

On behalf of Vision Expo, we sincerely thank you for being with us this year.

Vision Expo Has Gone Green!

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.



disclosures

last 12 months

allergan/abbvie
sun pharma
tarsus pharma
Ocuphire
Bruder
Scope

last 12 months

sydnexis
eyenovia bio
laboratoires Thea
visus/tenpoint
therapeutics
Harrow

last 12 months

aperta biosciences
astareal, inc.
azura ophthalmics
aldeyra therapeutics
Vyluma
Lenz

“All relevant relationships have been mitigated.”

Drugs of the future

milton m. hom
eyemage@mminternet.com
Azusa, CA

Drugs of the future

milton m. hom
eyemage@mminternet.com
Azusa, CA

Where will the next
blockbuster drug come from?

Three frontiers

Dry eye & neuroinflammation



Myopia control

Demodex & blepharitis

Dry eye

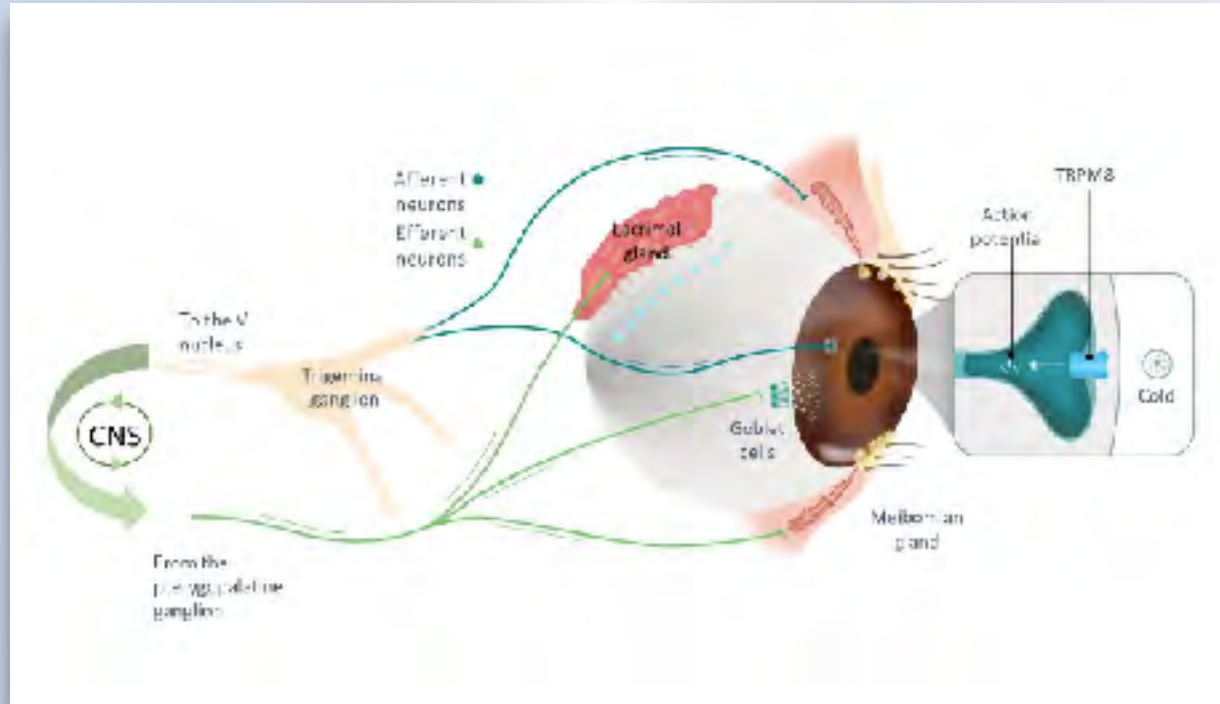
Neurology is the
new dry eye frontier

Company	Drug	MOA	Indication	FDA
Alcon	Acoltremon	TRP channels Cold receptors	Dry eye	Approved
Aldeyra/ AbbVie	Reproxalap	RASP trap TRP channels	Dry eye/ Allergic conjunctivitis	Phase 3
Okyo	Urcosimod	Anti- inflammatory Neurogenic inflammation	Dry eye/ Neuropathic pain	Phase 2

	Immune Inflammation 	Neurogenic Inflammation 
Signals	Cytokines TNF- α , IL-6, prostaglandins	Neuropeptides Substance P, CGRP, VIP, neurokinin A
Pathway	Immune cells	“Alarm response”
Time course	Gradual over days to weeks	Rapid, sudden



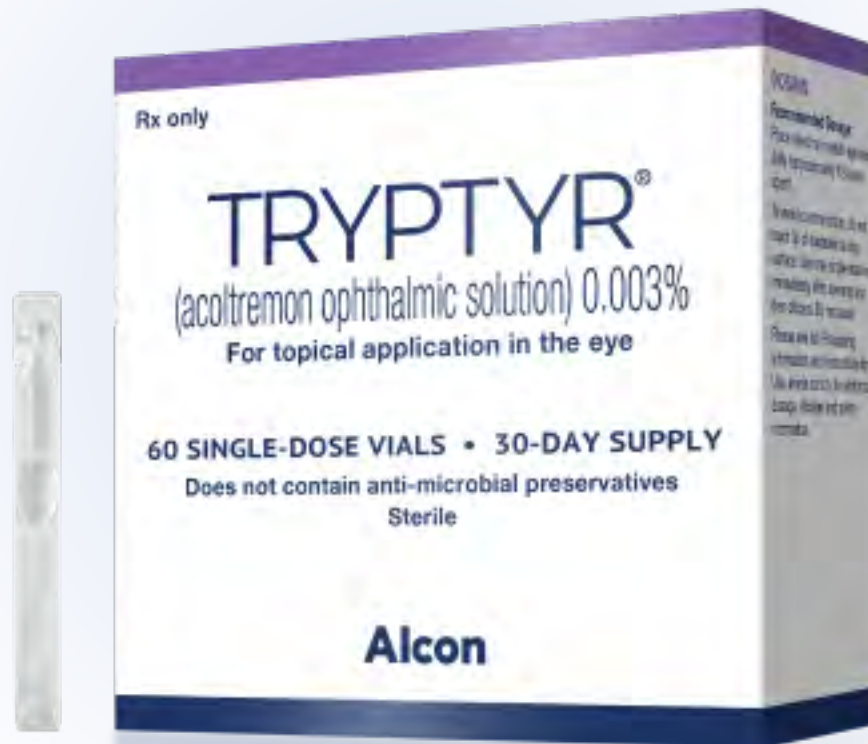
TRP channels switches on neurogenic inflammation



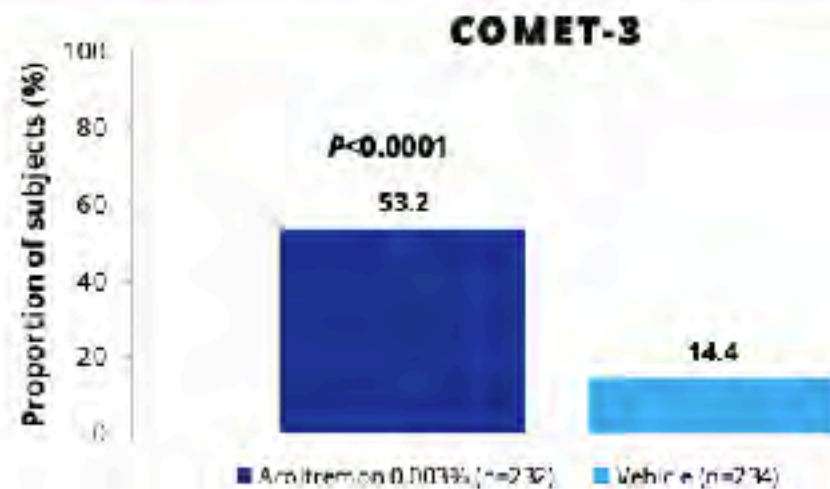
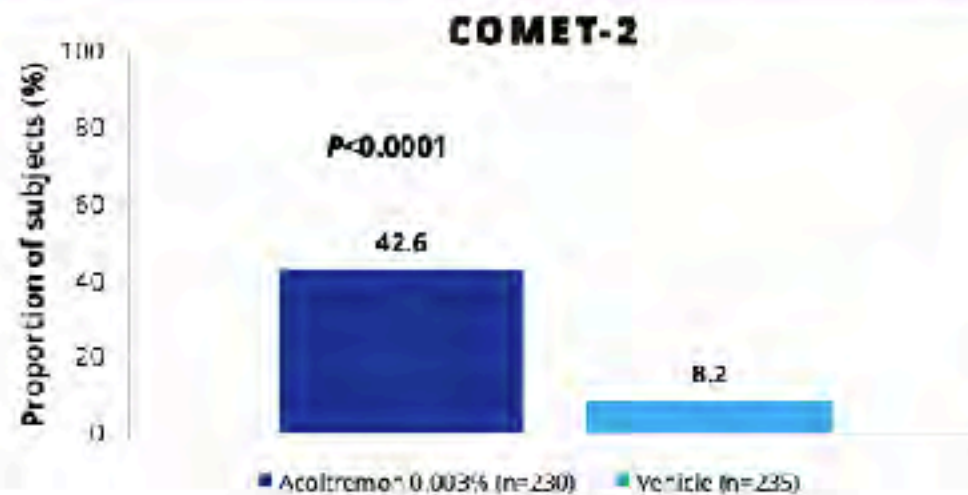
Cools inflammation
Increases tear volume

