Company Overview

Investor Presentation

March 2020

Important Information

The information in this presentation does not contain all of the information that a potential investor should review before investing in Aerie shares. The descriptions of Aerie Pharmaceuticals, Inc. (the "Company" or "Aerie") in this presentation are qualified in their entirety by reference to reports filed with the SEC. Certain information in this presentation has been obtained from outside sources or is anecdotal in nature. While such information is believed to be reliable for the purposes used herein, no representations are made as to the accuracy or completeness thereof and we take no responsibility for such information.

Any discussion of the potential use or expected success of Rhopressa® (netarsudil ophthalmic solution) 0.02% or Rocklatan® (netarsudil and latanoprost ophthalmic solution) 0.02%/0.005%, with respect to foreign approval or additional indications, and our current or any future product candidates, including AR-1105, AR-13503 and AVX-012, is subject to regulatory approval. In addition, any discussion of U.S. Food and Drug Administration ("FDA") approval of Rhopressa® or Rocklatan® does not guarantee successful commercialization of Rhopressa® or Rocklatan®. For more information on Rhopressa®, including prescribing information, refer to the full Rhopressa® product label at www.rhopressa.com. For more information on Rocklatan®, including prescribing information, refer to the full Rocklatan® product label at www.rocklatan.com.

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Certain statements in this presentation, including any guidance or timelines presented herein, are "forward-looking statements" within the meaning of the federal securities laws. Words such as "may," "will," "should," "would," "could," "believe," "expects," "anticipates," "plans," "intends," "estimates," "targets," "projects," "potential" or similar expressions are intended to identify these forward-looking statements. These statements are based on the Company's current plans and expectations. Known and unknown risks, uncertainties and other factors could cause actual results to differ materially from those contemplated by the statements. In evaluating these statements, you should specifically consider various factors that may cause our actual results to differ materially from any forward-looking statements. In particular, these statements include any discussion of potential commercial sales, placement or utilization of Rocklatan® or Rhopressa® in the United States or any other market. Likewise, FDA approval of Rhopressa® and Rocklatan® does not constitute approval of any future product candidates. Any top line data presented herein is preliminary and based solely on information available to us as of the date of this presentation and additional information about the results may be disclosed at any time. FDA approval of Rhopressa® and Rocklatan® also does not constitute regulatory approval of Rhopressa® or Rocklatan® in jurisdictions outside the United States and there can be no assurance that we will receive regulatory approval for Rhopressa® or Rocklatan® in jurisdictions outside the United States. In addition, any discussion in this presentation about preclinical activities or opportunities associated with our products or discussions involving the potential for our dry eye product candidate are preliminary and the outcome of any studies may not be predictive of the outcome of later trials and ultimate regulatory approval. Any future clinical trial results may not demonstrate safety and efficacy sufficient to obtain regulatory approval related to the preclinical research findings discussed in this presentation. Any statements regarding Aerie's future liquidity, cash balances or financing transactions also constitute forward-looking statements. These risks and uncertainties are described more fully in the quarterly and annual reports that we file with the SEC, particularly in the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Such forward-looking statements only speak as of the date they are made. We undertake no obligation to publicly update or revise any forward-looking statements, whether because of new information, future events or otherwise, except as otherwise required by law.

Aerie Overview

Aerie IOP–Reducing Products (IP 2030+)

- **Rhopressa® and Rocklatan® commercialized**
- **Aerie Ireland plant** online Q1 2020
- **Globalization Plan Under Way** – Europe and Japan

Key Pipeline Activities

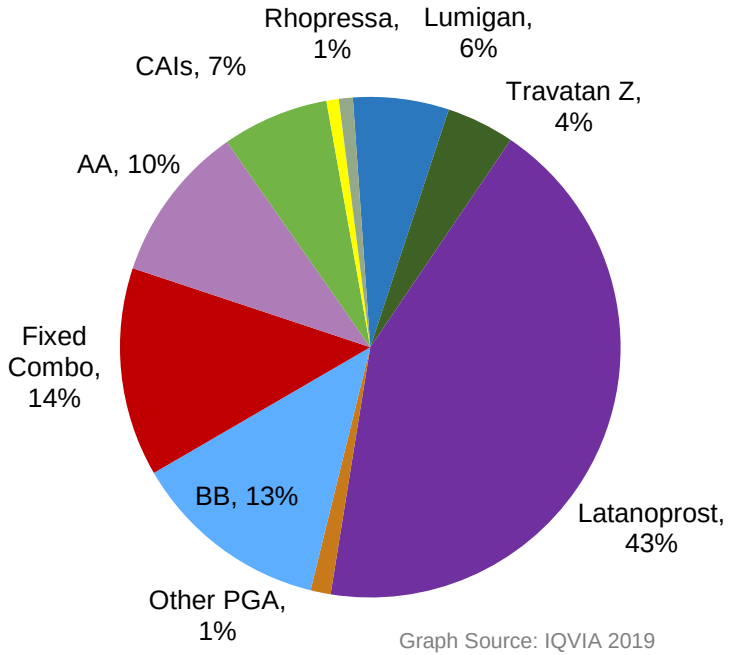
- **Avizorex TRPM8 agonist for Dry Eye** (Phase 2/3 clinical study H2 2020)
- **Sustained-Release Implant Platform:**
  - **Retina** AR-13503 (First-in-human clinical study commenced Q3 2019)
    AR-1105 (Phase 2 clinical study commenced Q1 2019)

Rhopressa® and Rocklatan® have not been approved by any regulatory authority other than the FDA. Additional potential Rhopressa® indications are being considered for further study and are not labeled indications. AR-13503 and AR-1105 are development stage product candidates and are not approved by any regulatory agency.

