



# Corporate Presentation

## July 2015

**Circadian Technologies**  
**(ASX:CIR, OTCQX:CKDXY)**

**Megan Baldwin PhD, CEO & MD**  
**[megan.baldwin@circadian.com.au](mailto:megan.baldwin@circadian.com.au)**



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# Corporate Summary

- Extensive worldwide intellectual property platform in respect of VEGF-C, VEGF-D and VEGFR-3
- Lead compound OPT-302 blocks VEGF-C and VEGF-D
- OPT-302 in development for treatment of wet AMD
- Potential in a range of eye diseases as a monotherapy or in combination with approved anti-VEGF-A therapies
- Phase 1 clinical trial initiated under FDA approved IND
- Potential to move directly into Phase 2A trial following dose-escalation cohorts
- 5 leading US clinical sites
- Funded through end of 2017 and completion of Phase 1 and 2 clinical studies
- Pipeline includes Phase 2 ready oncology asset (VGX-100) and Eli Lilly partnered compound IMC-3C5
- Management team with substantial experience in developing drugs targeting the VEGF pathway

## OPT-302 Wet AMD Program: Milestones

IND Approval for OPT-302  
June 2015 ✓

Initiated Phase 1 clinical trial:  
June 2015 ✓

Ph 1 Primary Data Analysis:  
1Q16

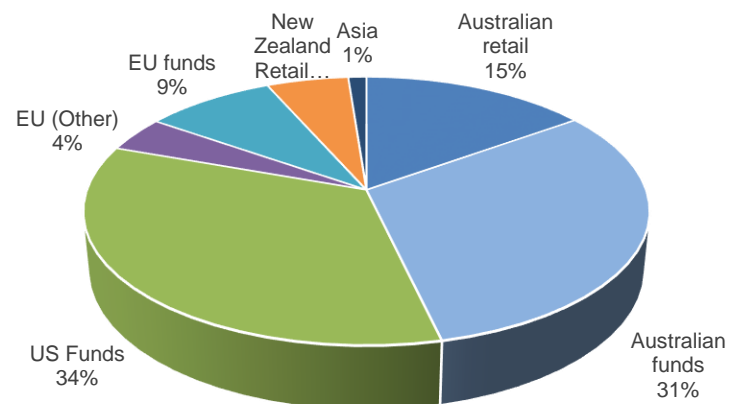
Ph 2B Primary Data Analysis:  
2017

# Financial Position (Unaudited)

Key Financial Details	ASX: CIR
Ticker Symbol	ASX:CIR
Share Price <i>(as at July 8 2015)</i>	A\$0.195
Total Ordinary Shares on Issue	150,190,303
Options on Issue	49,722,697
Market Capitalisation <i>(as at July 8 2015)</i>	A\$29m
Trading Range <i>(last 12 months)</i>	A\$0.135 – 0.215
Cash Balance <i>(at 30 June 2015)</i>	~A\$18.2m
Listed Investments	~A\$2m
Top 10 Shareholders Own	69%

Substantial Shareholders	% Holding
Biotechnology Value Fund (BVF)*	17.7%
Baker Bros (NY, USA)	9%
Packer & Co.	8.5%