Activates inflammation
Pain burning stinging photophobia

Dry eye



Proportion of subjects who achieved a ≥ 10 -mm improvement from baseline in unanesthetized Schirmer score on day 14



Dry eye

GoodRx
\$900



Dry eye

Drug	Good Rx
Cequa	\$645.80
Restasis	\$660.30
Xiidra	732.59
Meibo	\$853.21
Tryptyr	\$900

Dry eye



sored ad



Brand: [Wonderland Herbs](#)

Cooling Agent WS12, CAS 68489-09-8, Purity 99%, 100g

[Search this page](#)

Price: ~~\$94.00~~

Business Price ▼ **\$89.30**

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Brand Wonderland Herbs

Percentage assay 99

Manufacturer WonderLand Herbs

UPC 744173960159



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8:12

88

Live

STEM

Following

Shop

For You



DryEyeMaster

The Periman Eye Institute (PEI) team tries
TRYPTYR for the first time. TRYPTYR ... more



	COMET-2		COMET-3	
	Acoltremon 0.005% n=230	Vehicle n=235	Acoltremon 0.003% n=232	Vehicle n=234
Number of serious ocular TEAEs	0	0	0	0
Study discontinuation rate (%)	8.7	9.4	7.3	6.8
Percentage of subjects discontinuing study due to any TEAE (%)	1.3	1.3	2.2	2.1
Number of ocular TEAEs >2.5%		1		1
Incidence of burning or stinging (%)	53.0	3.8	50.9	2.6
Percentage of burning or stinging rated as mild in severity (%)	50.4	100.0	57.3	100.0
Number of subjects discontinuing study due to burning/stinging	0	0	2	0

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Aldeyra/ AbbVie	Reproxalap	RASP trap TRP channels	Dry eye/ Allergic conjunctivitis	Phase 3
Okyo	Urcosimod	Anti- inflammatory Neurogenic inflammation	Dry eye/ Neuropathic pain	Phase 2

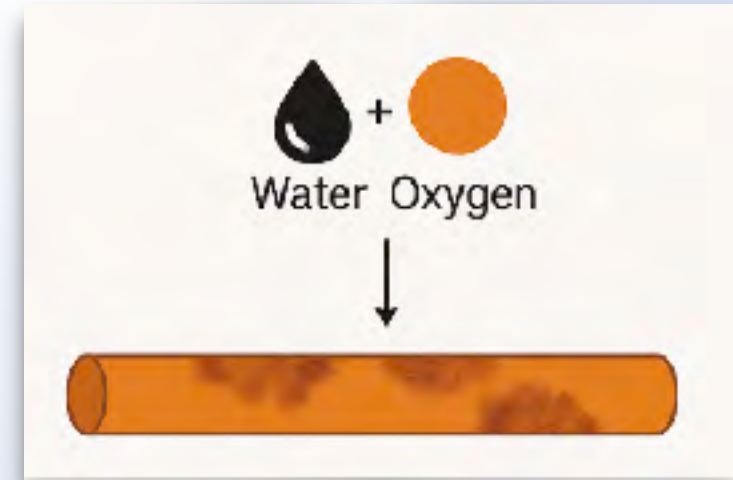
Reproxalap

Oxidative stress by RASPs
(biological rust)

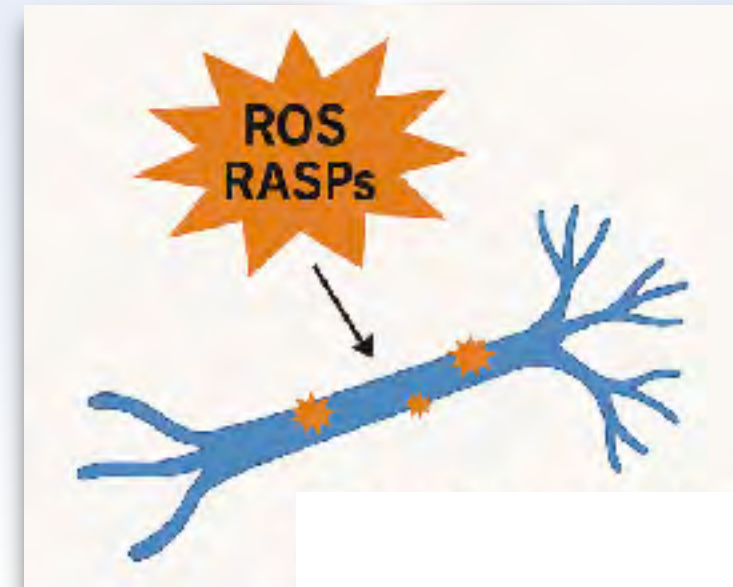
Causes misfiring and
sparks

Activates neurogenic
inflammation

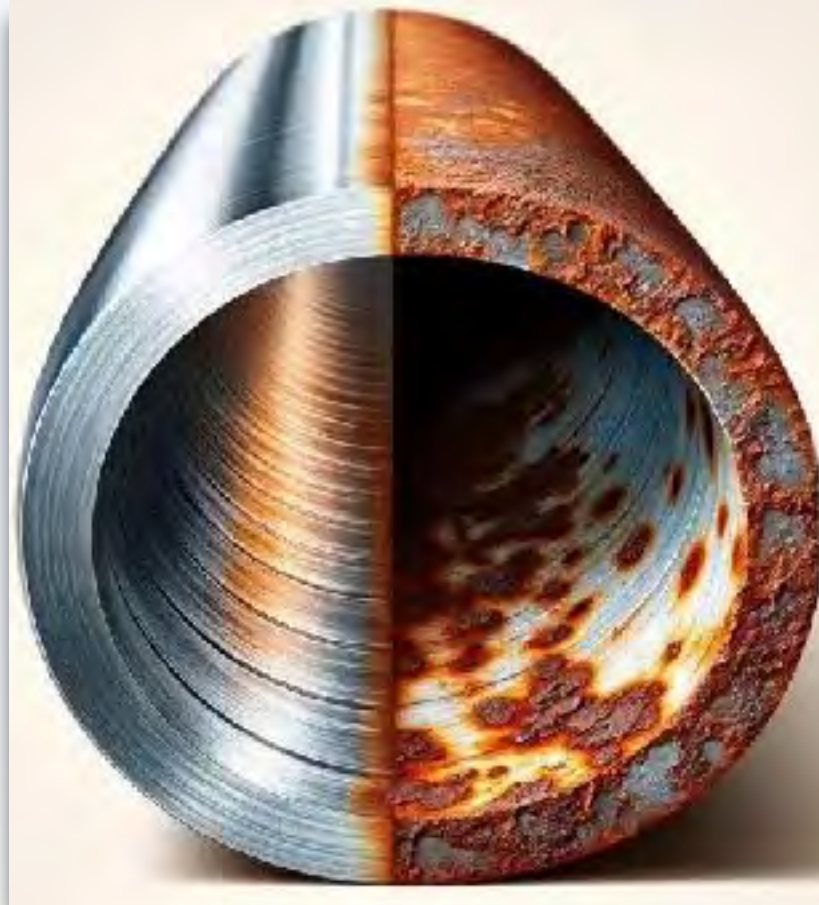
Rust



Biological Rust



Reproxalap binds RASPs and repairs and protects nerves



Urcosimod

Neurogenic



Calms fibers

Neurogenic:

Quiets down nociceptors

Stops/slows release of
neuropeptides

Immune



Reduces cytokines

Immune:

Stops/slows macrophage,
dendritic and T-cells cytokine
release

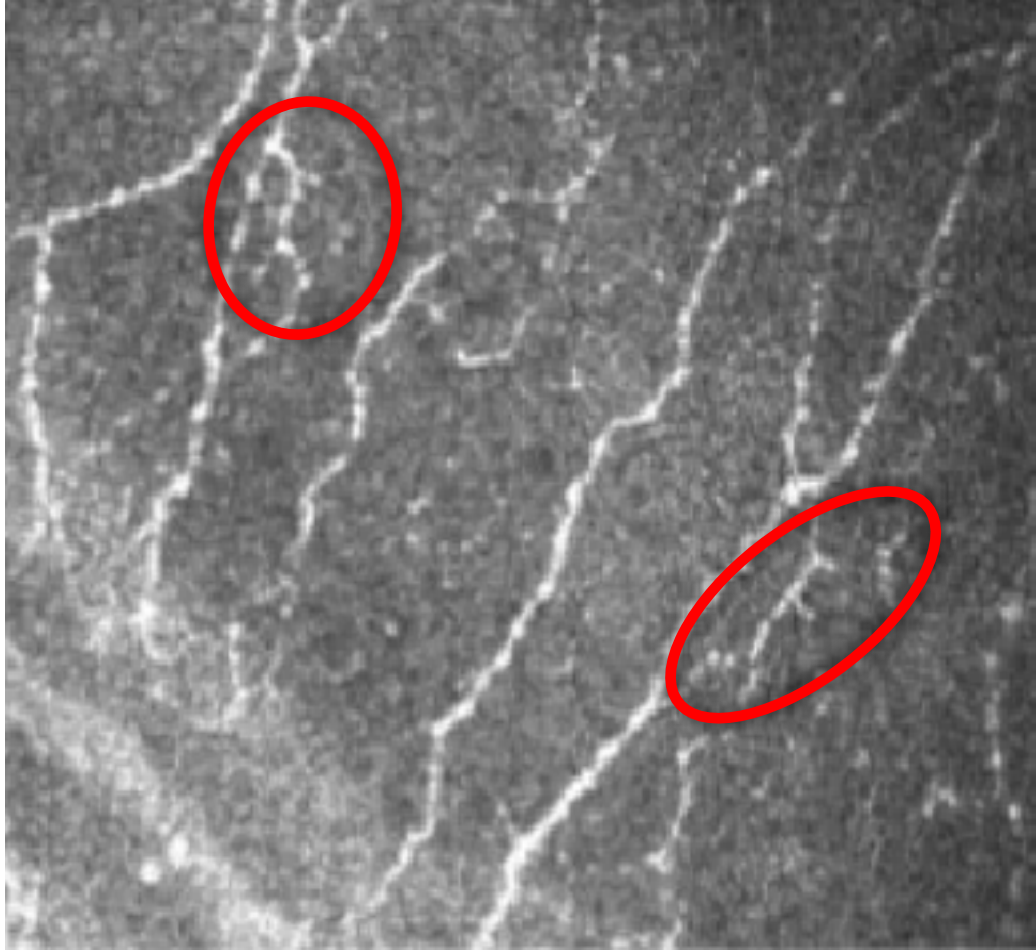
Summary

- **Acoltermon** = cools nerves & tear stimulation
- **Reproxalap** = “*biological rust*” protection → less nerve misfires & neurogenic inflammation
- **Urcosimod** = nerve calming + immune-based anti-inflammatory