Glaucoma Market Perspective

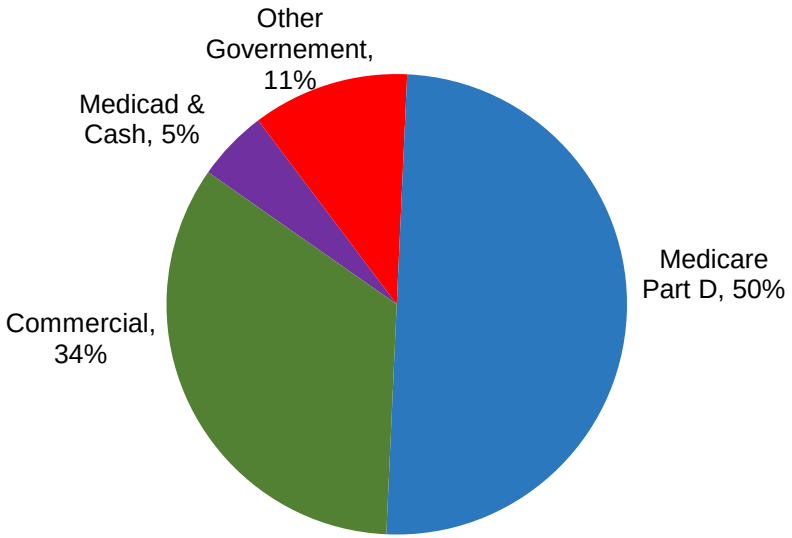
2019 U.S. Glaucoma Market

- ~$3B Market, 36M TRx, **55M bottles**
- 55% of unit volume first-line (PGAs)
- 45% of unit volume 2-3X/Day Adjuncts



Graph Source: IQVIA 2019
CAI: Carbonic Anhydrase Inhibitor
AA: Alpha Agonist
BB: Beta Blocker

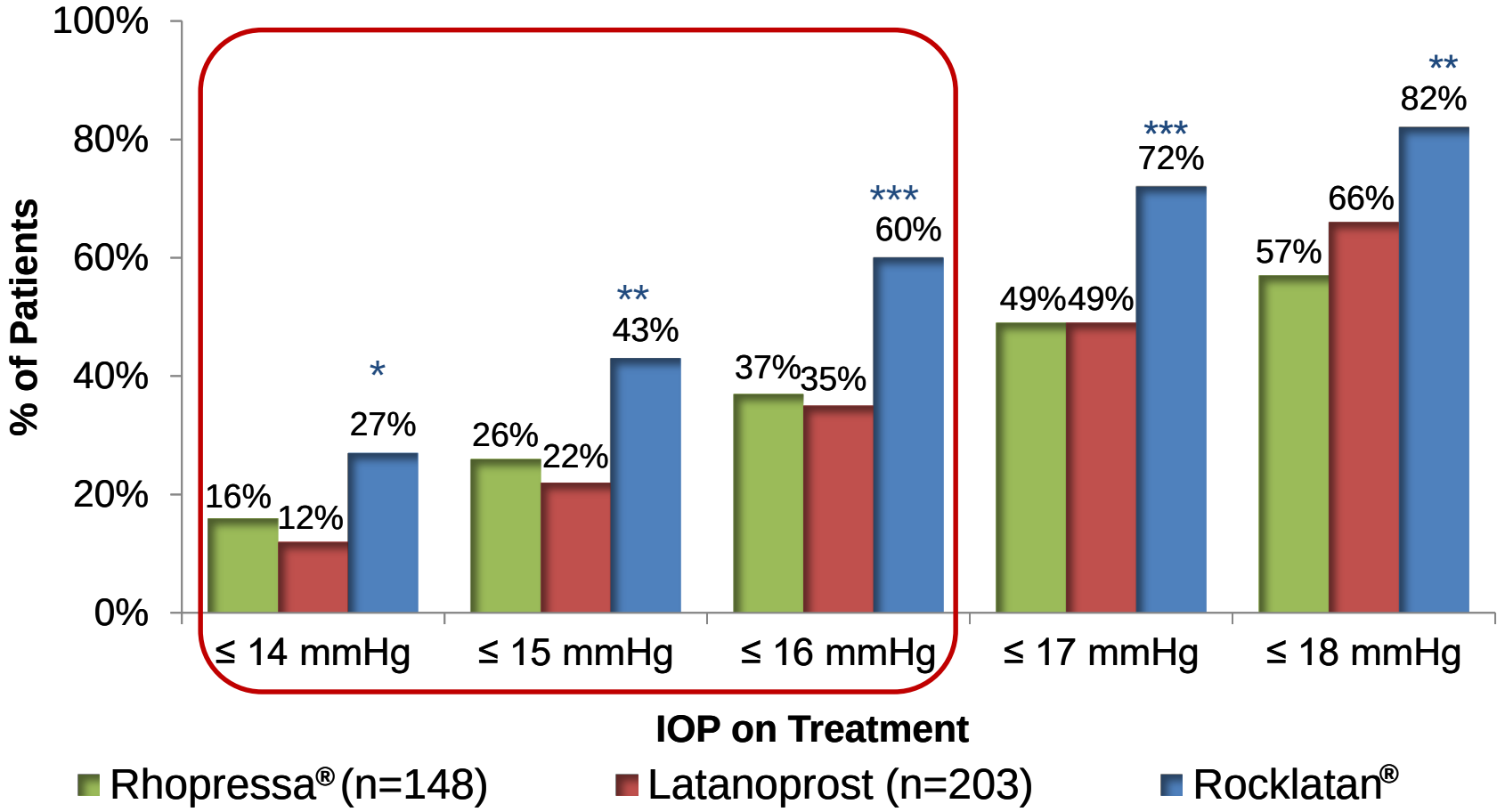
Estimated Glaucoma Market TRx Mix



Sources: IQVIA: NPA Rx and NSP Unit data

Rocklatan® Phase 3 Month 12 Responder Analysis: Goal is to Achieve Lowest IOP Possible

At Month 12: % of Patients with IOP Reduced to 18 mmHg or Lower



*p<0.05, **p<0.01, ***p<0.0001

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Based on Mercury 1 Interim Analysis 2

Rocklatan® has not been approved by any regulatory authority other than the FDA.

