



**Paradigm changing drugs for back of the eye**

**SOUTHEASTERN VIRGINIA BIOMEDICAL TECHNOLOGY  
PARTNERSHIP FORUM**

**June 15, 2010**

# The OcuCure Opportunity

Differentiated at many levels

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- ▶ **Proprietary new class of ophthalmic drug**
  - Chronic therapy - AMD & Diabetic Retinopathy (DR)
  - Dual action - antiangiogenic & angiolytic
- ▶ **Topical eye drop developed**
  - Delivers relevant concentrations to the retina
- ▶ **Ideally positioned**
  - Market shifting in a near perfect way
- ▶ **Proof of concept demonstrated in animal models of AMD**

# Management Team

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- ▶ **Sunder H. Malkani, President & CEO, Board Member**
  - Developed AOSEPT, that was acquired by CIBA Vision, a Novartis Co.
  - Innotech Mgt. team, which went public (NASDAQ) and acquired by J&J
- ▶ **Patricia B. Williams, PhD., Chief Scientific Officer**
  - President of EyeRx Research, where she was awarded 7 patents
  - Developed several ophthalmic drugs through IND to clinical trials
  - Director of Center for Ocular Pharmacology at EVMS
- ▶ **Craig M. Greven, M.D., FACS, Consulting Chief Medical Officer**
  - Chairman, Dept. of Ophthalmology, Wake Forest University Eye Center
  - Conducted clinical trials for AMD and other retinal treatments
- ▶ **Sam English, PhD., VP Pharmaceutical Programs**
  - Director of Research, Carilion Clinic
  - Managed multi-million dollar medical research program