Central vs peripheral

Alterations in nerve morphology

Nerve Sprouting



Corneal microneuroma



Neuropathic pain & dry eye

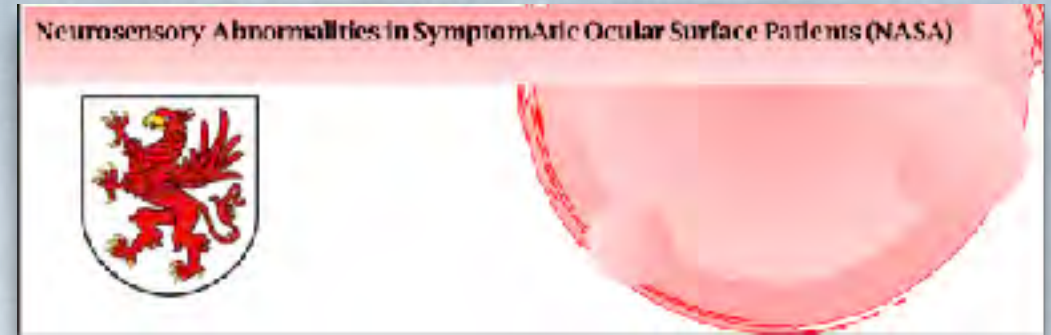


to
a



<https://www.apma.org/neuromas>

NASA Study



1000 patients

Proparacaine Challenge Test

Participants diagnosed with neuropathic corneal pain with ocular surface discomfort

Establish the **prevalence** of neuropathic corneal pain in patients with ocular surface discomfort

<https://clinicaltrials.gov/ct2/show/NCT04838223>

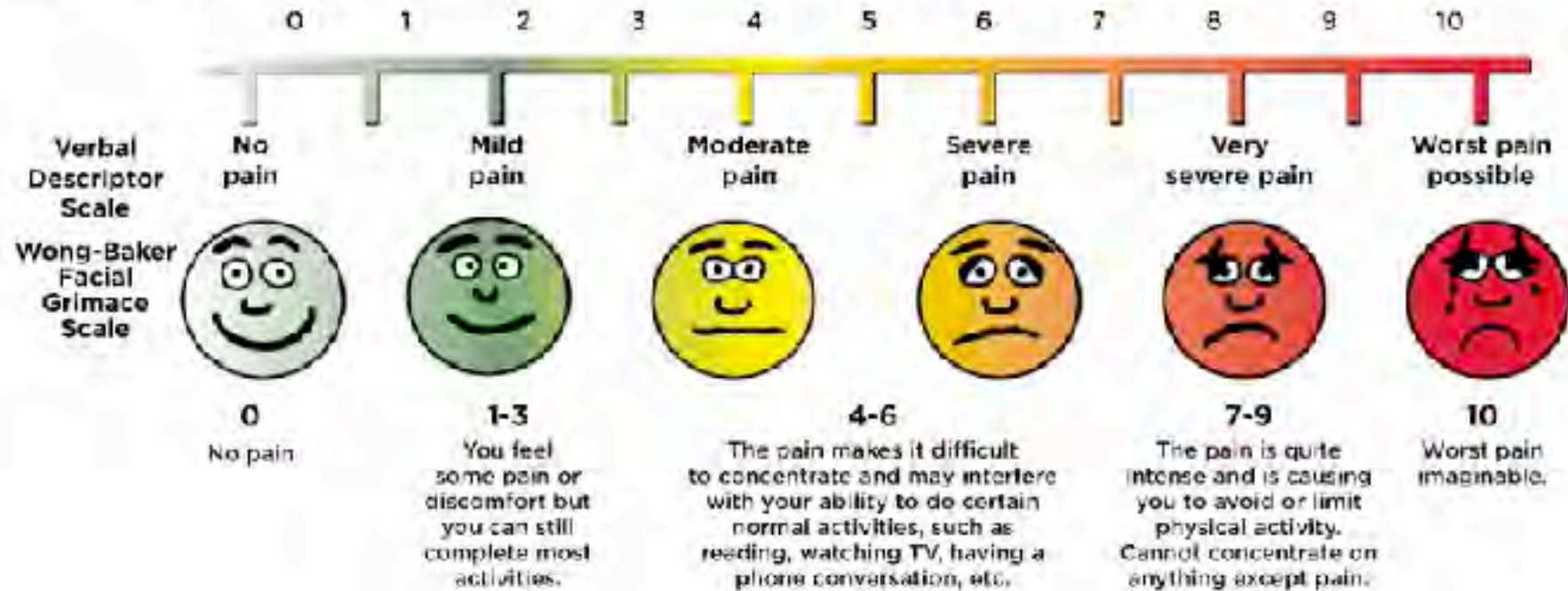
Proparacaine challenge

1. Baseline pain reading
2. Add drop anesthesia
(proparacaine)
3. Wait 90 seconds
4. Proparacaine pain reading

Dieckmann G, Goyal S, Hamrah P. Neuropathic corneal pain: approaches for management. Ophthalmology. 2017;124(11 Suppl):S34-S47.