## Shareholders by Region

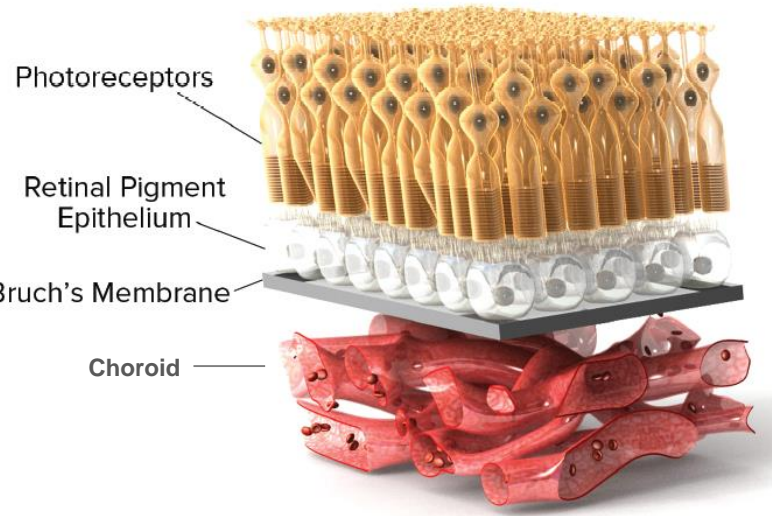


# Lead Program: OPT-302 for Wet AMD

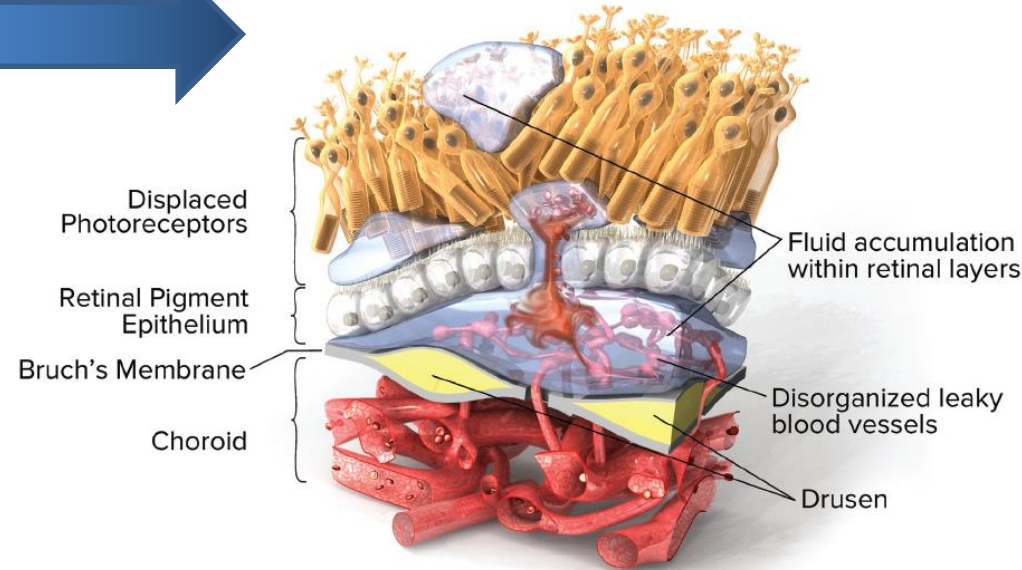
- **Lead molecule:**
  - OPT-302 (soluble VEGFR-3, VEGF-C/-D 'Trap')
- **Mechanism:**
  - Blocks VEGF-C and VEGF-D:
    - Inhibits blood vessel growth
    - Inhibits vessel leak
- **Strategy:**
  - To investigate activity as a monotherapy
  - To develop OPT-302 for use in combination with existing VEGF-A inhibitors for the treatment of wet AMD
  - Achieve complete blockade of the VEGF pathway

# The disease process of 'wet' (neovascular) AMD

## Normal Retina

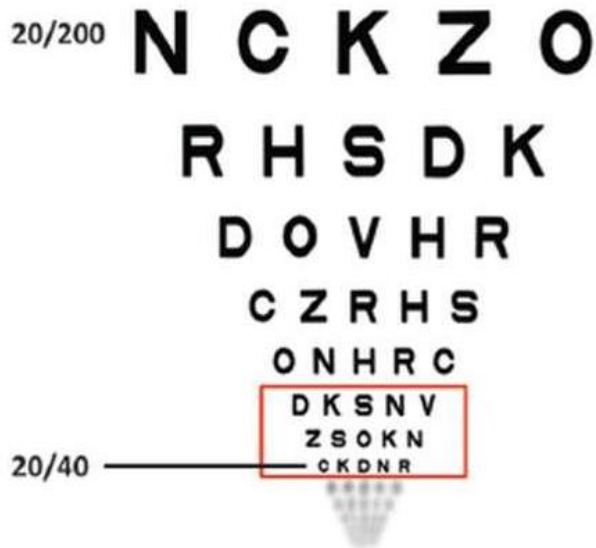


## 'Wet' AMD

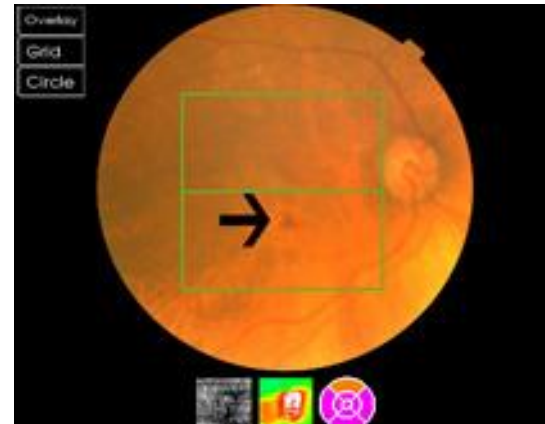


# Routine Non-Invasive Monitoring Procedures for Disease and Treatment Efficacy

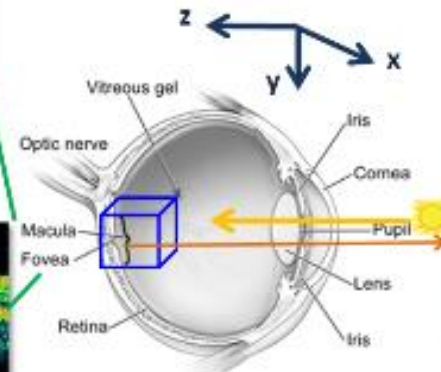
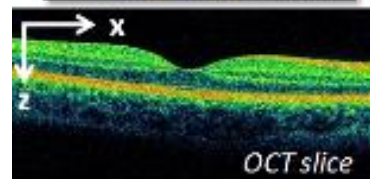
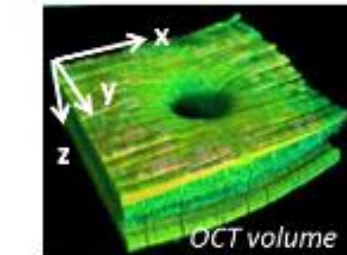
Eye Chart (*Visual Acuity*)