Topline Results from Rhopressa® Phase 4 Multi-center Open-label Study (MOST)

- **12-week MOST study evaluated efficacy, tolerability and safety of Rhopressa® use in 260 patients in a real-world clinical setting**
  - Use of Rhopressa® as monotherapy or adjunct was at discretion of the physician
- **Used adjunctively (n=151, mITT):**
  - Rhopressa® was similarly effective when added to prior PGA monotherapy or when added to prior multi-drug therapy
    - Additional IOP reductions of 4.3 mmHg and 4.5 mmHg, respectively (12 weeks)
- **Used as monotherapy (n=91, mITT):**
  - Rhopressa® maintained IOP levels comparable to prior PGA following switch (n=57)
- **Rhopressa® was well tolerated as monotherapy and adjunctive therapy**
  - No treatment-related serious adverse events (AEs)
  - Most common AEs were Conjunctival Hyperemia (20.8%) and Vision Blurred (7.3%)
  - 89% of patients reported Rhopressa® was tolerated “well” or better in survey (mITT)

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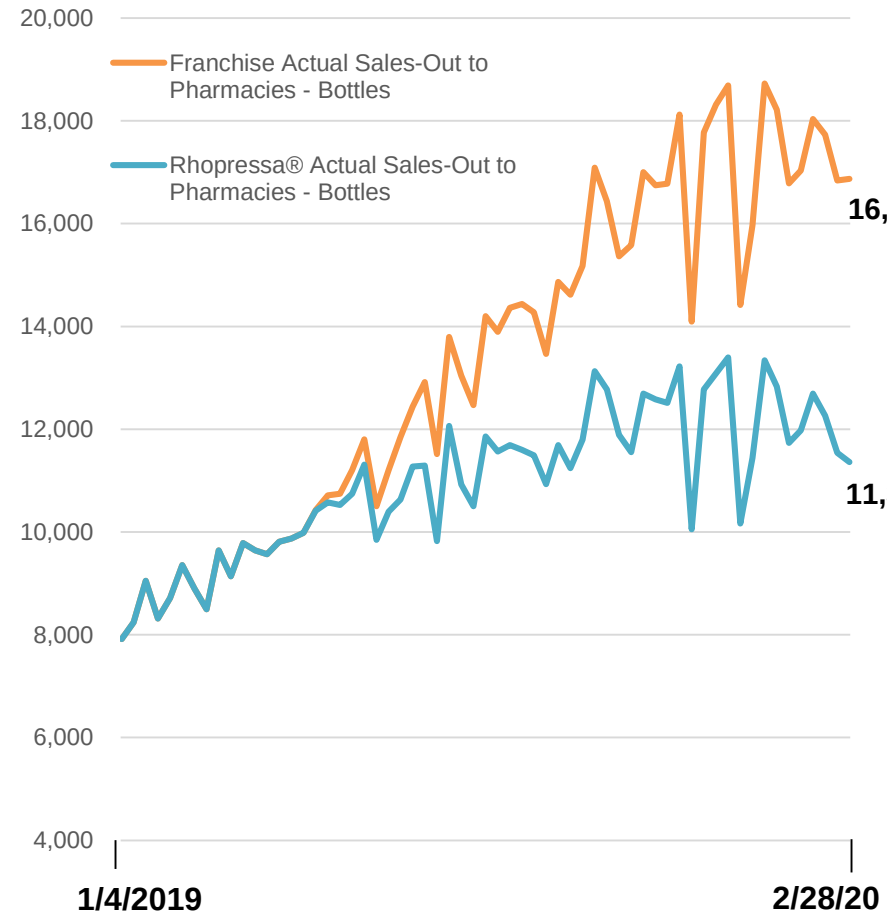
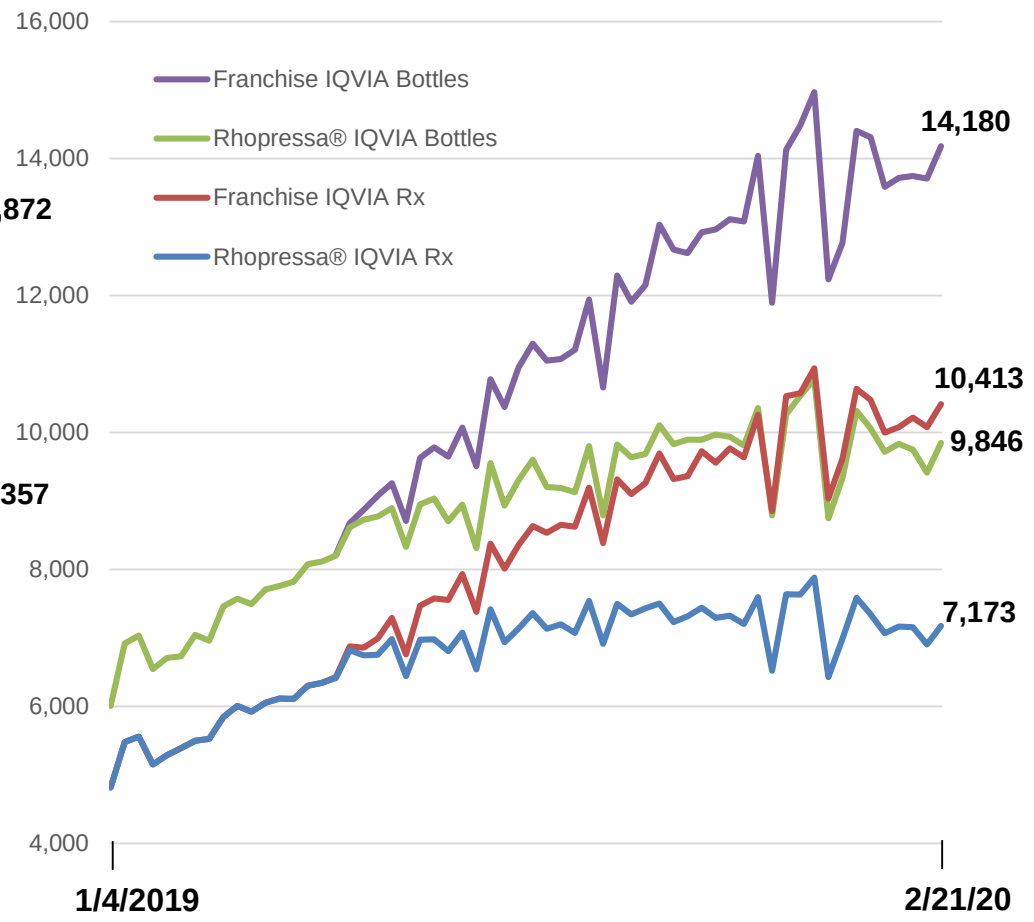
U.S. Glaucoma Franchise Launch Update