Central vs peripheral

Appendix IV: Visual Analogue Scale Questionnaire

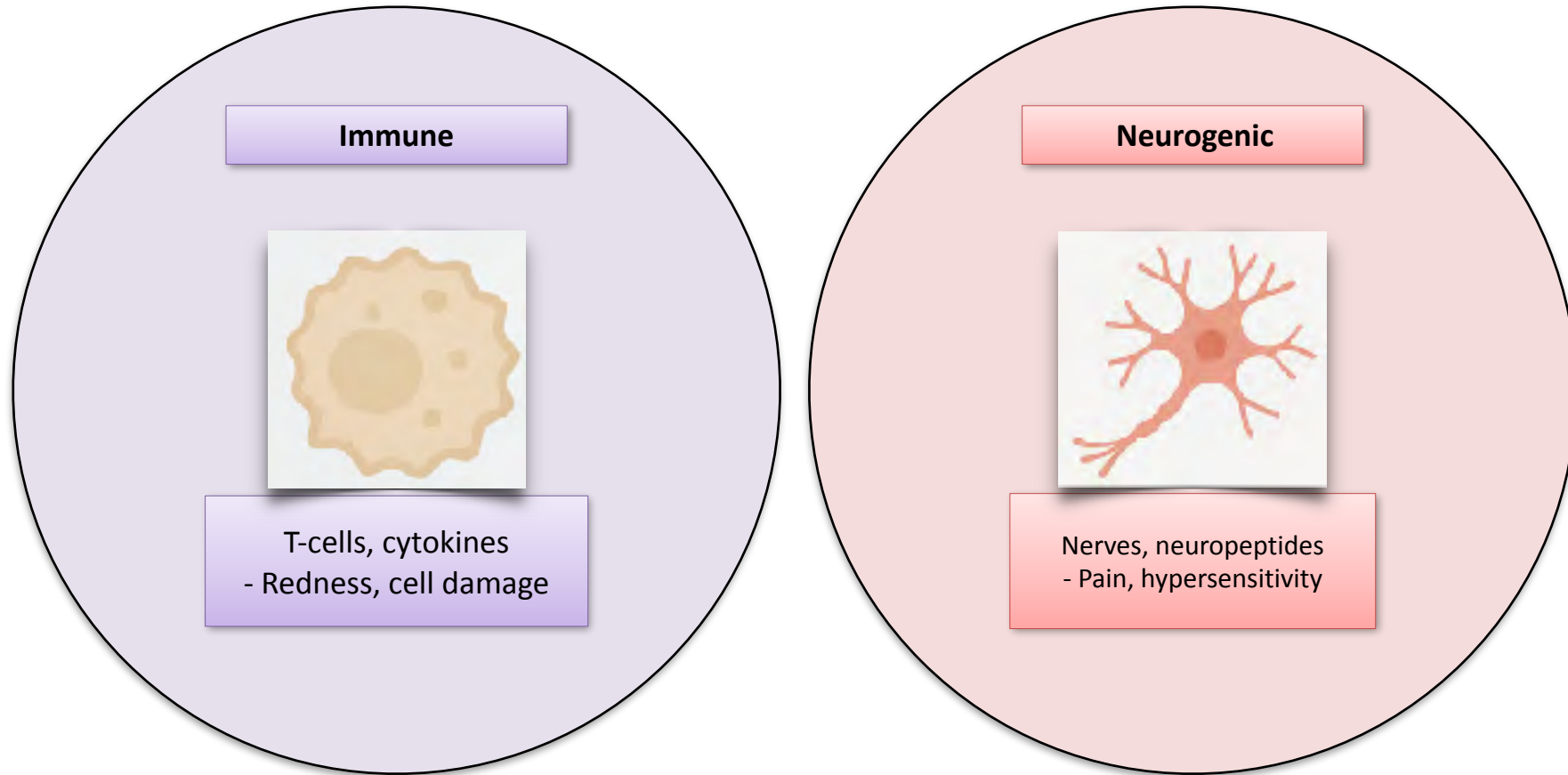


Neuropathic pain & dry eye

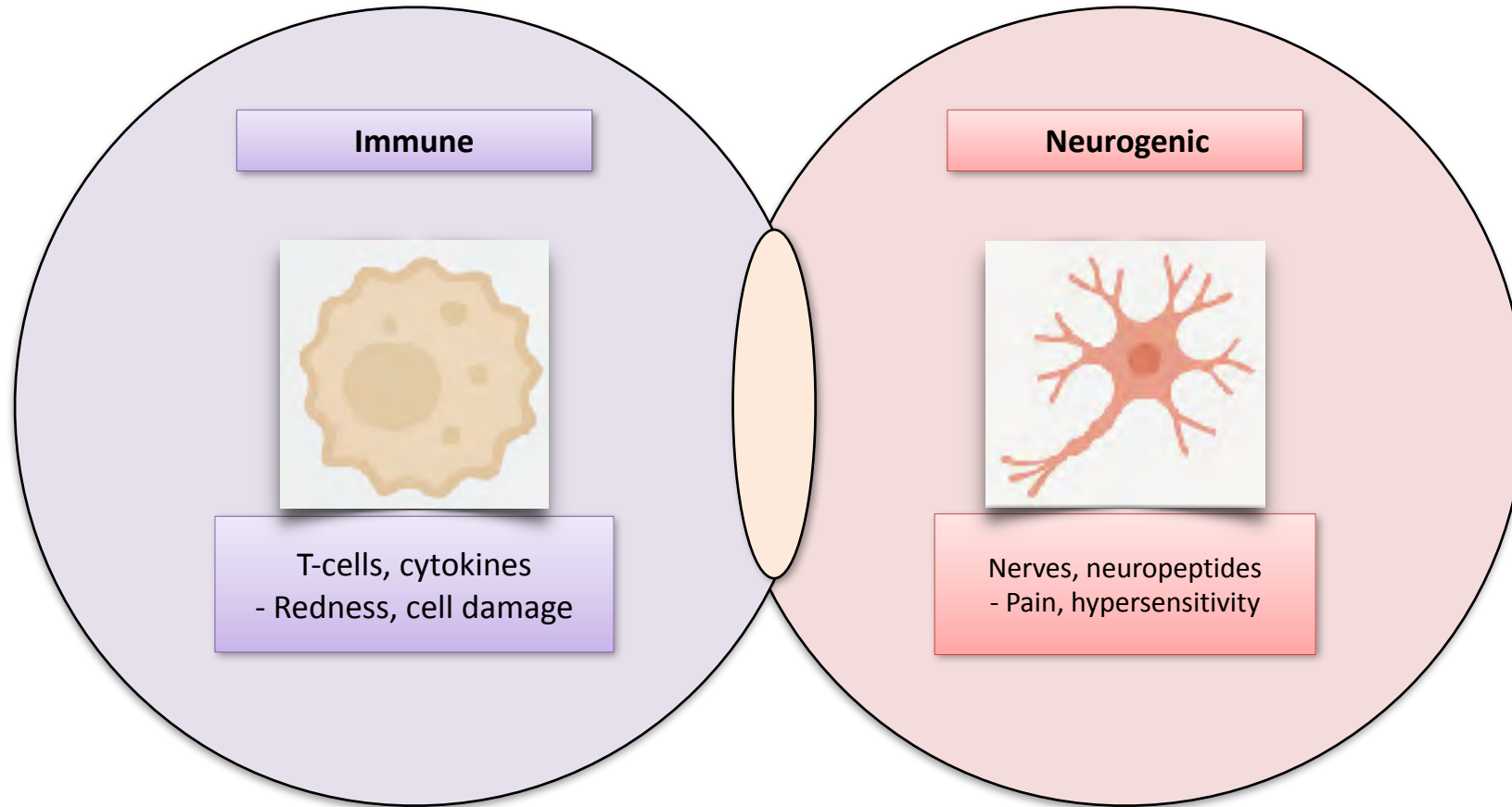
“in our study, 27 out of 33 (81.82%) patients showed mixed sensitization”

Kim J, Yoon HJ, You IC, Ko BY, Yoon KC. Clinical characteristics of dry eye with ocular neuropathic pain features: comparison according to the types of sensitization based on the Ocular Pain Assessment Survey. BMC Ophthalmol. 2020 Nov 18;20(1):455. doi: 10.1186/s12886-020-01733-1. PMID: 33208127; PMCID: PMC7672944.

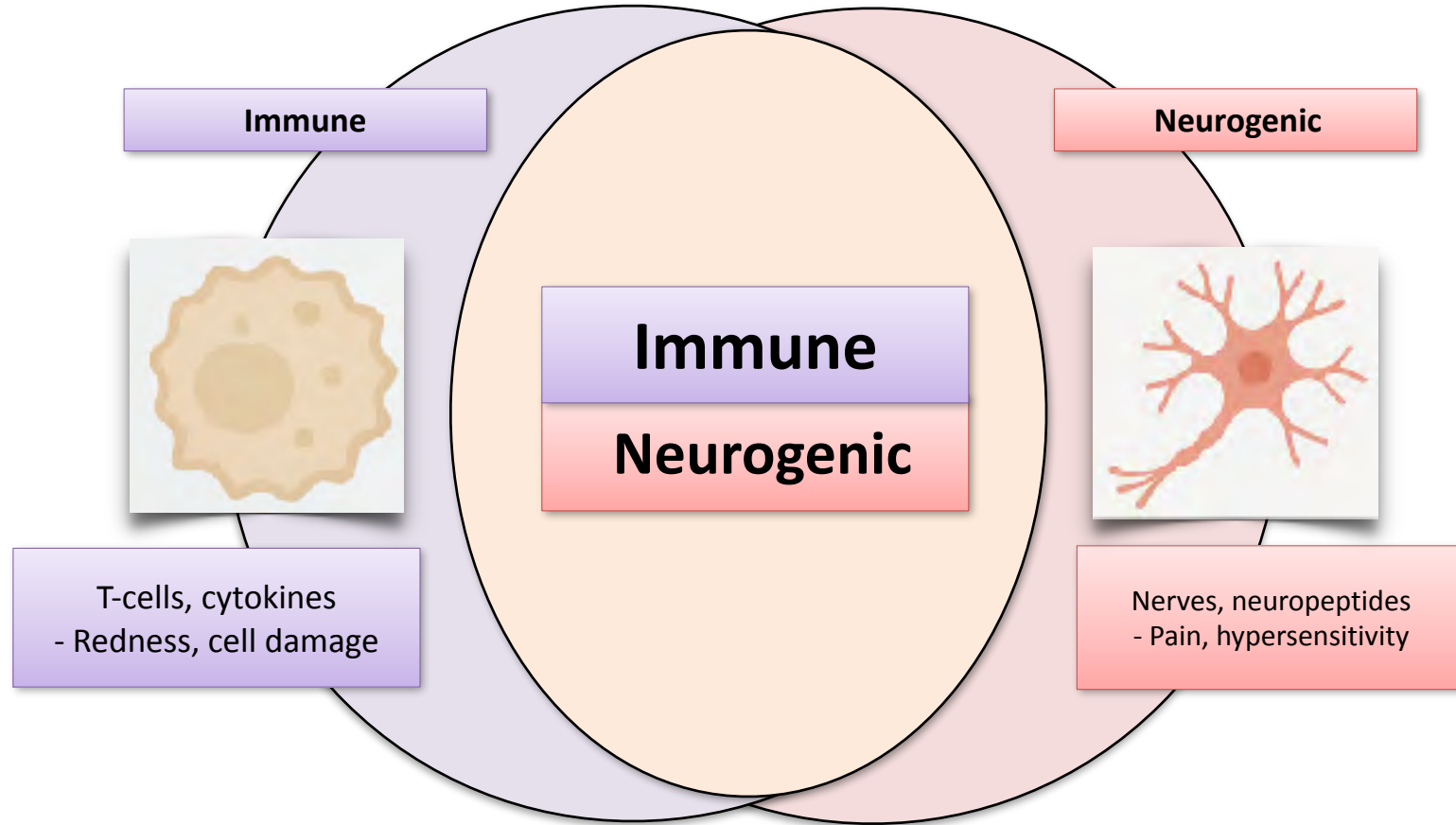
Immune-Mediated vs Neurogenic Inflammation



Immune-Mediated vs Neurogenic Inflammation



Immune-Mediated vs Neurogenic Inflammation



New generation of dry eye drugs

Major Shift

💧 From surface
lubrication



🔥 To nerve
inflammation

Thoughts & Pearls

Dry eye: Neurology is the new dry eye

The new drugs treat the nerves

There are 2 types of inflammation in dry eye: classic immune based and neurogenic.

Most dry eye has both types

Especially for severes ,consider treating both types of inflammation (add cyclosporine/lifitigrast/loteprednol)

Hypersensitive nerves - these drugs will hurt

Myopia

Myopia

“almost 1 billion people will have high myopia, suggesting an alarming increase of prevalence globally.”

