but do represent a new paradigm in how we approach this condition,” said Dr Fenner. He added, “In dry AMD with geographic atrophy, complement inhibitors may slow lesion growth, buying time by delaying central vision loss and preserving visual function, though the magnitude of benefit and ideal patient selection remain debated.”

In Asia-Pacific, several companies are strengthening their ophthalmology biologics pipelines through partnerships and regional execution. Santen Pharmaceutical is expanding its retinal and glaucoma biologics portfolio through targeted collaborations. In China, Everest Medicines is advancing the late-stage bifunctional biologic VIS-101, which targets VEGF-A and ANG-2 for retinal vascular diseases. AffaMed Therapeutics, another Chinese biotech, is also advancing a portfolio of late-stage ophthalmology biologics.

Cell Therapies

Cell-based therapies represent the most ambitious frontier in ophthalmology, aiming not just to slow disease progression but to restore or replace damaged retinal tissue. “Cell-based therapies for retinal degenerative diseases like dry AMD and inherited retinal diseases have been in development for some years now, but evidence for functional benefit to patients remains very limited. Realistically, we don't expect this class of therapies to enter routine clinical practice in the next few years,” said Dr Fenner.

Despite these challenges, research activity continues, particularly in Asia-Pacific. Companies such as India’s Eyestem are developing stem cell-based therapies for retinal degeneration, including dry AMD, with an emphasis on scalable manufacturing and regional access. Academic institutions also play a critical role, with the RIKEN Center for Biosystems Dynamics Research pioneering induced pluripotent stem cell-based retinal research and supporting translational programmes aimed at regeneration. “Cell therapy is an ‘aspirational leap’ toward restoration/repair, but it’s still earlier and operationally more complex than injections,” said Dr Fenner.

Devices and combination approaches

Devices and combination approaches are becoming an increasingly important layer of ophthalmology innovation, focused on reducing treatment burden, improving adherence, and translating therapies into real-world clinical practice. Unlike novel drugs alone, these strategies often combine devices, biologics, and digital tools to enhance durability and outcomes.

Minimally invasive glaucoma surgery (MIGS) is one of the best established of device-led innovation in ophthalmology, with companies such as Santen Pharmaceutical actively involved in advancing glaucoma management through device-enabled and combination approaches that aim to reduce long-term reliance on eye drops and lower surgical risk.

The ophthalmology pipeline is evolving through advances in treatment delivery alongside progress in disease biology. “Pace of development is faster in ‘delivery/durability,’ and steadier in ‘new biology’. The fastest change is how we deliver VEGF suppression (implants, and gene therapy). The PDS gaining diabetic indications is a concrete example of this acceleration. The harder change (but potentially bigger long-term) is true disease modification for GA — complement inhibitors are step 1 while cell therapy is more of a moonshot,” said Dr Fenner.

However, translating these advances into routine care raises important economic questions. “Economics and access to new medications remains an area of concern. Upcoming gene-based therapies in particular are expected to carry hefty price tags and changes to public healthcare financing may be required if all patients are to benefit from these new developments,”said Dr Fenner.

As innovation accelerates, the true test for ophthalmology will lie in balancing durability and disease modification with affordability and access.

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