Actual Weekly Sales-Out to Pharmacies Data as of 2/28/20



IQVIA Weekly Data as of 2/21/20



U.S. Glaucoma Franchise: TRx/NRx as of 2/21/20

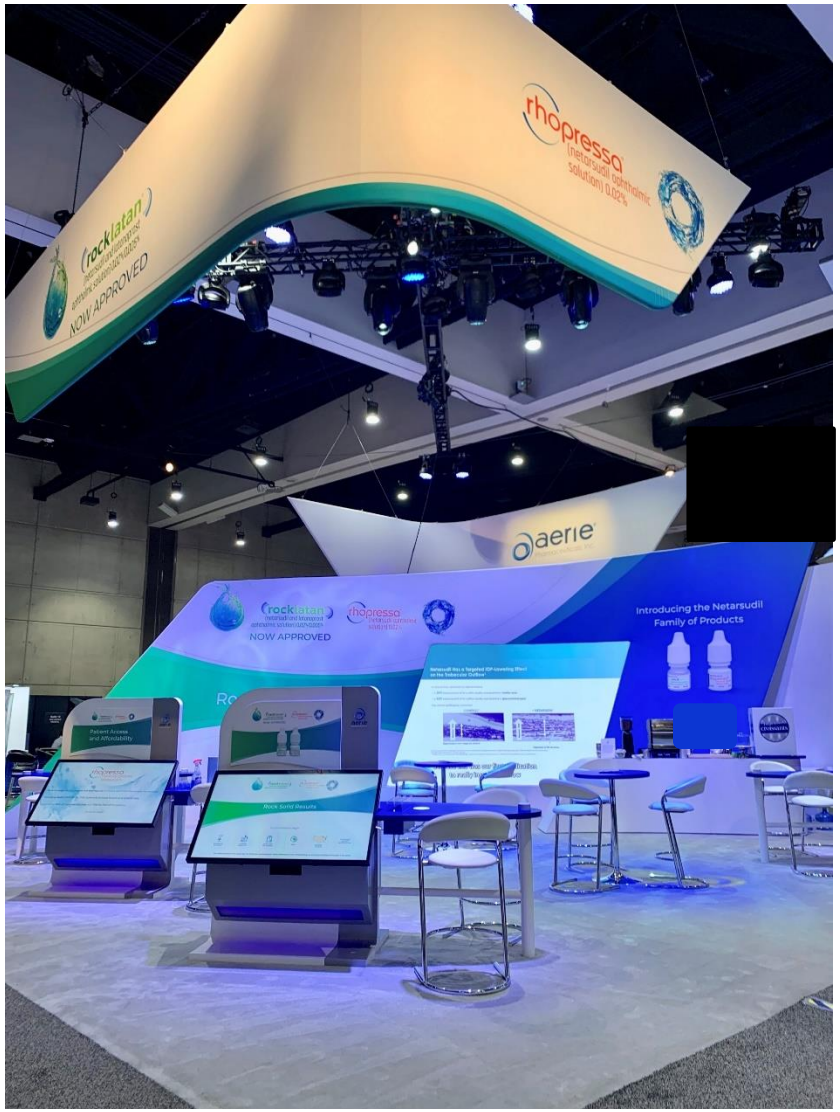
	% TRx Change vs. Last Week	% NRx Change vs. Last Week
Rhopressa®	3.9%	1.9%
Rocklatan®	2.2%	-1.0%
Franchise	3.4%	0.9%
Market	0.5%	-0.6%

Market Access as of March 2020

- **Rhopressa®**
  - Commercial ~ 90% of covered lives
  - Medicare Part D ~ 75% of covered lives
- **Rocklatan®**
  - Commercial ~ 82% of covered lives
  - Medicare Part D ~ 36% of covered lives
  - Additional 18% of remaining Medicare Part D lives have affordable access through U.S. government funded Low Income Subsidy programs

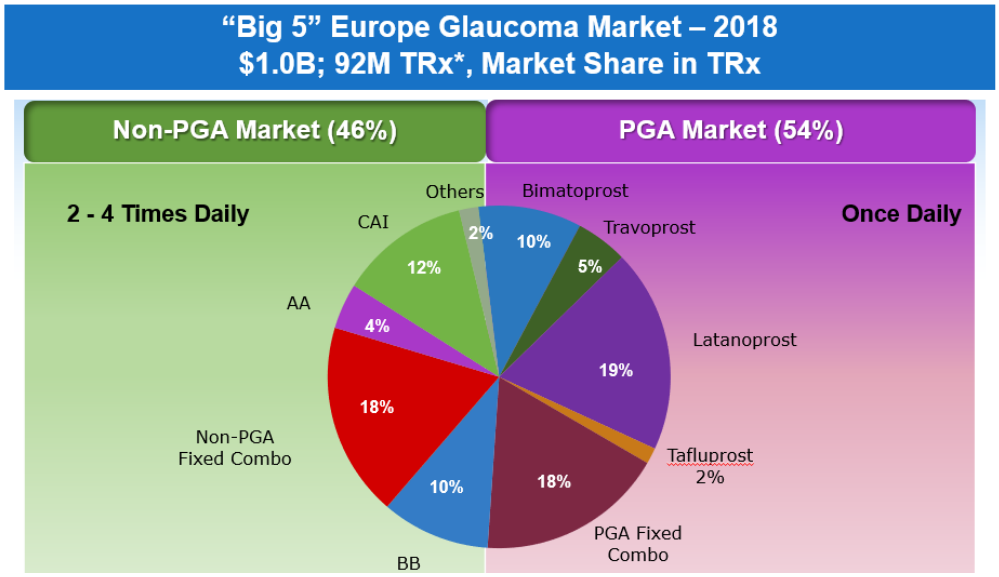
Access percentages reflect signed contracts, not necessarily implemented underlying formulary coverage.