# Visual Impact of AMD and DR



Normal



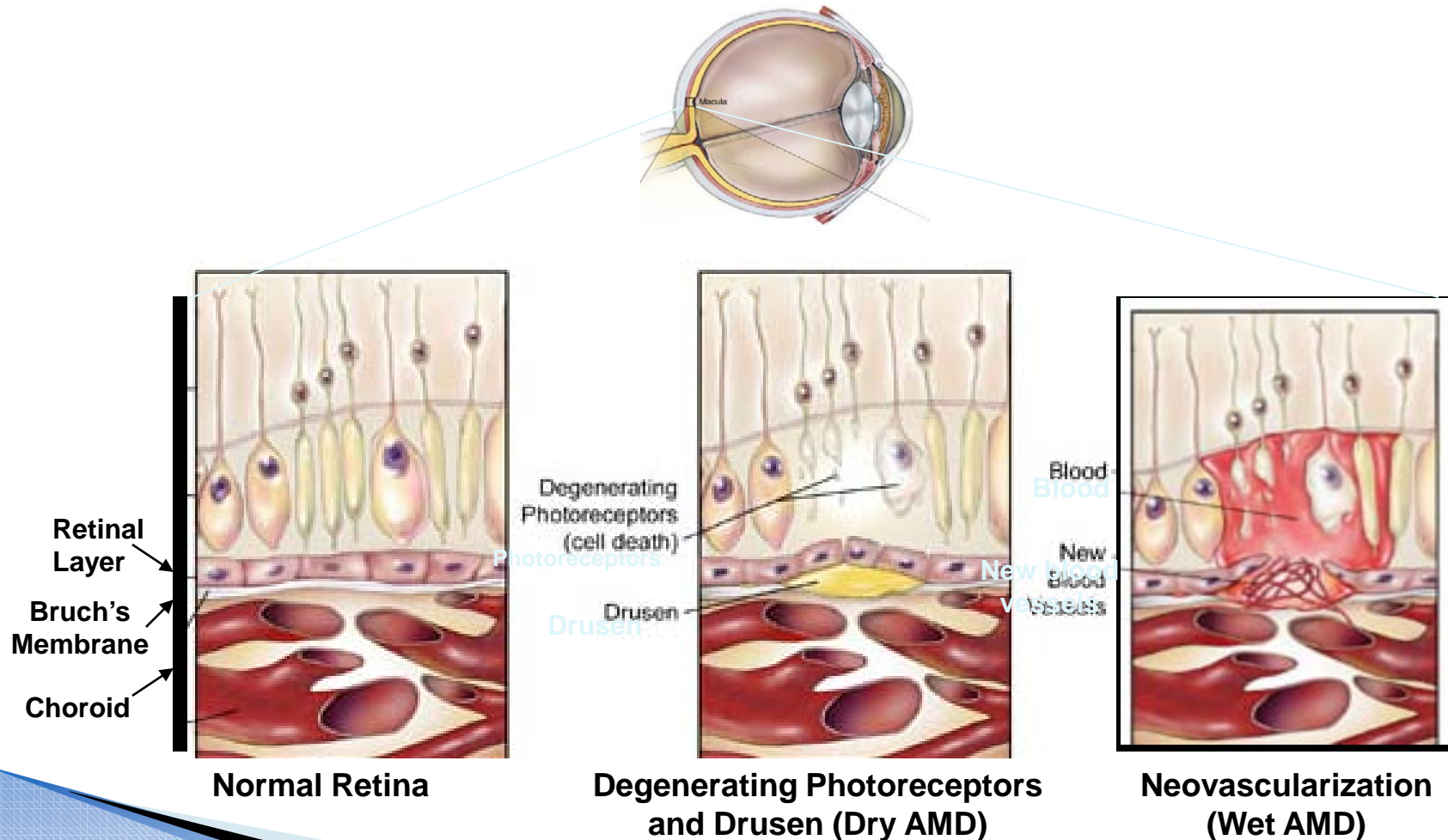
AMD



DR

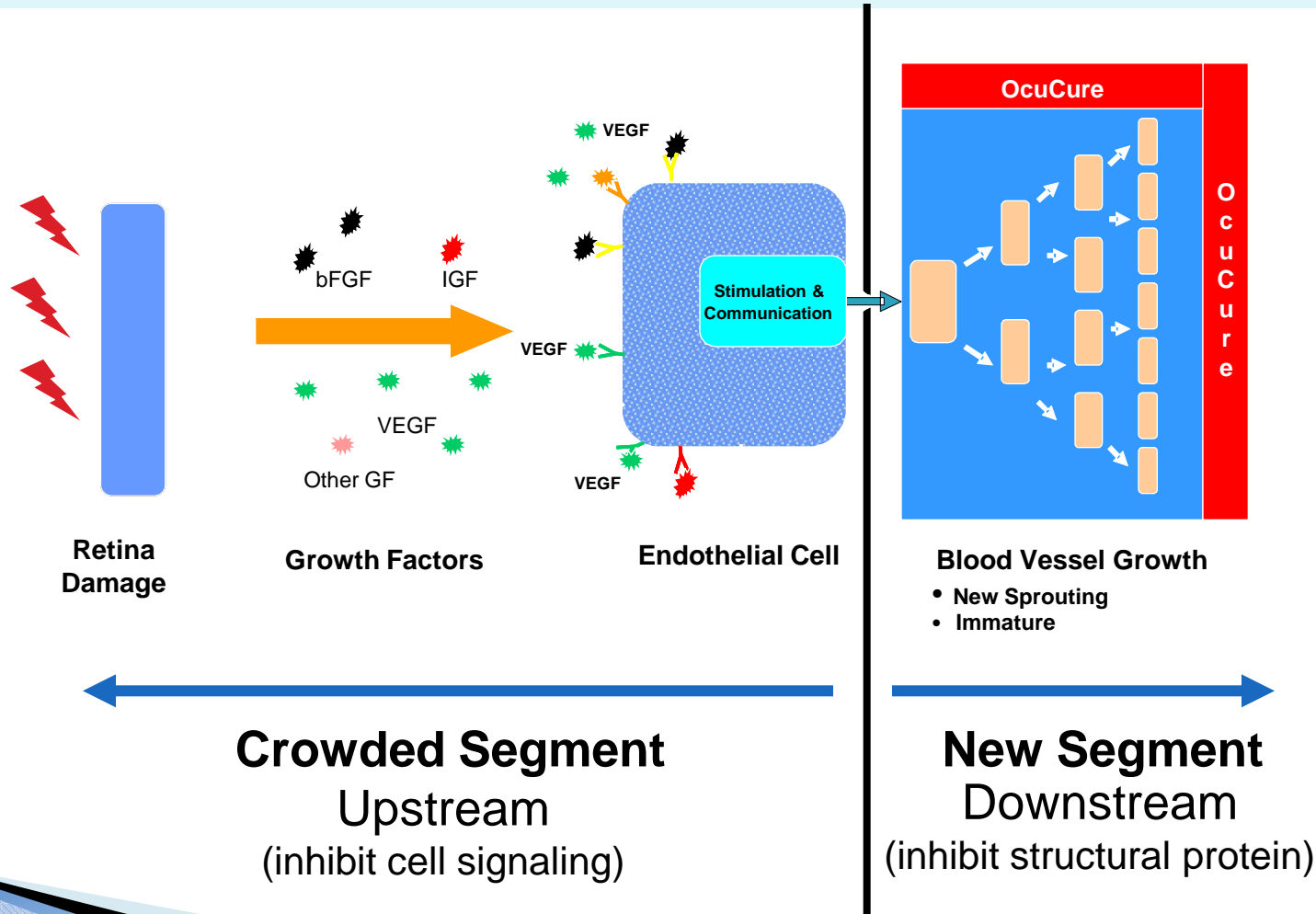
# Progression of AMD

## A Result of Angiogenesis



# The