Wu PC, Chuang MN, Choi J, Chen H, Wu G, Ohno-Matsui K, Jonas JB, Cheung CMG. Update in myopia and treatment strategy of atropine use in myopia control. Eye (Lond). 2019 Jan;33(1):3-13. doi: 10.1038/s41433-018-0139-7. Epub 2018 Jun 11. PMID: 29891900; PMCID: PMC6328548.

Myopia

“studies have found that the lack of outdoor exposure to sunlight and limited physical activities can trigger [myopia]”

Kevin Chan

Chan K, Fischer A, Goldberg L, Lazar I. Today's Perspectives on Myopia Management. Modern Optometry. 2024 July/Aug.

He X, Sankaridurg P, Wang J, et al. Time outdoors in reducing myopia. Ophthalmol. 2022;129(11):1245-1254.

Myopia

“For better or worse, screen time is here to stay. I educate parents to encourage their children to spend as much time outdoors as possible, as this can delay the onset of myopia”

Andrew Fischer

Chan K, Fischer A, Goldberg L, Lazar I. Today's Perspectives on Myopia Management. Modern Optometry. 2024 July/Aug.

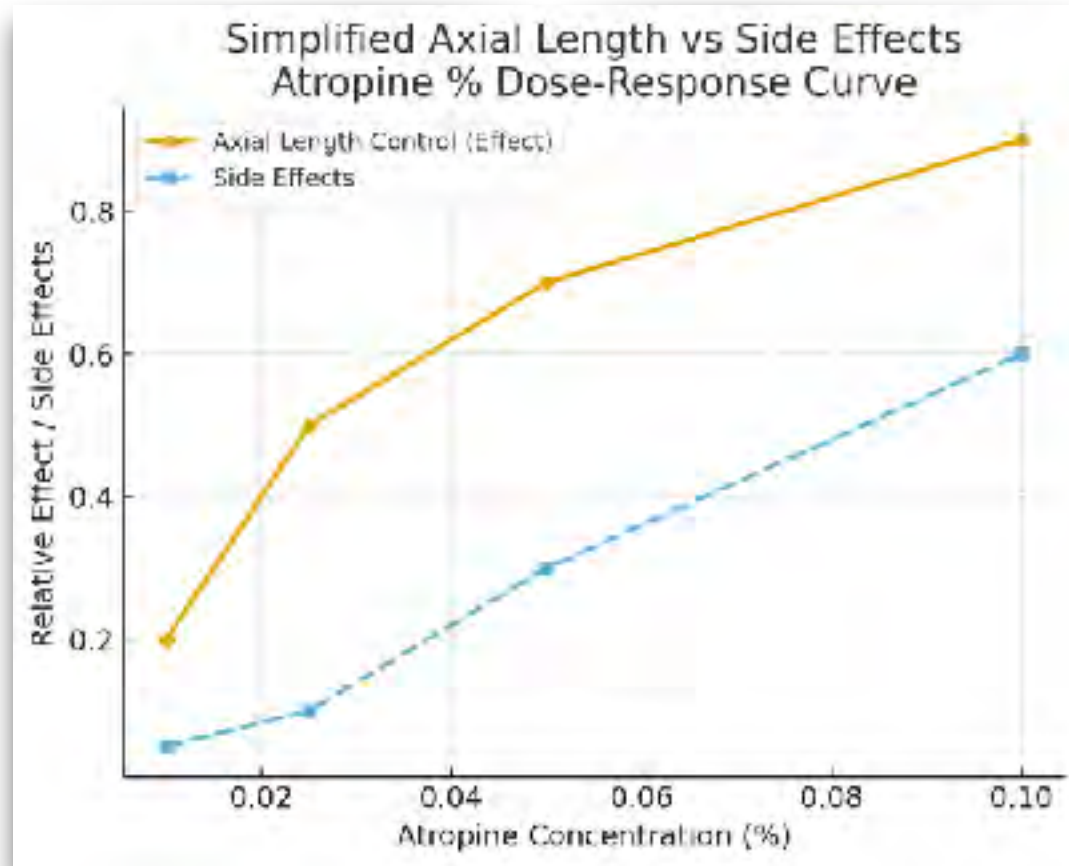
He X, Sankaridurg P, Wang J, et al. Time outdoors in reducing myopia. Ophthalmol. 2022;129(11):1245-1254.

Outdoor time = Nature's atropine
Encourage outdoor play

Selected Clinical trials

	Route	Ages	Length	% atropine
Vyluma (Nevakar)	Drop	3-17y	3y	0.01% 0.02%
Eyenovia	Optejet	3-12y	3y	0.1% 0.01%
Sydnexis	Drop	3-14y	3y+1y	0.01%

Atropine % Gradient: Axial Length vs Side Effects



0.01%



minimal side effects, modest efficacy

0.025%



best balance of efficacy vs tolerability
(LAMP, ATOM)

0.05%

0.1%+



stronger effect but ↑ light sensitivity &
near blur

References:

1. Chia A, Lu QS, Tan D. Five-Year Clinical Trial on Atropine for the Treatment of Myopia 2: Myopia Control with Atropine 0.01% Eyedrops. *Ophthalmology*. 2016;123(2):391-9.
2. Yam JC, Li FF, Zhang X, Tang SM, Yip BHK, Kam KW, et al. LAMP Study: 3-Year Results. *Ophthalmology*. 2020;127(7):910-918.
3. Wu PC, Choy BN, Chiu MY, Chen LJ, Tan Q, Kang MT, et al. Update in myopia and atropine use. *Eye (Lond)*. 2019;33(1):3-13.

When to start?

International Myopia Institute (IMI)

Age (years)	Refraction
6	+0.75 D or less
7 to 8	+0.50 or less
9 to 10	+0.25 D or less
11	emmetropia

Gifford KL, Richdale K, Kang P, Aller TA, Lam CS, Liu YM, Michaud L, Mulder J, Orr JB, Rose KA, Saunders KJ, Seidel D, Tideman JWL, Sankaridurg P. IMI - Clinical Management Guidelines Report. Invest Ophthalmol Vis Sci. 2019 Feb 28;60(3):M184-M203. doi: 10.1167/iovs.18-25977. PMID: 30817832.

Pre-Myopes

= < +0.75 @ 6-7yo is high risk

- Independent of family history, ethnicity and other optical and environmental factors.⁷
- Fastest change in refraction is year before onset.
- Watch for eso and lag of accommodation

Myopia

“The decision to initiate myopia management is therefore very simple—initiate treatment when myopia is first diagnosed.”

Daniel Tillia

Tillia D. When to Initiate Myopia Management Intervention and When to Stop. Review of Myopia Management. <https://reviewofmm.com/when-to-initiate-myopia-management-intervention-and-when-to-stop/>

Spectacle Myopia Control

	Tech	Duration	% Reduction
MiyoSight (Hoya)	Defocus incorporated multiple segments (DIMS)	2y	Diopters: 52% Axial: 62%
Stellest (Essilor)	Highly aspherical lenslet target (HALT)	2y	Diopters: 67% Axial: 60%
SightGlass	Diffusion optics technology (DOT)	1y (36m)	Diopters: 74%/59% Axial: 50%/33%

Lam C.S.Y., Tang WC, Tse DY, Lee R.P.K., Chun R.K.M., Hasegawa K, et al. Defocus Incorporated Multiple Segments (DIMS) spectacle lenses slow myopia progression: a 2-year randomised clinical trial. Br J Ophthalmol. 2019.

Black K. Essilor's Reveals Results of "Game-changing" Stellest Lens for Myopia <https://www.mivision.com.au/2020/09/essilors-reveals-results-of-game-changing-stellest-lens-for-myopia/>. mivision; 2020.

Rappon J, Chung C, Young G, et al Control of myopia using diffusion optics spectacle lenses: 12-month results of a randomised controlled, efficacy and safety study (CYPRESS) British Journal of Ophthalmology Published Online First: 01 September 2022.