Active Engagement at Key Conferences



- **February 2020: American Glaucoma Society (AGS)**
- **May 2020: Association of Research in Vision and Ophthalmology (ARVO)**
- **May 2020: American Society of Cataract and Refractive Surgeons (ASCRS)**
- **May/June 2020: European Glaucoma Society (EGS)**
- **July 2020: American Society for Retina Specialists (ASRS)**
- **October 2020: European Society of Cataract and Refractive Surgeons (ESCRS)**
- **October 2020: Japan Glaucoma Society (JGS)**
- **November 2020: American Academy of Ophthalmology (AAO)**

Expanding Aerie Franchise: Europe

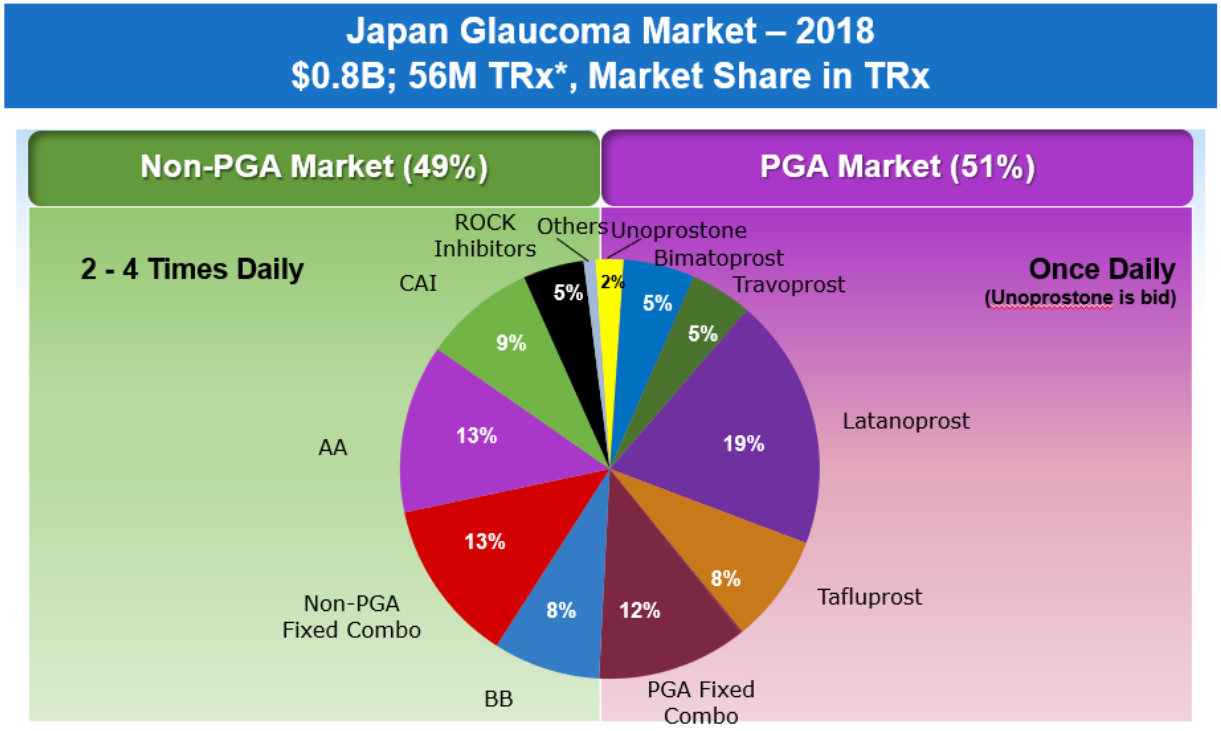


- Marketing authorisation granted for Rhokiinsa® (Rhopressa®) in November 2019; Roclanda® (Rocklatan®) MAA accepted for review in December 2019
- Mercury 3: 6-month safety and 90-day efficacy registration trial comparing Rocklatan® (known as Roclanda® in Europe) for non-inferiority to a fixed-dose combo in Europe (Ganfort®).
- Ireland Plant to begin supporting worldwide commercial supply in Q1 2020.

Mercury 3 top-line readout expected in H2 2020

Sources: IMS Analytics Link at ex-manufacturer price level- March 2019. *TRx calculated from IQVIA unit data (1 month = 1 TRx)

Expanding Aerie Franchise: Japan



- Phase 2 study successful top-line results released in November 2019
- Phase 3 trials expected to be conducted in Japan

Aerie currently exploring partnering opportunities

Sources: IQVIA Analytics Link at ex-manufacturer price level – March 2019. *TRx calculated from IQVIA unit data (1 month = 1 TRx)

AR-13324-CS208 Japan Phase 2 Study Topline Results

- **28-day prospective, double-masked, placebo-controlled, dose-ranging study of netarsudil efficacy and safety in Japanese subjects with open-angle glaucoma (OAG) or ocular hypertension (OHT)**
- **Netarsudil 0.01%, 0.02% and 0.04% were efficacious, met primary endpoint of superiority to placebo in mean diurnal IOP at Week 4[1], were safe and generally well tolerated**
  - Baseline mean diurnal IOPs 20-21 mmHg across study arms[2] (Japanese IOPs ~3 – 4 mmHg lower than in the U.S.)
  - Week 4 mean diurnal IOP was 16.3 (-4.1), 15.4 (-4.8), 16.2 (-4.8) and 19.3 (-1.7) mmHg in the netarsudil 0.01%, 0.02%, 0.04%, and placebo groups, respectively[2]
  - No serious adverse events
- **Netarsudil 0.02% (concentration of Rhopressa® in the U.S) provided best balance of efficacy and safety**
  - Most common AE was Conjunctival Hyperemia (37.0%), discontinuation rate was 1.9%, all lower than in US trials[3-5]

Netarsudil generated lower IOPs than observed prior to subject washout from prior meds – by up to 2mmHg