Retinal Image



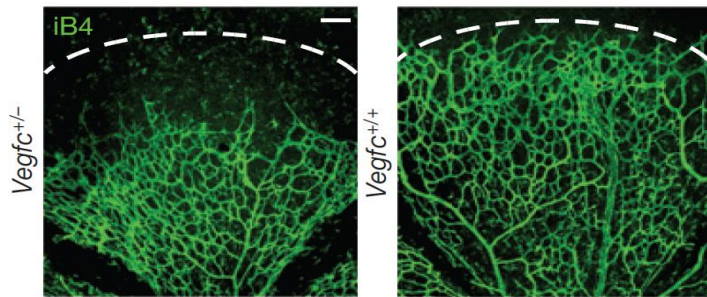
OCT (*Optical Coherence Tomography*)  
(*Fluid, hemorrhage, retinal thickness, retinal detachment*)



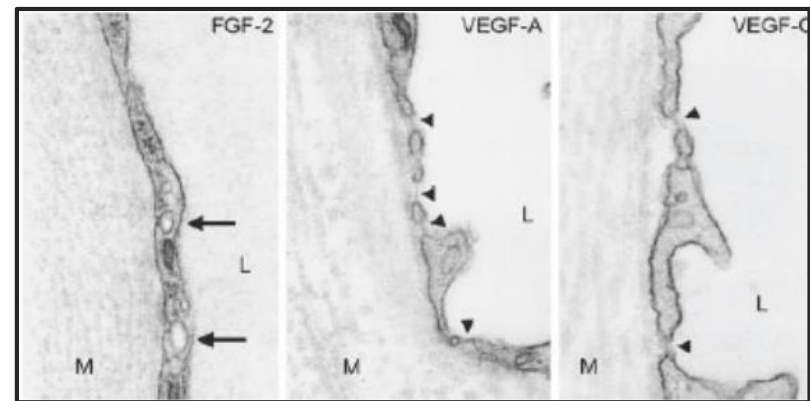


# VEGF-C Causes Blood Vessels to Grow & Leak

## VEGF-C is required for the development of retinal blood vessels



## VEGF-C is a potent inducer of vessel leakage



- Persistent angiogenesis and retinal vascular leakage are observed in patients that are 'sub-responsive' to Lucentis®/Eylea® (VEGF-A inhibitors)



# The opportunity for OPT-302:

## An unmet medical need remains despite anti-VEGF-A therapy

- Wet AMD is the leading cause of blindness in the western world
- Estimated >\$US5BN p.a. market opportunity in wet AMD in US alone and world-wide \$US10BN\* , increasing with ageing population
- Only two targeted therapies approved for wet AMD (Lucentis® & Eylea®, off-label Avastin®)
- Both target VEGF-A, but not VEGF-C or VEGF-D

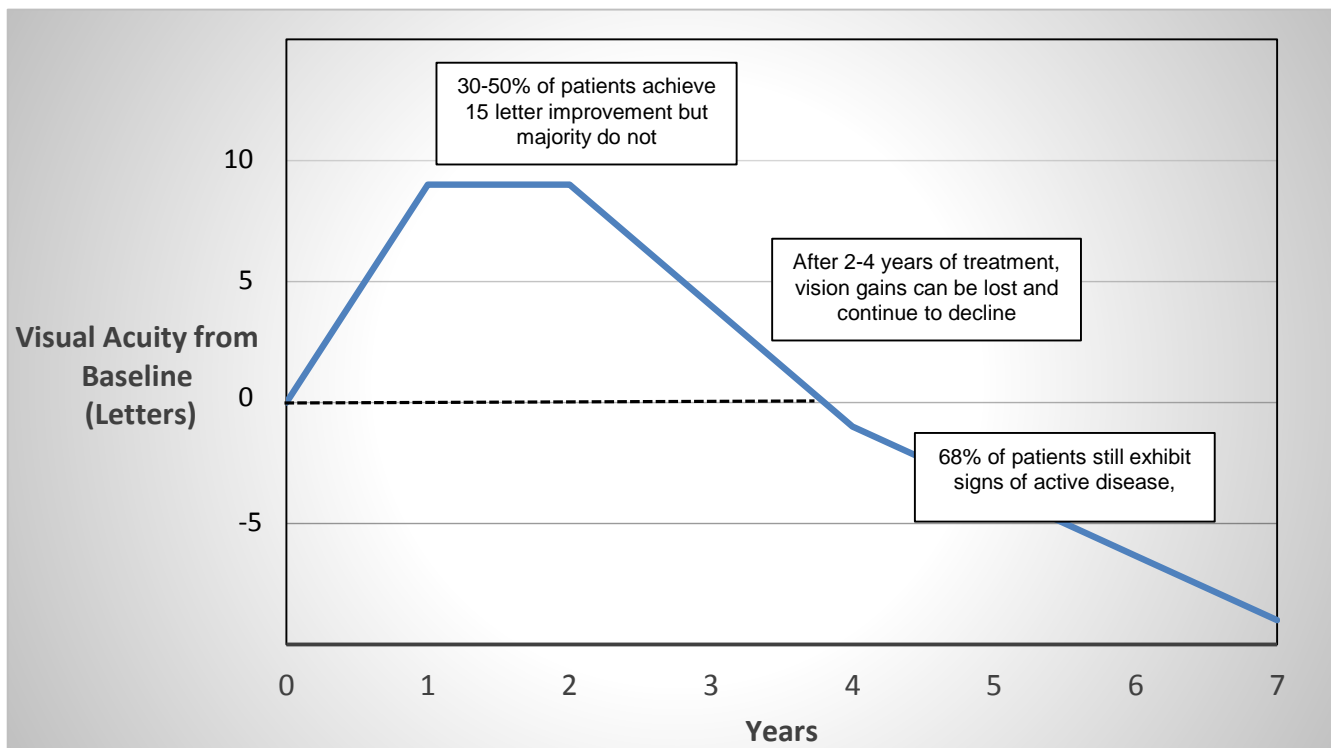
**Long term single-agent therapy with VEGF-A inhibitors is associated with sub-optimal response:**