OcuCure Advantage

Angiogenic Cascade **NOTE** typeface in figure is very small to be legible



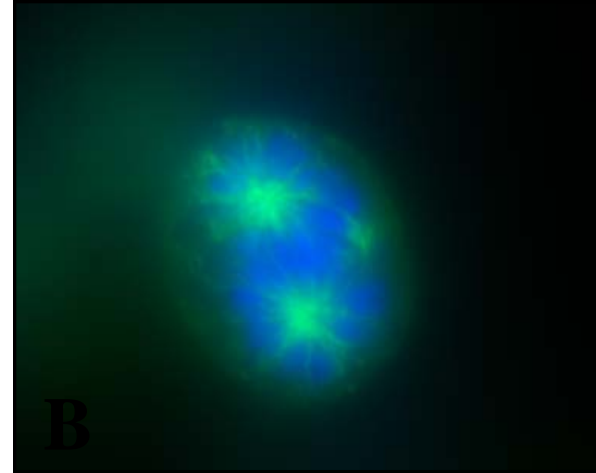
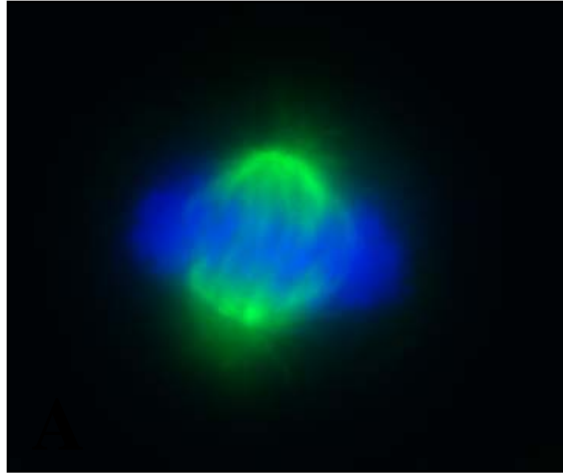
# Mechanism of Action