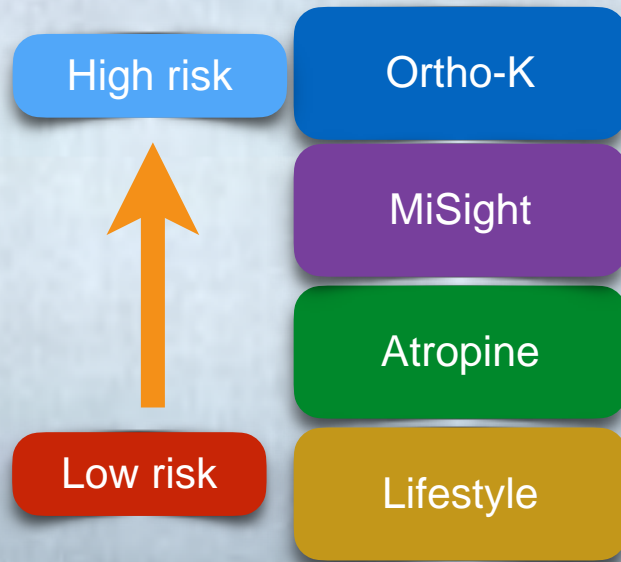
Suggested 1st choice interventions

Brianna Rhue Milton Hom

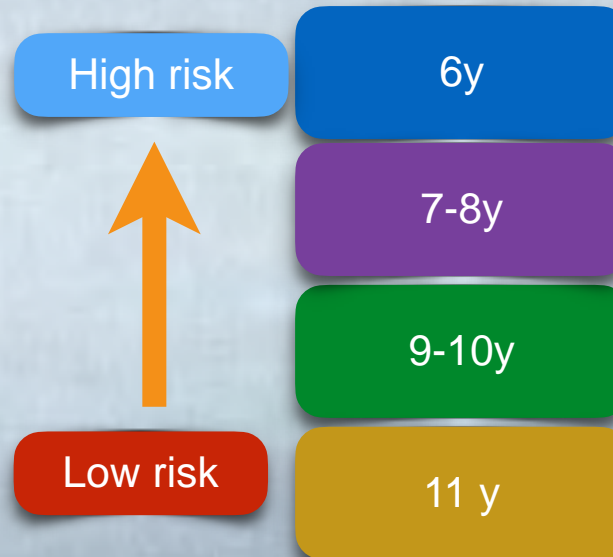
Age	PL to +0.75D	-0.50 to -1.00D	-1.25 to -2.00D	-2.00D+
6y	Lifestyle Prophylactic Atropine*	Atropine* MiSight* Cylinder: Biofinity Toric MF D Lens +2.50	MiSight* Ortho-K*	MiSight* Ortho-K* ? Combo Therapy
	PL to +0.50D	-0.50 to -1.00D	-1.25 to -2.00D	-2.00D+
7-8y	Lifestyle Prophylactic Atropine*	Atropine* MiSight	MiSight Ortho-K	MiSight Ortho-K
	PL to +0.25D	-0.50 to -1.00D	-1.25 to -2.00D	-2.00D+
9-10y	Lifestyle	Atropine* MiSight	MiSight Ortho-K	MiSight Ortho-K
	emmetropia	-0.50 to -1.00D	-1.25 to -2.00D	-2.00D+
11y	Lifestyle	Atropine* MiSight	MiSight Ortho-K	MiSight w/Ortho-K

Grid

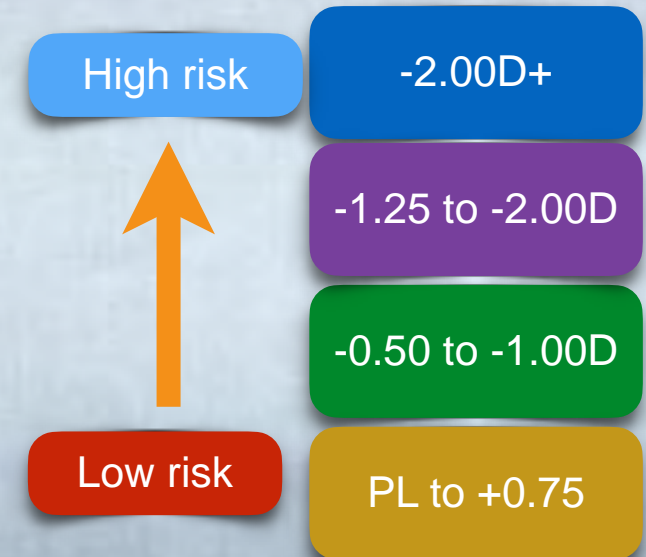
Interventions



Age



Rx



Thoughts & Pearls

Myopia: Earlier the better

Main challenge is convincing the parents

Race against time

Sydnexis will be a starter drug

Atropine works best with other therapies/interventions

Ortho-K has gotten a lot easier

Demodex

The basics

The Good Mites

Reports of Demodex mites were recorded as early as 1841

Demodex mites exist in every adult over 70 years old.

Symptoms: ocular dryness, severe itching, burning, foreign body sensation, crusting and redness of the lid margin, and blurry vision.

<https://www.rosacea.org/patients/the-ecology-of-your-face-demodex-rosacea-and-you>

Hom MM, Mastrotta KM, Schachter SE. Demodex. Optom Vis Sci. 2013 Jul;90(7):e198-205.

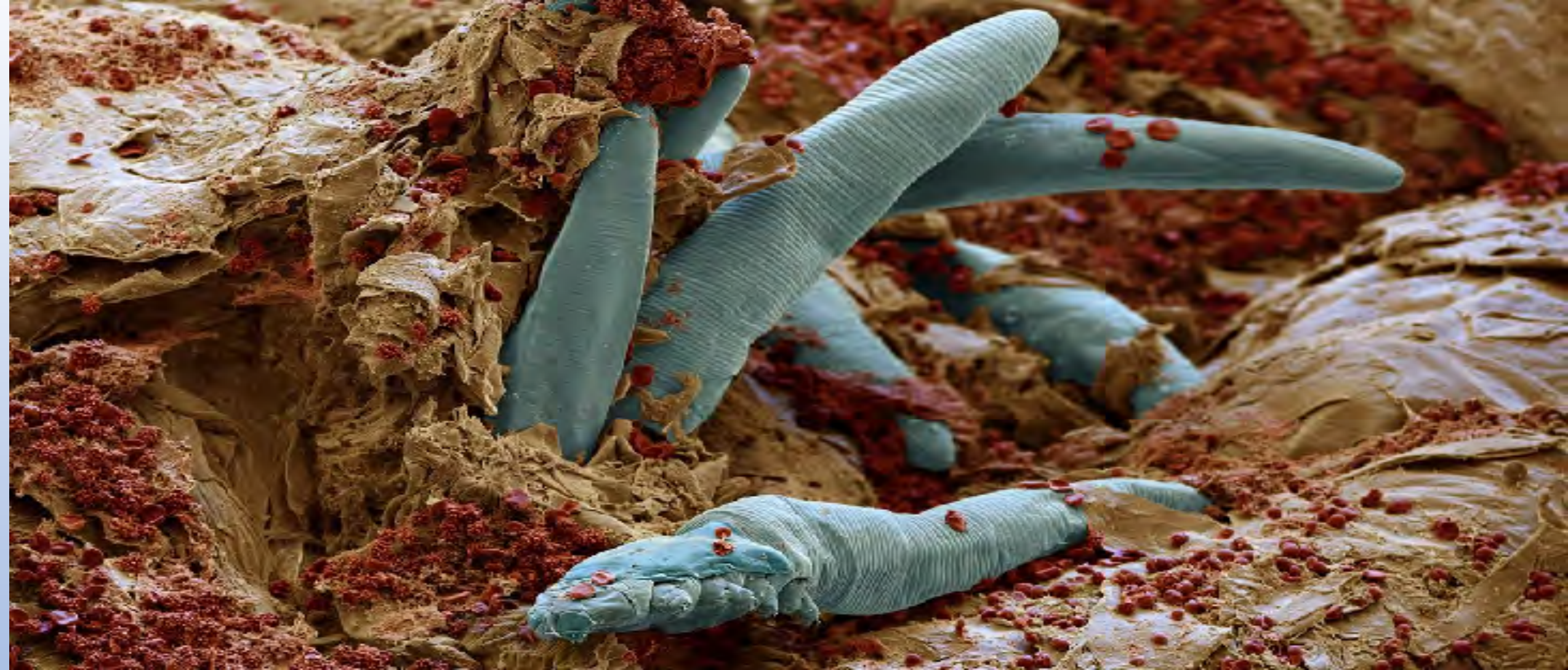
The Good Mites

“the willingness of the mites to reproduce is great”

“Consider the scrambling of this...[demodex] mob while the [human] host sleeps: males seeking, finding, breeding females; [pregnant] females seeking new follicles; inhabitants of follicles sweeping feces outside.”

Coston TO. Demodex folliculorum blepharitis. Trans Am Ophthalmol Soc. 1967;65:361-92. PMID: 4229846; PMCID: PMC1310279.

Hom MM, Mastrotta KM, Schachter SE. Demodex. Optom Vis Sci. 2013 Jul;90(7):e198-205.



Microscopic arthropods, *Demodex folliculorum*, live on all mammals
especially their faces
and cause no harm under most circumstances.

Drugs

Demodex

Demodex Blepharitis

Blepharitis

Selected Clinical trials			
	Form	Dosing	Proposed Indication
Tarsus (lotilaner)	Drop	BID	Demodex/ MGD
Aperta (Spinosod)	ung	N/A	Blepharitis Demodex
Azura (selenium sulfide)	ung	2 x week	Blepharitis MGD/CL dryness
(Ivermectin)	Topical	Weekly	Demodex
Glaukos	Topical	?	Demodex

Lotilaner (Xdemvy)



Kuntz, E.A., Kammanadiminti, S. Safety evaluation of lotilaner in dogs after oral administration as flavoured chewable tablets (Credelio™). Parasites Vectors 10, 538 (2017).

<https://www.credelio.com/about-credelio/side-effects>

https://www.ispot.tv/ad/lx_l/credelio-tiny-defender-of-dogs

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Kuntz, E.A., Kammanadiminti, S. Safety evaluation of lotilaner in dogs after oral administration as flavoured chewable tablets (Credelio™). Parasites Vectors 10, 538 (2017).