- **>50% patients do not achieve a significant gain in vision**
- **Phase 3 trial results indicate that between 50-70% patients have retinal fluid despite anti-VEGF-A therapy**

- VEGF-C & VEGF-D are implicated in mediating resistance to anti-VEGF-A therapy
- VEGF-A, VEGF-C & VEGF-D share signalling through VEGFR-2, a validated pathway involved in wet AMD progression
- VEGF-C & VEGF-D also activate VEGFR-3
- Complete receptor blockade requires blockade of all ligands

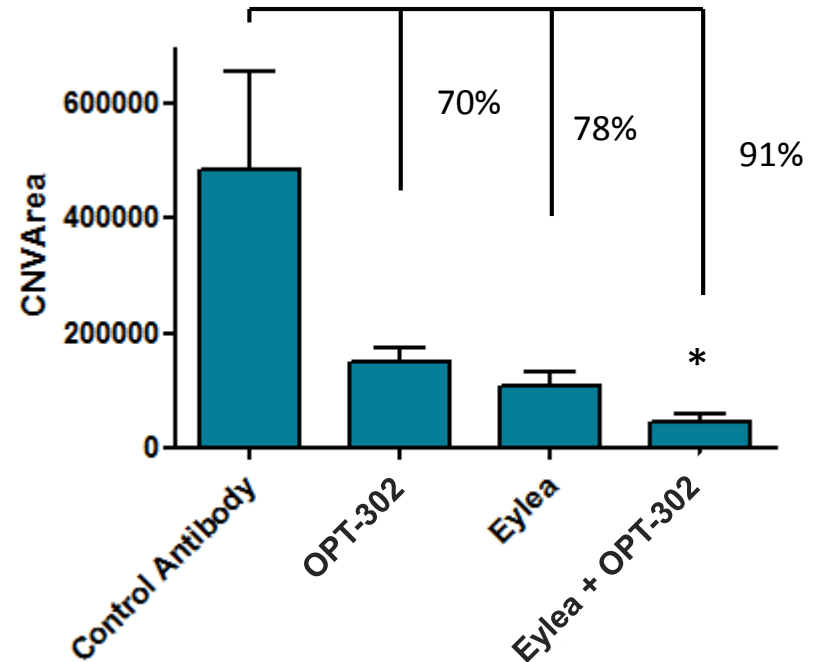
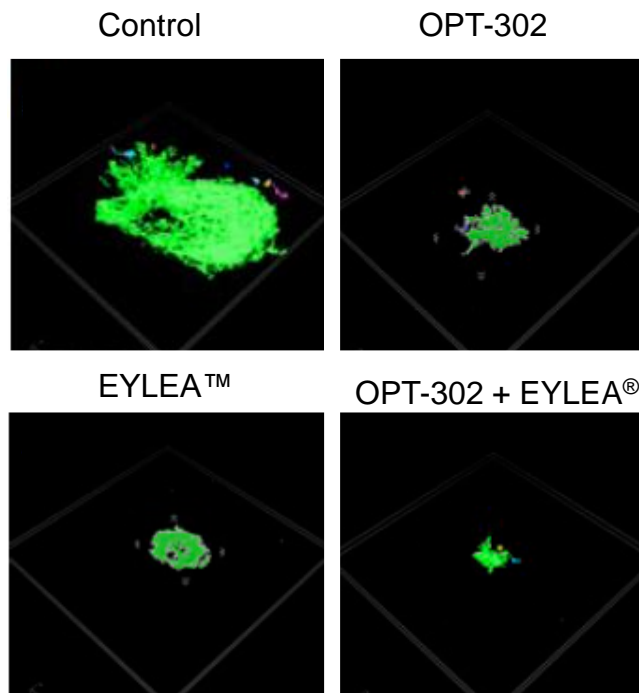
*\*Cowen Analyst Report: Ophthotech July 7 2015*