## Tubulin Inhibition

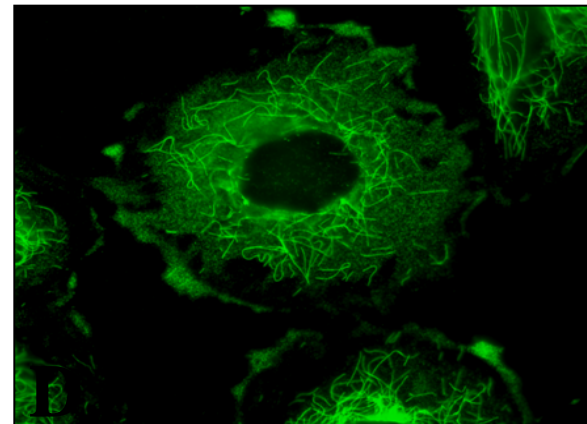
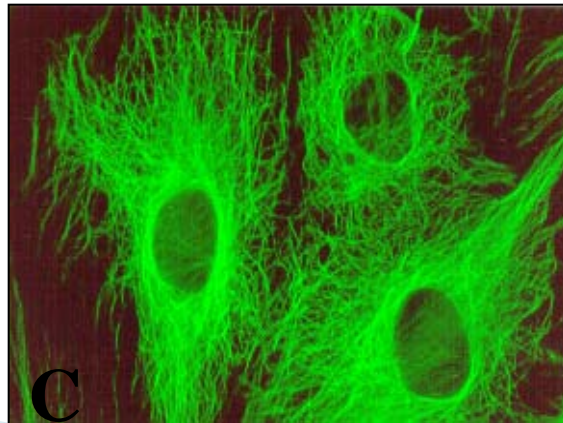
Control