<https://www.credelio.com/about-credelio/side-effects>

https://www.ispot.tv/ad/lx_l/credelio-tiny-defender-of-dogs

Lotilaner (Xdemvy)

- FDA-approved (2023)
- High mite eradication (50–68%)
- First-in-class, vehicle-controlled data



Kuntz, E.A., Kammanadiminti, S. Safety evaluation of lotilaner in dogs after oral administration as flavoured chewable tablets (Credelio™). Parasites Vectors 10, 538 (2017). <https://doi.org/10.1186/s13071-017-2468-y>
<https://www.credelio.com/about-credelio/side-effects>

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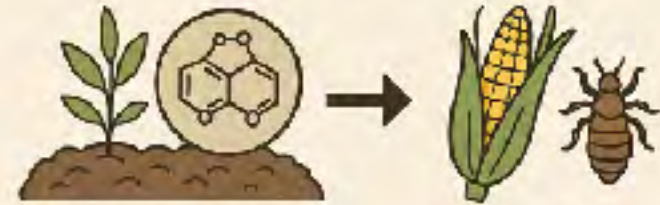
Spinosa



Saccharopolyspora spinosa

Discovered in an abandoned rum still
in the Virgin Islands in 1982

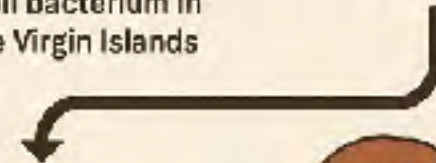
SPINOSAD



SOIL CURIOSITY

discovered in 1982 from
a soil bacterium in
the Virgin Islands

CROP BIOINSECTICIDE



HEAD LICE TREATMENT



CANDIDATE FOR DEMODEX BLEPHARITIS



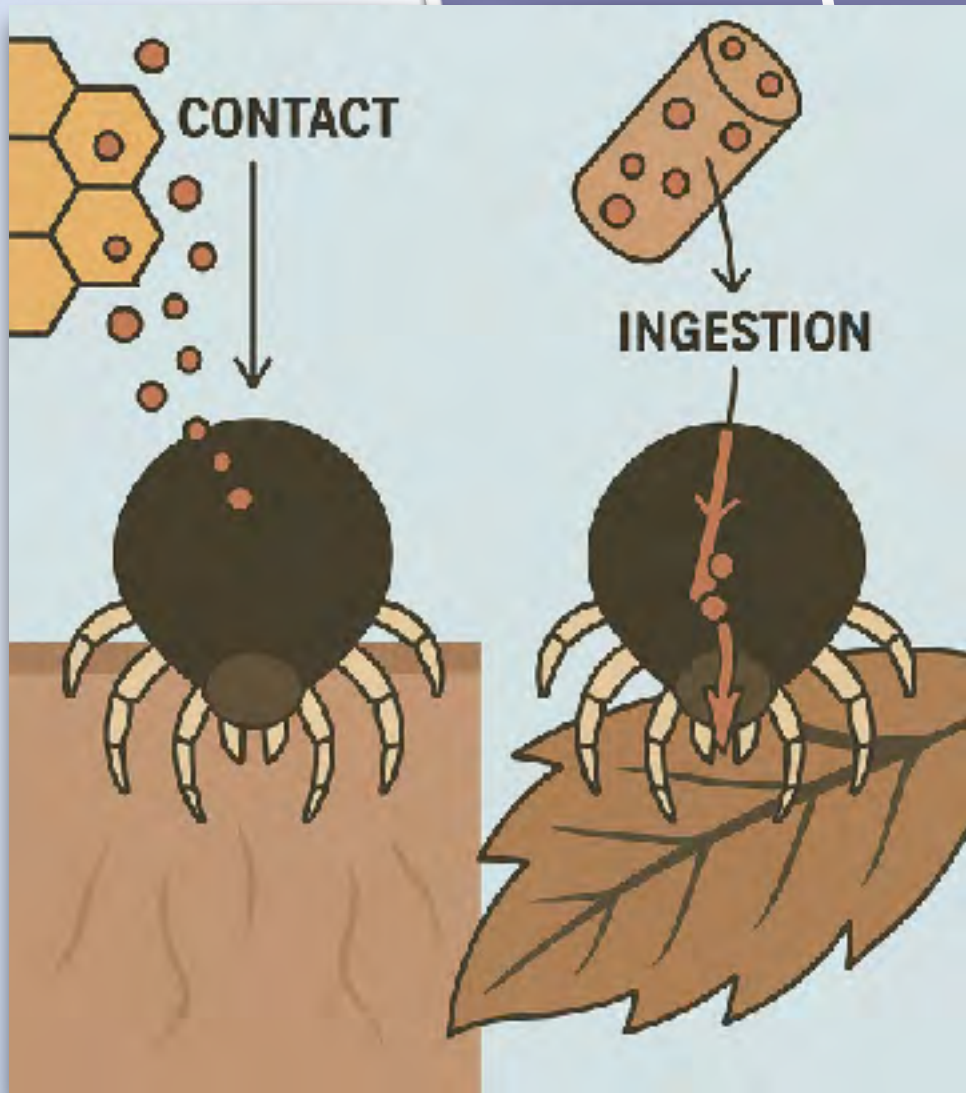
DEFENSE AGAINST INSECTS

Soil bacteria compete for space and nutrients. By releasing spinosyns (spinosad), *S. spinosa* creates a chemical shield that kills or deters insects that might eat or disturb the organic matter it lives in.

Streptomyces spinosa



Spinosad



Spinosad



Head lice



Bug spray

Selected Clinical trials			
	Form	Dosing	Proposed Indication
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(Ivermectin)	Topical	Weekly	Demodex
Glaukos	Topical	?	Demodex

Selenium sulfide

From Dandruff Shampoo to Dry Eye Relief?



Selenium sulfide



<https://www.youtube.com/watch?v=HSvNtVUpqSg>

Selenium sulfide



Scalp (Dandruff)

Problem:

- Fast skin shedding → flakes

Selenium Action:

- Slows skin turnover
- Breaks down flakes
- Reduces fungus



Eyelid (MGD)

Problem:

- Excess keratin + thick oil → blocked glands

Selenium Action:

- Slows skin turnover
- Loosens debris
- Opens ducts
- Reduces fungus

Selenium sulfide



Eyelid (MGD)

Problem:

- Excess keratin + thick oil → blocked glands

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Selenium sulfide

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Selenium sulfide

Eyelid (MGD)

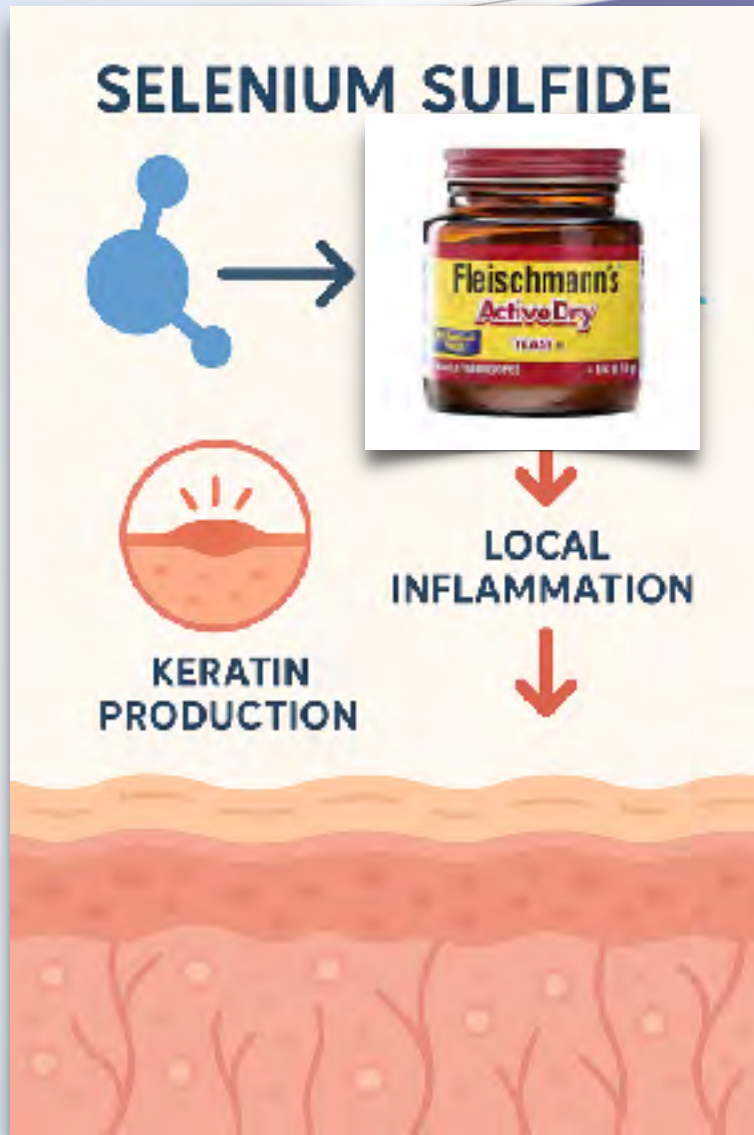
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Selenium Action:

- Slows skin turnover
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m sulfide

Eyelid (MGD)

Problem:

- Excess keratin + thick oil → blocked glands

Selenium Action:

- Slows skin turnover
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- Reduces fungus

Wang L, Deng Y. Malassezia species may play potential roles in the pathogenesis of meibomian gland dysfunction. Med Hypotheses. 2020 Nov;144:110137