# The opportunity for OPT-302: An unmet medical need remains despite anti-VEGF-A therapy



# OPT-302 has comparable single-agent and additive activity with Eylea<sup>®</sup> in mouse AMD

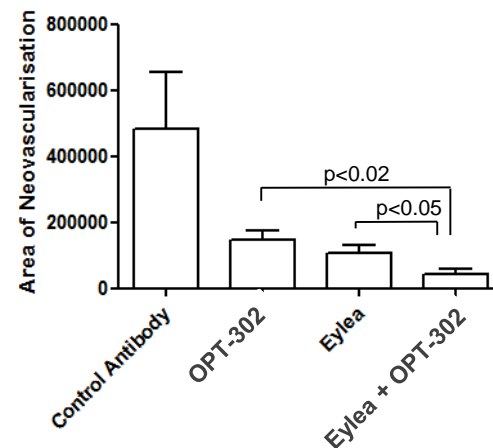
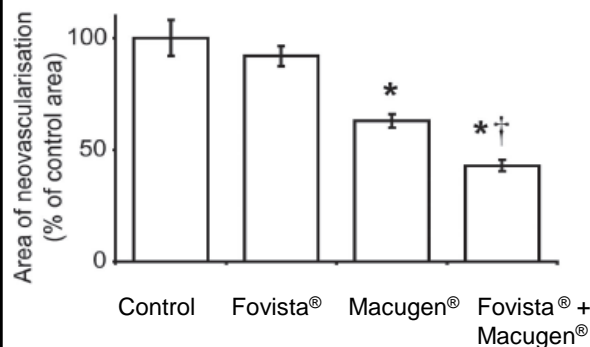
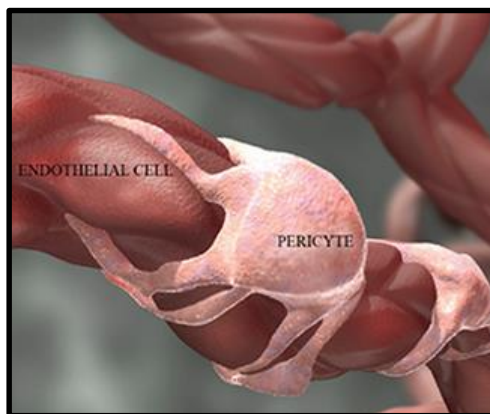
Combined inhibition of VEGF-A (Eylea<sup>®</sup>), VEGF-C and VEGF-D (OPT-302) is more effective than inhibition of VEGF-A alone



\* Pairwise comparison: OPT-302 vs Eylea + OPT-302 ( $p < 0.02$ )  
Eylea vs Eylea + OPT-302 ( $p < 0.05$ )

# Ophthotech and Opthea: Distinct approaches for wet AMD combination therapy

## Activity in in mouse wet AMD model



	FOVISTA™	OPT-302
Preclinical: Activity as Monotherapy?	NO	YES
Preclinical: Activity in Combination?	YES	YES
Potential Use in DME?	Unlikely	YES
Drug Class	Aptamer	Protein
Mechanism	Strips pericytes (supportive cells for vessel wall) which may enhance a-VEGF-A delivery/activity	Directly targets vessel wall (endothelium, through same and independent pathway to Lucentis/Eylea). Blocks a mechanism of resistance to existing a-VEGF therapies.
Valuation at NASDAQ listing	US\$662 m (At end Phase 2)	N/A
Current Market Cap.	AUD\$1.8 bn (Phase 3)	AUD\$28 m (Phase 1)

# OPT-302 Clinical Trials in Wet AMD Patients

Clinical trial protocol covers a Phase 1/2A study in wet AMD patients:

- Phase 1:
  - Dose escalation – Open label
  - Safety & preliminary indicators of clinical activity
  - Data anticipated 1Q'16
- Phase 2A:
  - Dose expansion – Randomised
  - Monotherapy & combination OPT-302 + Lucentis®
- Phase 2B:
  - Randomised, controlled study
  - Design to be finalised following Ph 1/2A
  - OPT-302 + Lucentis® vs Lucentis® only in previously untreated (naïve) patients
  - OPT-302 as 'rescue' therapy in Lucentis® 'sub-responders'