OC-10X

Mitosis



Cytoskeletal  
Structure

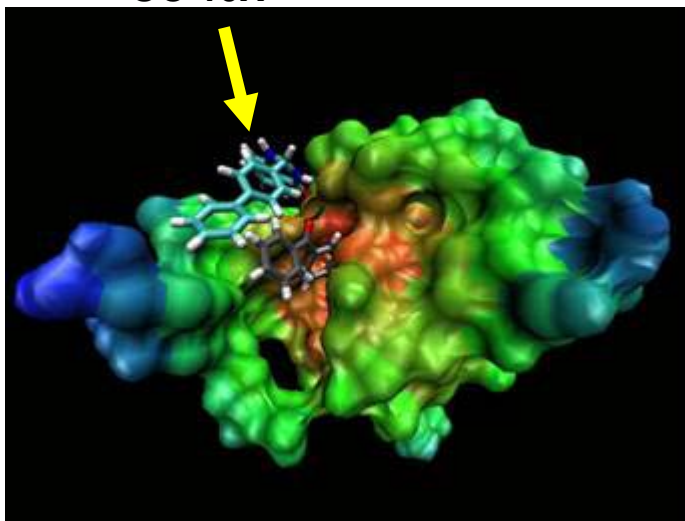


# Mechanism of Action

$\beta$  Tubulin inhibition with low toxicity

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OC-10X



## Preliminary Animal Safety

### Maximum Tolerated Dose

- Oral >800 mg/kg: 5 days of treatment
- IP >1200 mg/kg: 14 days of treatment

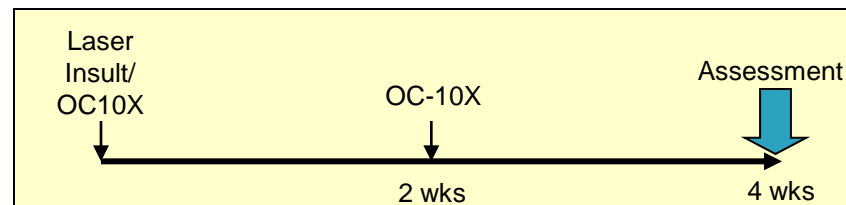
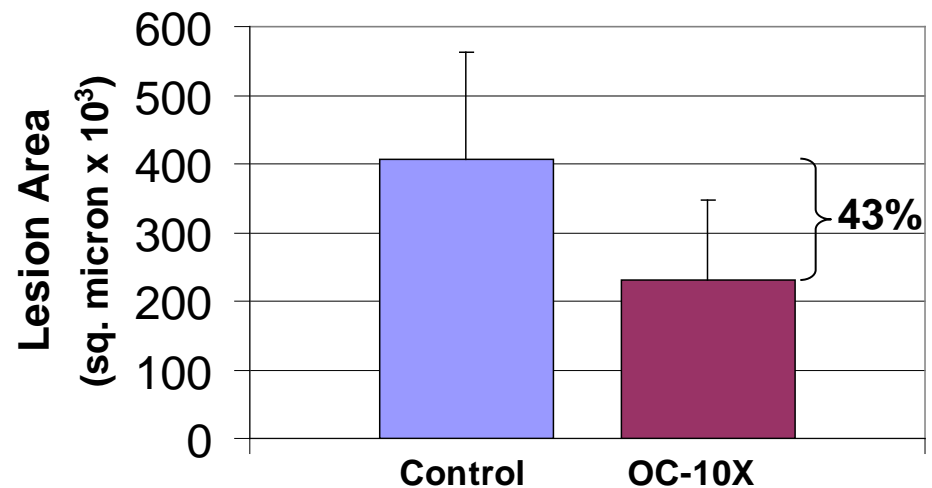
# Efficacy in Primate Model of Wet AMD

## Antiangiogenic Activity

### Laser-induced CNV model

- ▶ 8 non-human primates
  - Bilateral laser photocoagulation
- ▶ **43% reduction** of lesion area in treated eyes vs control eyes
  - Statistically significant ( $p=0.025$ )

### Anti-angiogenic Activity



# Ocular Safety Studies

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- ▶ **Topical eye drop administration for 14 days**
  - Slit lamp, Histology, Retinal Function (mf ERG)
- ▶ **Topical eye drop administration for 6 weeks**
  - Slit lamp, Confocal microscopy, Retina Function (ffERG), Optic nerve function
- ▶ **Long term tox:**
  - **Ocular Assessments**
    - Tolerability - 16 mo
    - Histology - 6 mo
    - Retina Function (ffERG)- 16 mo
  - **Systemic assessments: 16 mo**
    - Chemical chemistry, CBC, Gross necropsy

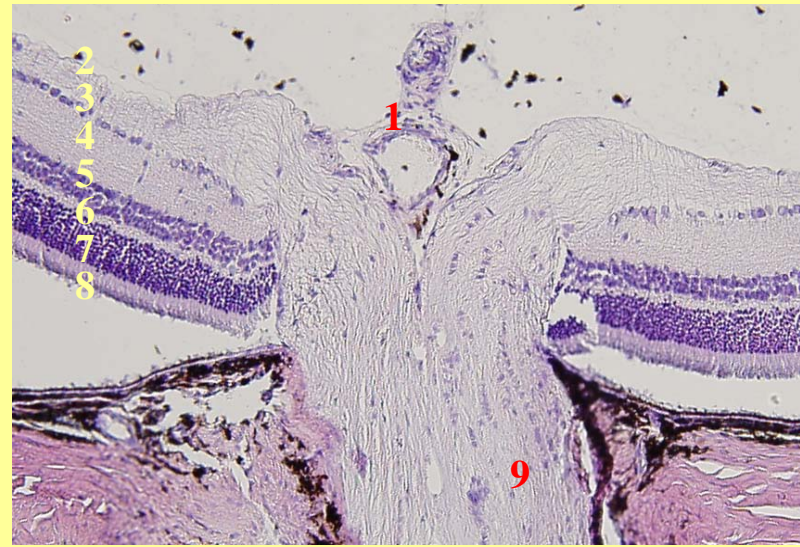
# Ocular Safety: Optic Nerve Histology

## Long-term (6 wk) Topical Administration

### Histology of the Retina and Optic Nerve of Rat# 605



Left panel: Untreated



Right panel: Treated

- 1) Central retinal vessels
- 2) Nerve fiber layer
- 3) Retinal ganglionic cell layer