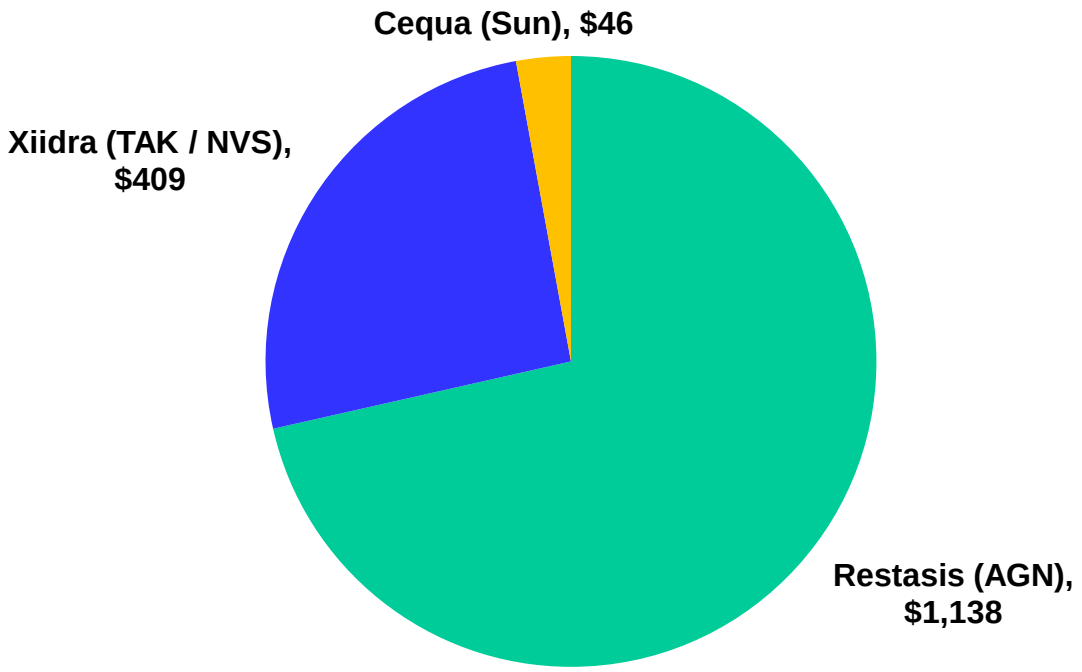
1. ANCOVA with MCMC imputation. 2. Observed data. 3. Bacharach J, et al. Ophthalmology. 2015 Feb;122(2):302-7. 4. Serle JB, et al. Am J Ophthalmol. 2018 Feb;186:116-127. 5. Khouri AS, et al. Am J Ophthalmol. 2019 Aug;204:97-104.

Advancing the Pipeline

Drug/Target	Indication	Development Stage		
		Preclinical	Phase 1/2a	Phase 2b
Front of the Eye				
AR-15512 (AVX TRPM8 agonist)	Dry Eye			
Back of the Eye				
AR-1105 Implant (Dexamethasone)	RVO/DME			
AR-13503 Implant (ROCK, PKC)	wAMD			
	DME/DR			
	Glaucoma Neuro-enhancement			

U.S. Dry Eye Market

US 2019 Sales: $1.6B est.



- **Estimated 30 million dry eye sufferers in the United States**
- **Less than 3 million treated**

Sources: Mixture of public information, IQVIA , Market Scope and estimates – Feb 2020

AVX-012 for Dry Eye

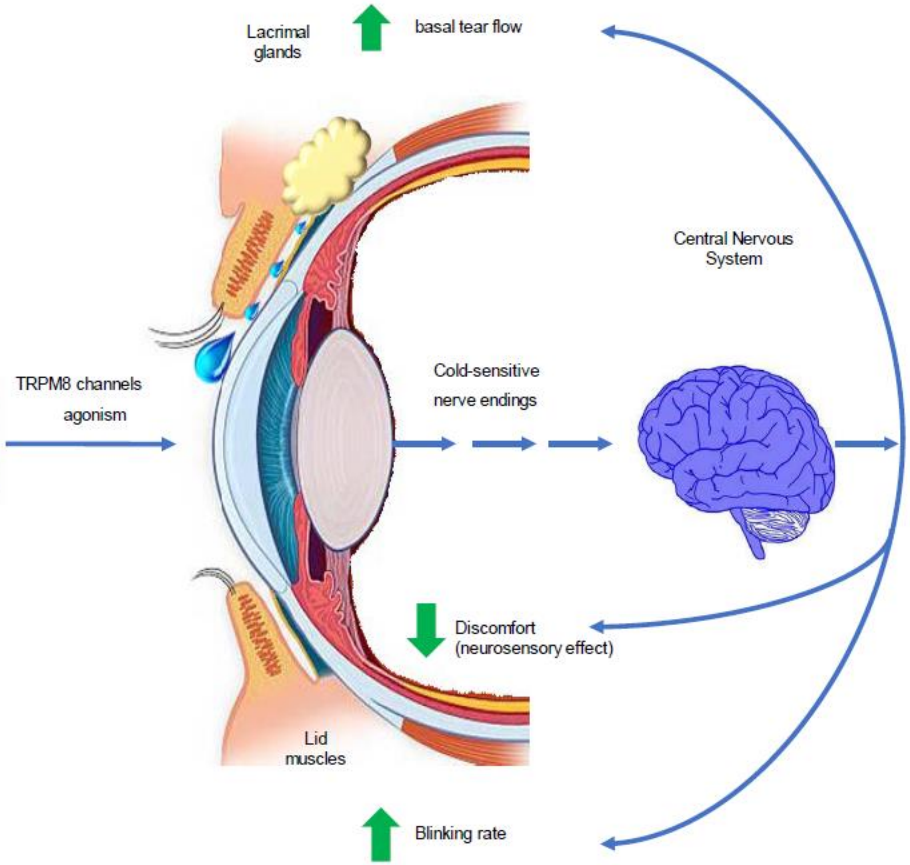
- **Novel Mechanism of Action – Modulation of Corneal TRPM8 receptors**
  - TRPM8 receptor is a cold thermoreceptor involved in basal tear production (i.e.; sign)
  - Modulation of TRPM8 also provides a cooling sensation upon instillation (i.e.; symptom)
  - This mechanism of action is different than those of current prescription dry eye products and supports use as monotherapy as well in conjunction with approved products
- **Avizorex completed a Phase 1/2a study in early 2019 in ~130 subjects**
  - One concentration and two dosing regimens (BID/TID) were evaluated
  - Statistically significant improvements in both a sign (tear production-Schirmer's) and subject-reported symptoms (SANDE questionnaire) were observed
- **Aerie is already performing additional research to support next clinical study**
  - Longer-term non-clinical toxicology studies are necessary
  - Larger scale manufacturing activities underway
- **Aerie plans to conduct a Phase 2/3 study in late 2020**
  - Larger study than conducted by Avizorex
  - Evaluation of two concentrations of AVX-012 BID

Data on file.
AVX-012 is a development stage product candidate and is not approved by any regulatory agency