## OPT-302 Wet AMD Program: Milestones

IND Approval for OPT-302  
June 2015 ✓

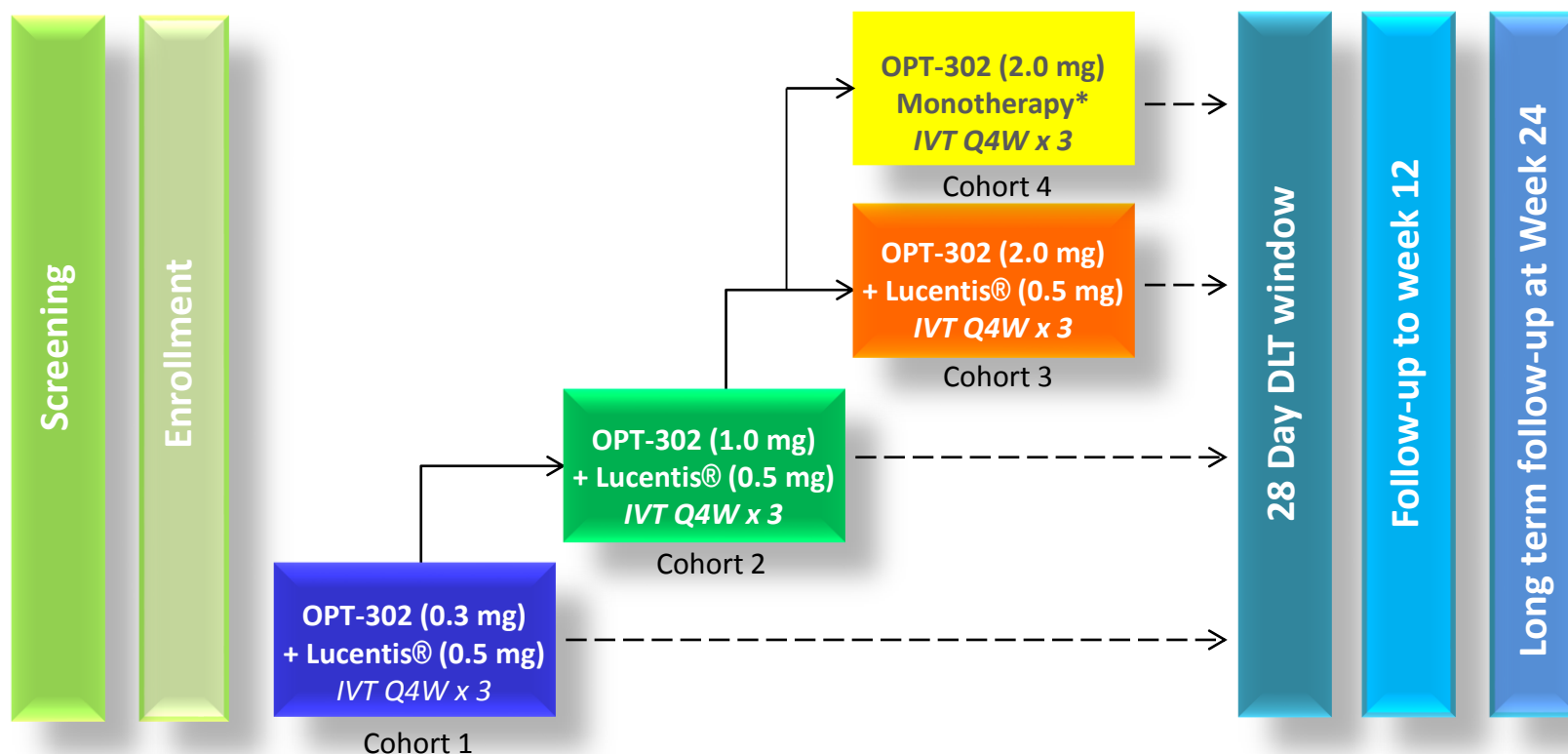
Initiated Phase 1 clinical trial:  
30 June 2015 ✓