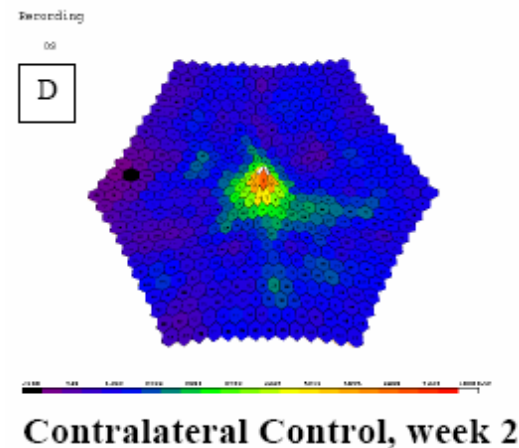
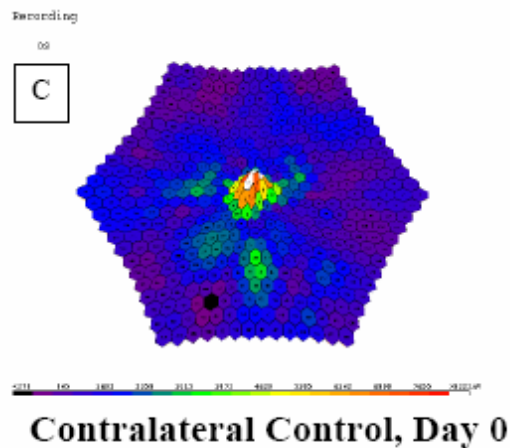
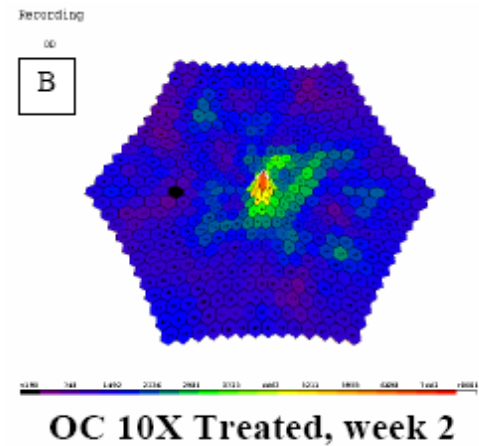
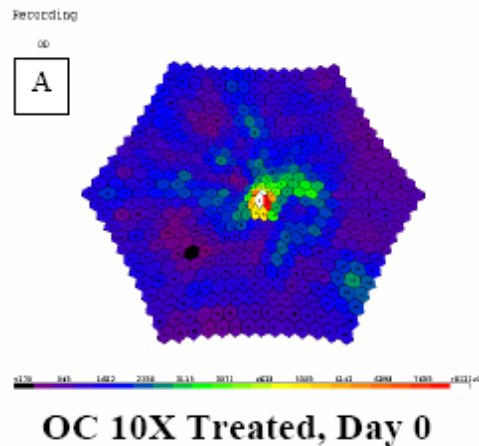
- 4) Inner plexiform layer
- 5) Inner nuclear layer
- 6) Outer plexiform layer

