A Quick Peek into the Future Glaucoma Therapeutic Innovations

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Disclosures

AdeTherapeutics: C
Accelerated Vision: C
Aerie: C, R
AMO: C, R, S
Alcan: C, R
Alcon: C, R
AMO: C, R, S
Aerie: C
Allergan: C, R
AquaLogix: C, R
Bausch & Lomb: C
Ciba Vision: C
Clarity Medical Systems: C
Croma Pharma: C
Envisia Therapeutics: C
Eyelight: C
Forsight Labs: C
Glaukos: C, R, S
InnFocus: C
Iridex: C, R
Ivantis: C, R, S
LayerBio: C
New World Medical: R
Oraya Therapeutics: C
OYO Pharma: C
PhilAction: C
Sevacule: C
Science Based Health: C
SOLX: C, R
Stroma: C
Transcend: C, R
TrueVision: C

C = Consultant
R = Research Support
S = Speakers Honorarium

Therapeutics

Drug Delivery

MIGS

Neuroprotection

Regeneration

Diagnostics

Early Detection

Progression

IOP Telemetry

Innovation Span

Sustained Release Approaches

Ocular Surface

Anterior Chamber

Suprachoroidal

Subconjunctival

Scleral

Intravitreal

Latanoprost-Eluting Contact Lens

- To address poor compliance
- Preservative Free
- Can be made with refractive error correction
- Sustained, controlled delivery
- Therapeutic payload
- Duration of 2 weeks or 1 month
- Could be used as a continuous wear lens

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Drug-Eluting Punctal Plug System

Mati Therapeutics

Drug-Eluting Punctal Plug System

Matu Therapeutics

Drug-Eluting Punctal Plugs & Injectable Depots

Ocular Therapeutix

- Drug-eluting punctum plugs
  - Biodegradable microspheres + biopolymer
  - Trans-nasal drug delivery + bifurcations
  - Control and retention up to 6 months

- Refuna" Salinol
  - Inactivates remaining benzalkonium
  - Localized reduction in preservative irritation
  - Protects and preserves the fluid microenvironment

- Drug-eluting injectable depot
  - 6-12 month sustained release + anti-VEGF
  - Intranasal bioavailability and bioadhesion
  - 30 gauge needle for transluminal injectability

Forsight Vision5 Helios Insert

- Fornix ocular insert
- Bimatoprost elution

In situ Polymerizable Collagen Solution

Euclid Systems Corp

- Injectable viscous forms solid gel drug depot when exposed to physiological fluids or injected into tissues within 60 seconds
- Subconjunctival injection
- Latanoprost gel = >1 month

Collagen added to NaCl
<1 minute after
Neurotech’s patented core technology platform, Encapsulated Cell Therapy (ECT), is a first-in-class, versatile drug delivery platform in development for the treatment of a broad array of eye diseases.

The versatility of the ECT device enables long-term and continuous targeted delivery of single and combination drugs. Combined, the ECT device, nutrient reservoir, and biodegradable film create an implantable drug delivery system. The biodegradable film can be prepared to degrade from minutes to >6 months.

ECT implants have been successfully implanted in over 400 subjects for up to 5 years duration. Additionally, the therapy is reversible by simply removing the implant.

NTC-200 cells are able to secrete major classes of therapeutics, including antibodies, fusion proteins, and growth factors. Cell lines are isolated from the host inside a sealed polymer device. Cells are inserted into ECT devices in a controlled environment producing at least 150,000 ECT units a year. Cells are inserted into ECT devices in a controlled environment producing at least 150,000 ECT units a year.

Neurotech's dedicated manufacturing facility is designed for clinical development and commercial launch, with the capacity of manufacturing millions of ECT devices annually.

The ECT device can be customized to deliver a single or combination drug product. Different device geometries and nutrient conditions can be used to target specific diseases.

Intravitreal Encapsulated Cell Therapy

**ECT Principles**
- Ab-interno approach
- Minimally traumatic
- At least modest efficacy
- Extremely high safety profile
- Rapid recovery

**ECT Design**

**ECT Implantation**

**Drug-Polymer Conjugate Implant**

**PolyActivia**

Day 1
- Biodegradable implant visibly decreasing in size over time

Day 7
- No sign of adverse response to implant
- Subconjunctival or intravitreal 23G injection
- Combination drugs: 3-6 mos duration

Day 14
- Photographs of a rabbit eye up to 14 days

**PRINT™ Engineered Nanoparticles**

**Envisia Therapeutics**

Implants
- Extended release formulations of biologics and small molecule drugs
- Reproducible implant size, shape, composition and dose
- Simple delivery

Micro/Nano Particles
- Topical delivery with fewer doses
- Sustained release
- Permeation and targeted to increase efficacy

**Allergan Bimatoprost SR**

**Intracameral Bioerodible Drug Pellet**

**Replenish Ophthalmic MicroPump**

- Subconjunctival implant
- Inject programmed amount of drug at set times
- MCMS device
- 12 month drug supply
- Refilled with 31G needle
- Recharge wirelessly
**Suprachoroidal Micro-Stent**

Transcend CyPass Micro-Stent

Investigational device. Not approved by the FDA.

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**AqueSys XEN Implant Generations**

Investigational device. Not approved by the FDA.

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**Glaucoma Treatment Algorithm**

Now & Potentially In 5 years

1 Med → Multiple Meds → SLT → Multiple Meds → Trab → 2nd Trab or Tube

Level of Invasiveness:

1 Med → Drug Delivery → MIGS → MIGS2 → Trab or Tube

Phaco + MIGS