Ph 1 Primary Data Analysis:  
1Q16

Ph 2B Primary Data Analysis:  
2017

# OPT-302 Phase 1: Protocol: OPT-302-1001

## Dose escalation of repeated IVT injections



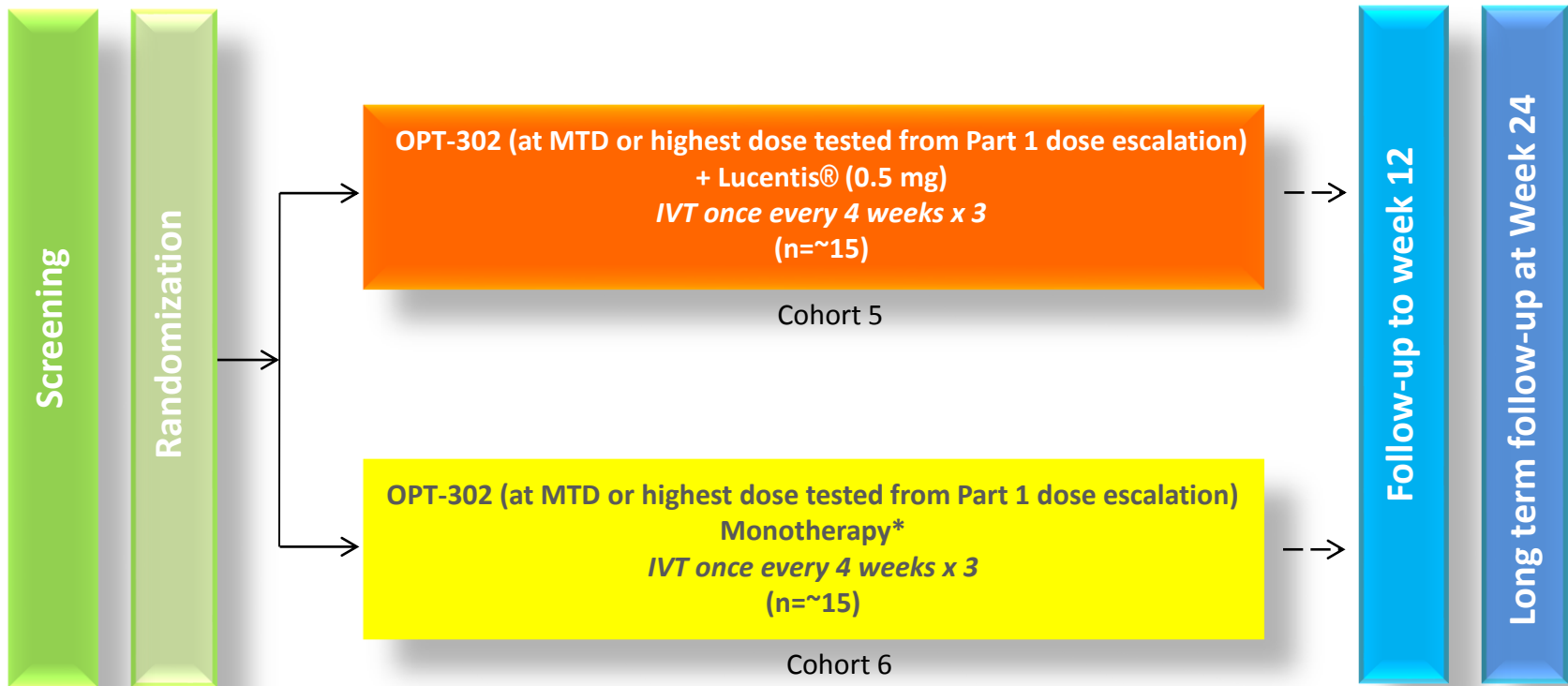
\*Access to rescue anti-VEGF-A Tx

- Comprises of 4 treatment cohorts of 5 subjects each
- Should a dose limiting toxicity (DLT) occur, 3 additional subjects will be enrolled in that cohort
- OPT-302 and ranibizumab given as separate IVT injections (each 0.05 mL) once every 4 weeks at day 1, 29 and 57
- When used in combination, the ranibizumab IVT injection will be given 30 mins prior to sequential IVT OPT-302



# OPT-302 Phase 1/2A: Protocol: OPT-302-1001

## Dose expansion of repeated IVT injections



\*Access to rescue anti-VEGF-A Tx

- Part 2 Dose expansion - Dependent on successful completion of Part 1 Dose Escalation
- OPT-302 and ranibizumab given as separate IVT injections (each 0.05 mL) every 4 weeks at day 1, 29 and 57.
- When used in combination, the ranibizumab IVT injection will be given 30 mins prior to sequential IVT OPT-302.

# Clinical Advisory Board & Advisors

- Clinical Advisory Board of internationally recognised and experienced key opinion leaders from Australia and US
- Extensive experience in development of novel and FDA approved therapeutics for wet AMD, including Macugen®, Fovista®, Eylea® and Lucentis®