- 7) Photoreceptor layer
- 8) Retinal pigment epithelium
- 9) Optic nerve

No toxicity observed

# Ocular Safety: Retina Function

## Topical Application of 1 % OC-10X for 14 d



**No toxicity observed by ERG**

Note: Color reversed in ERG Software

# PK: OC-10X Penetration in Primate Eye

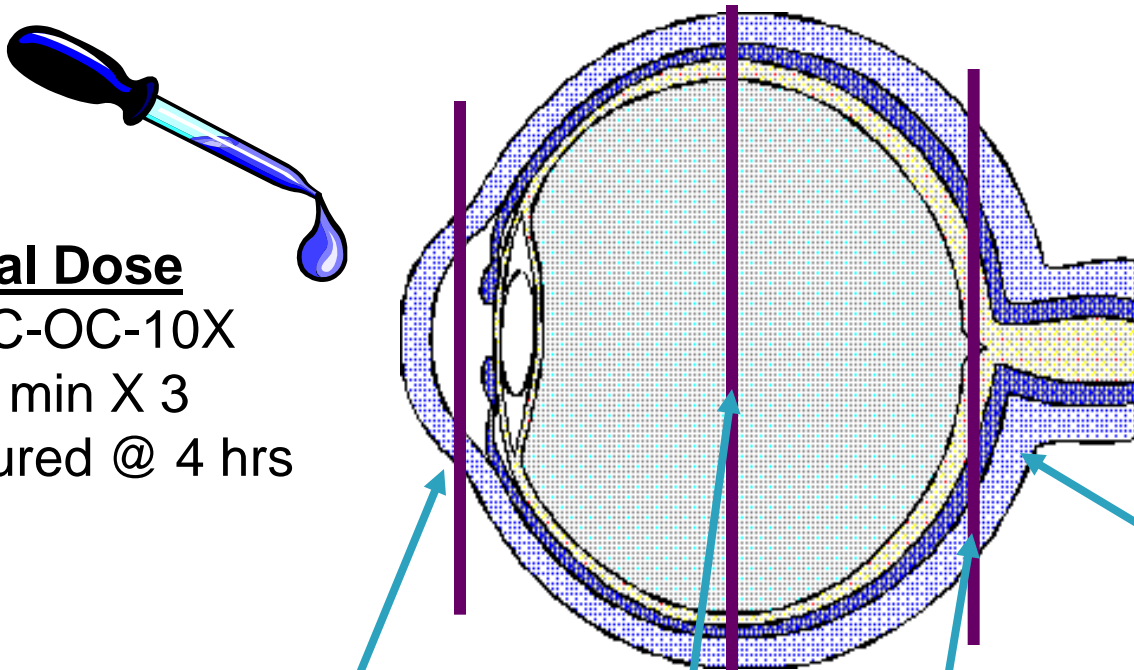
Clinically significant concentrations

## Topical Dose

1%  $^{14}\text{C}$ -OC-10X

1X/30 min X 3

Measured @ 4 hrs



**Aq. Humor**  
81ng/gm

**Vitreous**  
177ng/gm

**Retina**  
22ng/gm

**Sclera**  
137ng/gm

Serve as reservoir

Distribution to retina

# Multiple Opportunities

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- ▶ Wet AMD therapy
  - Ideal for chronic use
  - Concomitant with drugs or devices
- ▶ Dry AMD prophylaxis
- ▶ Diabetic retinopathy
- ▶ Oncology applications
  - Non-toxic compound

# Active Deal Space

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- ▶ 6 License Deals for AMD Compounds
  - Upfront payment \$5 - 75M; stage dependent
  - Development costs included
  - Milestones of ~ \$250MM
  - Running royalties
- ▶ 3 Licenses in 2008
- ▶ Recent Ophthalmic Acquisitions
  - Sanofi – Fovea \$538MM (Oct 09)
  - Abbott – AMO \$1.2B (Mar 09)

# Funding Status

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- ✓ ▶ Raised angel funding: \$3.5 Million
  - Multiple Rounds
- ▶ Raising funding for the following
  - Pre-IND studies, GMP supply, Phase I, Phase II prep
    - Support both AMD and DR
  - Phase IIa
    - Proof of Concept: Phase IIa- 6 mo trial (2 arms)
  - Plan for DR Phase II

# Partnership Opportunities

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**OcuCure seeks like-minded partners to advance the science and bring this sight saving treatment to patients, who need it.**

- **Tubulin biology**
- **Pharmacokinetics**
- **Unique drug delivery devices**
  - **Biopolymers**
- **GLP labs**
- **CRO's**
- **????**