AVX-012 (TRPM8 Agonist) for Dry Eye

HOW AVX-012 WORKS

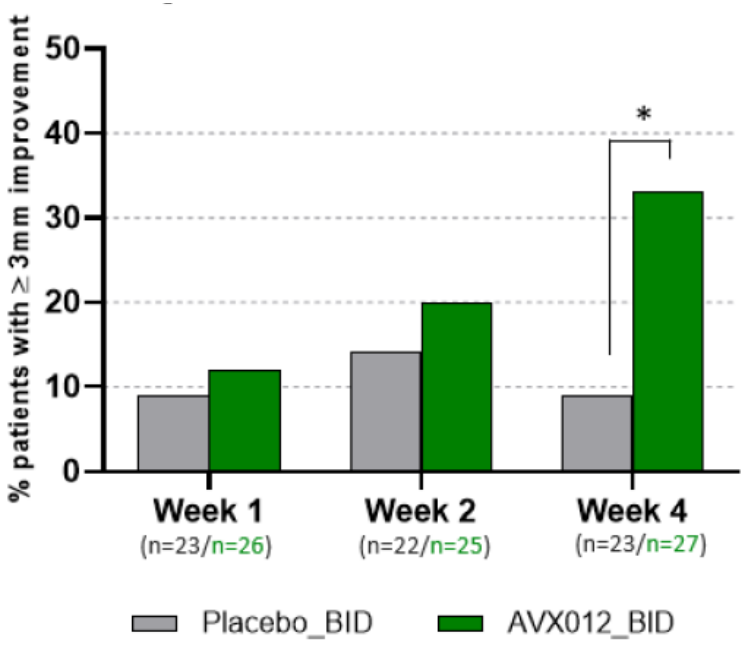
By activating cold thermoreceptors in the cornea increases tear production and blinking rate, restoring tear film stability and reducing discomfort



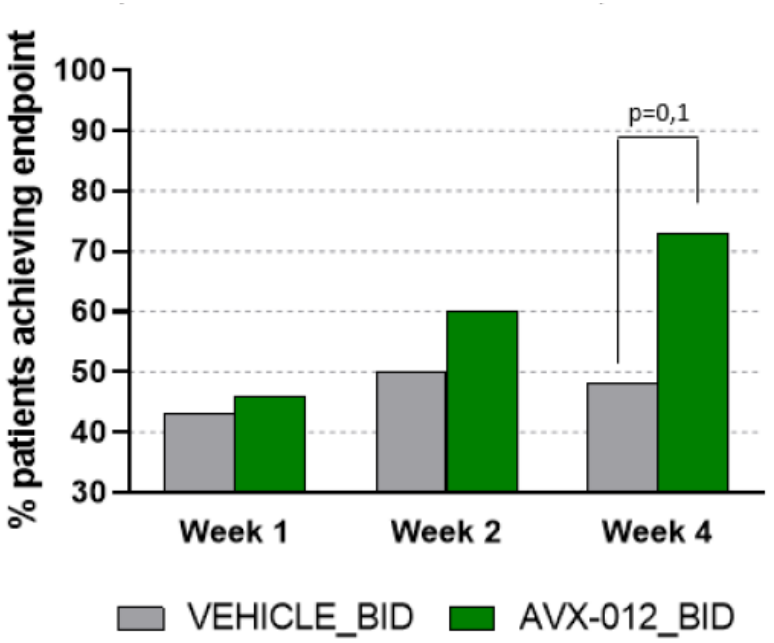
AVX-012 Dry Eye Clinical Trial Highlights

- Significant efficacy achieved for sign and symptoms with BID dosing of 0.0014% (50µM) AVX-012 over 28 days

Sign: Schirmer Evaluation
Percentage of patients improving ≥3mm



Symptoms: SANDE Score
Percentage of patients improving ≥20 score



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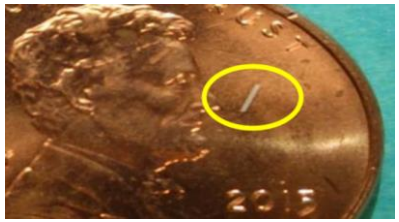
Back of the Eye Diseases – Aerie Approach

Bringing Small Molecule Therapy to Back of the Eye

- Most retinal drugs in use and in pipeline are protein therapeutics
  - Longer half-life allows monthly to bimonthly IVT injections
- Protein therapeutics address limited number of extracellular targets
- Small molecules address a wider array of therapeutic targets, but are rapidly cleared from back of the eye

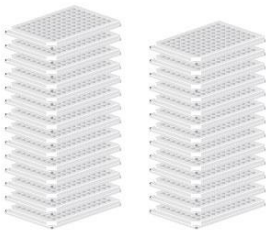


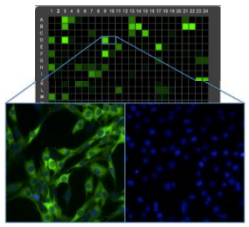
The Solution:

Pair small molecules with a safe and effective sustained delivery technology to enable IVT injections every 4 - 6 months