**Pravin Dugel MD**  
Retinal Consultants Arizona  
Keck School of Medicine USC



**Mark Gillies MD**  
Save Sight Institute  
Sydney Univ.










**Peter Campochiaro MD**  
John Hopkins  
Wilmer Eye Institute

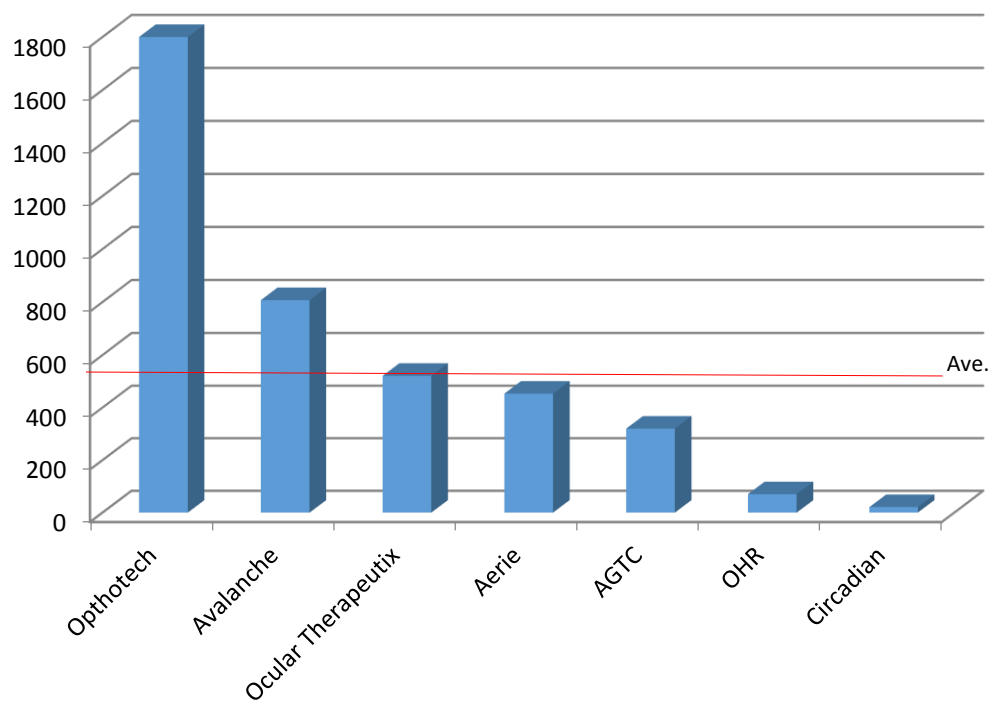


**Kameran Lashkari MD**  
Schepens Eye Res.Inst.  
Harvard Med.School  
Mass Eye & Ear

# Listed Ophthalmology Companies in Phase 1-3

 <p>PDGF-B aptamer Wet AMD</p>	<p><b>\$1.8BN</b> (Phase 3)</p>
 <p>a-VEGF-A gene therapy Wet AMD</p>	<p><b>\$807M</b> (Phase 1/2)</p>
 <p>Sustained delivery Wet AMD</p>	<p><b>\$521M</b> (Phase 3)</p>
 <p>ROCK inhib., small mol. Glaucoma</p>	<p><b>\$453M</b> (Phase 3)</p>
 <p>Gene therapy Eye diseases</p>	<p><b>\$320M</b> (Phase 1/2)</p>
 <p>Squalamine Wet AMD</p>	<p><b>\$70M</b> (Phase 2)</p>
 <p>OPT-302 Wet AMD</p>	<p><b>~\$29M</b> (Phase 1 June 15)</p>

Market Cap (AUD \$m) Listed Ophthalmology Companies Ph1-3



a At July 7 2015, in USD

# OPT-302: Intellectual Property

## Summary covering sVEGFR-3 IP for Eye Disease

COMPOSITION OF MATTER	TERM
<b>Covering sVEGFR-3 (inc. OPT-302)</b> <ul style="list-style-type: none"> <li>Granted Patents: Europe, Japan, Canada, Australia</li> <li>Granted Patent: USA</li> </ul>	2022 2026
<b>Covering OPT-302</b> <ul style="list-style-type: none"> <li>Recently filed new specific composition of matter PCT international patent application</li> </ul>	~2034
'USE' PATENT	
<ul style="list-style-type: none"> <li>US Patent granted covering generic use of sVEGFR-3 capable of binding VEGF-C to inhibit blood vessels in mammal having disease characterised by expression of VEGFR-3 in blood vessels</li> </ul>	2023
PATENT TERM EXTENSION/EXCLUSIVITY	
<b>+5 years under patent term extension</b> <b>OPT-302 entitled to data exclusivity (DE) and market exclusivity (ME) in many jurisdictions, eg.</b> <ul style="list-style-type: none"> <li>US (12 years DE for biologics)</li> <li>Europe (10 years made up of 8 years DE + 2 years ME)</li> <li>Japan (up to 8 years de facto DE)</li> <li>South Korea (5 years DE)</li> <li>Canada (up to 8 years incl. up to 6 years DE + 2 years ME)</li> <li>Australia (5 years DE)</li> </ul>	

# Wet AMD Program Summary

- OPT-302 is a fully owned asset with development potential for a range of eye diseases
- Potent blockade of two members of VEGF family
- Ocular PK and biodistribution similar to Eylea® in rabbit studies
- Monotherapy and additive activity with VEGF-A inhibitors in preclinical models
- IND-enabling preclinical safety toxicology studies completed
  - Well tolerated in preclinical GLP safety toxicology studies
  - Multiple monthly doses via ocular administration alone or in combination with Lucentis®
- Phase 1 clinical trial initiated under FDA approved IND
  - 5 US clinical sites
  - Primary endpoint: safety
  - Secondary endpoints to identify preliminary evidence of clinical activity (eye charts and imaging techniques)
  - Patients receive once monthly injection for 3 months (28 day DLT window)
- Phase 1 data anticipated 1Q'16
- Potential to move directly into Phase 2A randomised dose expansion following Phase 1

# Investment Highlights

- Leader in VEGF-C/D and VEGFR-3 targeting compounds in ophthalmology and oncology
- Fully funded through 2017 and Phase 1/2A and Phase 2B clinical studies in wet AMD patients
- Near-term clinical milestones
  - Phase 1 clinical trial for wet AMD initiated under FDA IND June '15
  - Primary analysis Phase 1 data 1Q'16
  - Primary analysis Phase 2B data 2017
- Differentiated MOA & strong IP position
- World class CAB & advisors
- Pipeline includes Phase 2 ready oncology asset (VGX-100) and Eli Lilly partnered compound IMC-3C5





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## Thank-you

Megan Baldwin , PhD

CEO & Managing Director

Circadian Technologies (ASX:CIR, OTCQX:CKDXY)

[Megan.baldwin@circadian.com.au](mailto:Megan.baldwin@circadian.com.au)

+61 (0) 447 788 674