Aerie's Ophthalmic Implant Platform

Small Molecule Drug Candidates

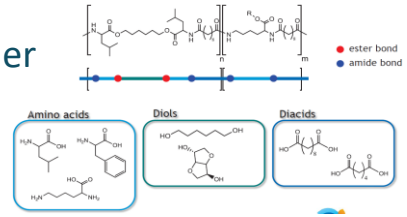


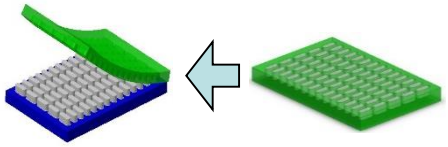


- Aerie Kinase Library
- Non-Aerie drug candidates

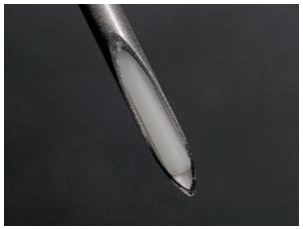
Proprietary Drug Delivery Technology

- DSM PEA Polymer
- PLGA





- PRINT® Mfg

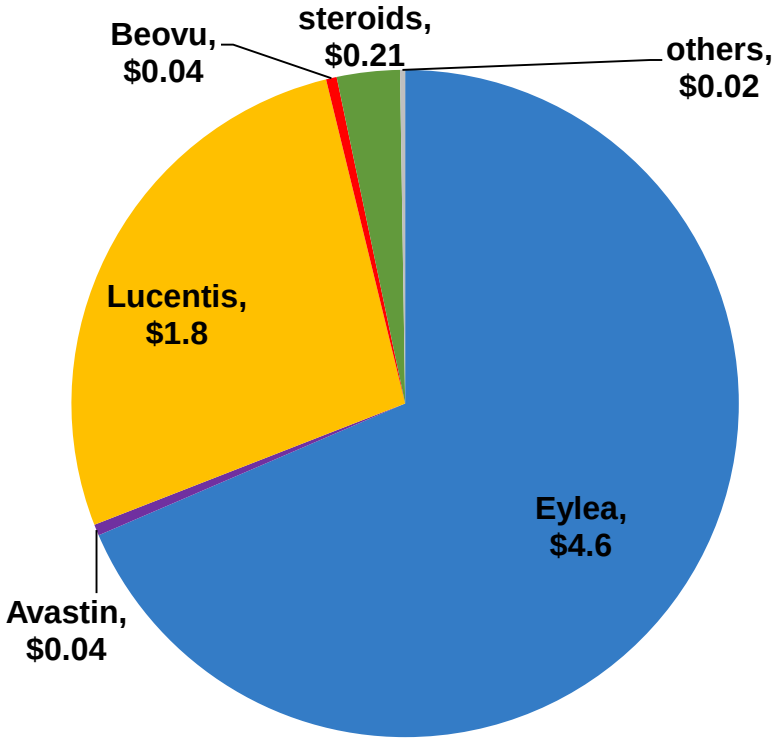


- Bio-erodible, sustained-release implant for intravitreal injection

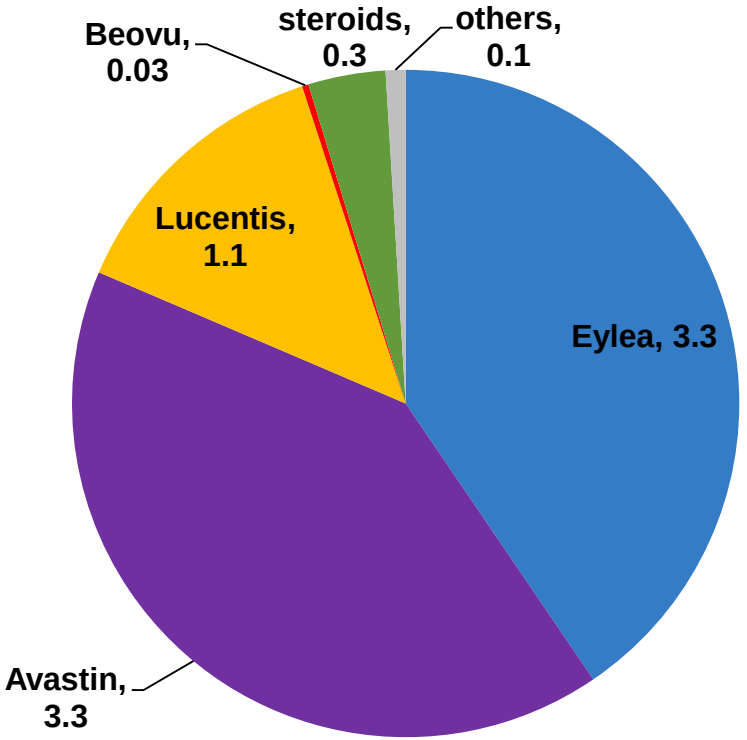
AMD **DME** **RVO** **Dry AMD/GA** **Glaucoma** **Others**

2019 U.S. Retinal Disease Market

2019 Sales: $6.8B



2019 Unit Sales: 8.1MM



Sources: Mixture of public information, IQVIA, Market-Scope and estimates – Feb 2020

Aerie's Sustained Implant Opportunities

Markets in Need of Further Innovation:

- Retinal Vein Occlusion (RVO)
- Wet Age Related Macular Edema (wAMD)
- Diabetic Macular Edema (DME)

Broadly Underserved Market Opportunities:

- Glaucoma Neuro-enhancement
- Dry AMD/Geographic Atrophy (GA)

Aerie's Lead Implant Product Candidates

AR-1105 (Dexamethasone) Implant (Phase 2 readout ~ H2 2020)

- Indications under development: retinal vein occlusion (RVO)
- Target product profile vs. Ozurdex®
  - Designed for longer duration of efficacy (6 mo vs 3 mo)
  - Designed for improved administration due to smaller needle
  - Potential for fewer adverse effects due to lower peak drug levels

AR-13503 (ROCK/PKC) Implant

- Initial indications under development: neovascular AMD and DME
- Novel MOA: anti-angiogenesis PLUS anti-fibrosis, anti-inflammation
- Designed to be effective as monotherapy or adjunctive therapy to anti-VEGF
- Targeting injection once every 6 months

For more information on Ozurdex® please see the product webpage https://www.ozurdex.com
AR-1105 and AR-13503 are development stage product candidates and are not approved by any regulatory agency

Aerie's Key Catalysts for 2020

Pipeline:

- Avizorex TRPM8 agonist for Dry Eye Phase 2/3 clinical study expected to commence **H2 2020**
- AR-1105 Phase 2 RVO clinical study readout expected **H2 2020**
- AR-13503 clinical study for Neuro-enhancement expected to commence **H2 2020**

Globalization:

- Roclanda® Mercury 3 topline readout expected **H2 2020;** Roclanda® EMA approval expected **late 2020**
- Rhopressa® Phase 3 clinical study in Japan expected to commence **H2 2020**

Continued growth of Aerie's glaucoma franchise in the U.S.

Summary

- **Key Priorities**
  - Successful commercialization in U.S. of Rhopressa® and Rocklatan®
- **Globalization Strategy**
  - Europe/Japan clinical path and commercialization strategy
  - Ireland Manufacturing Facility – expected to be online H1 2020
- **Research Initiatives**
  - Avizorex TRPM8 agonist for dry eye
  - Retina Program
- **Well-Financed**
  - $309.2M cash/investments at 12/31/19