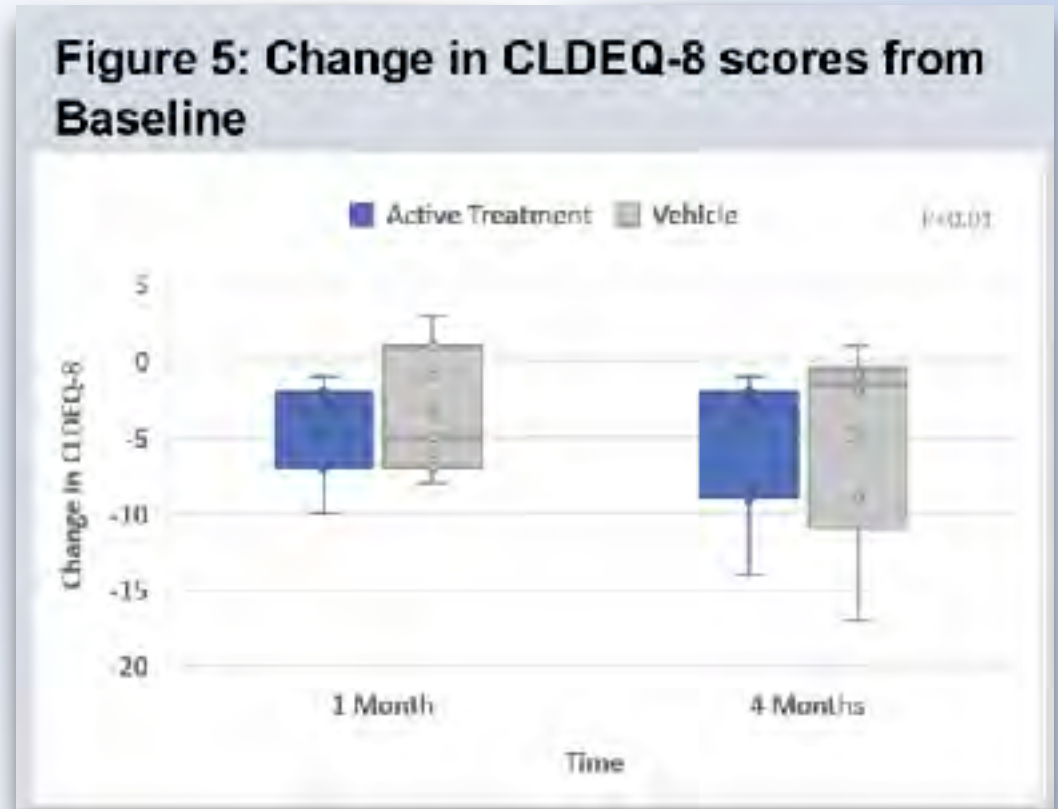
Selenium sulfide

CL Comfort Performance?

“Twice weekly use of a topical ointment...selenium sulfide...appears to improve Meibomian gland[s]...by more than 30% in symptomatic CL wearers after...6 weeks”

<https://azuraophthalmics.com/scientific-meetings>

First CL discomfort drug
Remember: Comfort = tear film + glands + lens.
Future drugs may blur the lines between blepharitis treatment and CL performance enhancers.



Selected Clinical trials			
	Form	Dosing	Proposed Indication
Tarsus (lotilaner)	Drop	BID	Demodex/ MGD
Aperta (Spinosod)	ung	N/A	Blepharitis Demodex
Azura (selenium sulfide)	ung	2 x week	Blepharitis MGD/CL dryness
(Ivermectin)	Topical	Weekly	Demodex
Glaukos	Topical	?	Demodex

Ivermectin

- Weekly 1% cream application
- 15-minute contact time
- Less redness & swelling
- Less lid debris & cylindrical dandruff
- More patient comfort

Choi Y, Eom Y, Gyn Yoon E. Efficacy of topical ivermectin 1% in the treatment of Demodex blepharitis. Cornea. 2021; 00:1-8.

Q: Ivermectin was first developed for livestock. True or False?

True – Nobel Prize 2015 for global parasitic disease control.



Ivermectin Paste Dewormer - 6.08g dose @ 1.87%-Apple flavored

Brand: Durvet

4.7 ★★★★★ (3,997)

2K+ bought in past month

Price: **\$16.90** (\$580.48 / ounce) ✓prime One-Day

Get Net 30 payment terms instantly when you add invoicing to your account. [Add now](#)



Buying multiple items? [Go to multi-select](#)

Size: **6.08 Gram**



[Click to see full view](#)



\$16.90 (\$580.48 / ounce)

✓prime One-Day

FREE delivery Tomorrow, July 8.
Order within 2 hrs 19 mins

In Stock

Qty: 1 ▼

[Request quote for 5921](#)

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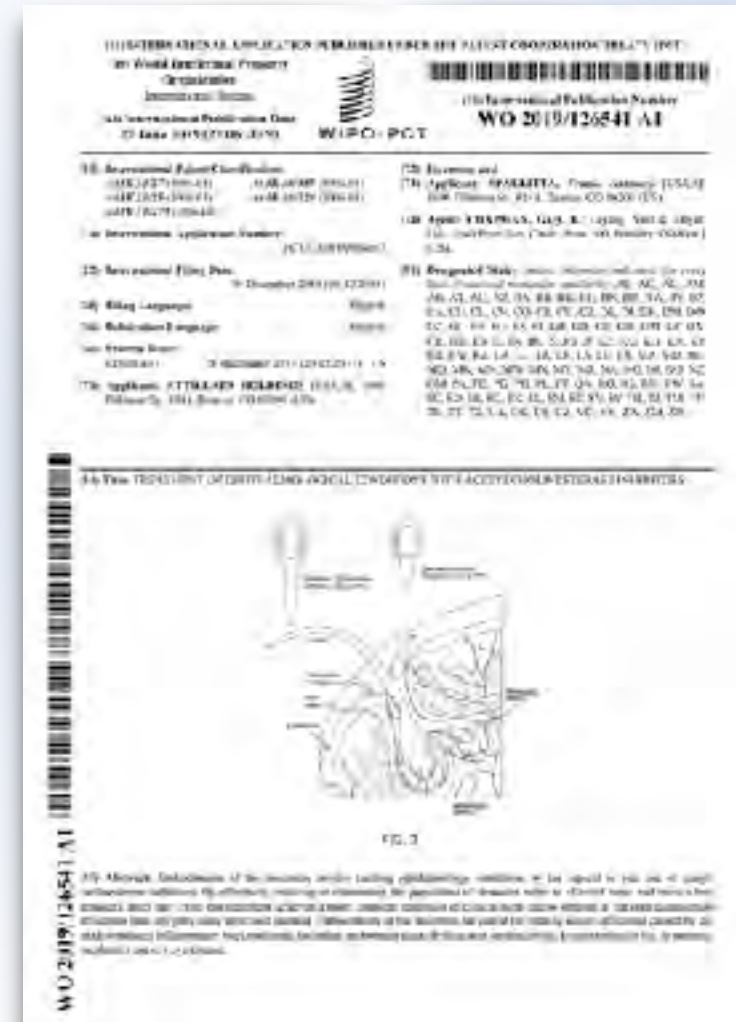
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Selected Clinical trials			
	Form	Dosing	Proposed Indication
Tarsus (lotilaner)	Drop	BID	Demodex/ MGD
Aperta (Spinosod)	ung	N/A	Blepharitis Demodex
Azura (selenium sulfide)	ung	2 x week	Blepharitis MGD/CL dryness
(Ivermectin)	Topical	Weekly	Demodex
Glaukos	Topical	?	Demodex

Glaukos

Glaukos Attilaps patent

- Acetylcholinesterase [ACE] inhibitors causes mite paralysis
- Ex Physostigmine, demarcarium, ecthiophate
- Ciliary muscle effects:
- Miosis, browaches, accommodative spasm)



Mite Wars

Lotilaner (Xdemvy) (Tarsus)

- FDA-approved (2023)
- High mite eradication (50–68%)
- Dog and cats drug

Spinosad (Aperta)

- Soil bacterium-derived
- Insect neurotoxin, used for lice & pests
- Ointment in trials for Demodex blepharitis

Selenium Sulfide (Azura)

- Twice-weekly ointment
- Improves Meibomian gland function (>30% in CL wearers)
- MGD + CL discomfort target

Ivermectin

- Off-label weekly use
- Anti-parasitic, improves comfort & debris

Glaukos

- Anticholinesterase (ACE) Inhibitor - mite paralysis
- Potential ciliary body risks (miosis, browache, accommodative spasm)

“Mite eradication was defined as a mite density of 0 mites/lash.”

Saturn 1: 67.9% achieved complete mite eradication

Saturn 2: 50% achieved complete mite eradication after 6 weeks

Yeu E, Wirta DL, Karpecki P, Baba SN, Holdbrook M; Saturn I Study Group. Lotilaner Ophthalmic Solution, 0.25%, for the Treatment of Demodex Blepharitis: Results of a Prospective, Randomized, Vehicle-Controlled, Double-Masked, Pivotal Trial (Saturn-1). *Cornea*. 2023 Apr 1;42(4):435-443.

Sadri E, Paauw JD, Ciolino JB, Nijm L, Simmons B, Meyer J, Gaddie IB, Berdy GJ, Holdbrook M, Baba SN, Jalalat P, Yeu E. Long-Term Outcomes of 6-Week Treatment of Lotilaner Ophthalmic Solution, 0.25%, for Demodex Blepharitis: A Noninterventional Extension Study. *Cornea*. 2024 Nov 1;43(11):1368-1374.

Gonzalez-Salinas R, Yeu E, Holdbrook M, et al. Collarette elimination and demodex mite eradication with topical lotilaner ophthalmic solution, 0.25. *J Ocul Pharmacol Ther*. 2021;37:479–484.

Symbiosis



“Wipe them out...all of them”
Star Wars: Episode 1 The Phantom Menace

Symbiosis

SYMBIOSIS

MUTUALISM



Flower gets pollinated ✓



Bee gets nectar ✓

COMMENSALISM



Whale is unaffected ✓



Barnacles find food ✓

PARASITISM



The cat gets skin irritation ✗



The tick feeds on cats blood ✓

Demodex relationships



Case: SH

Mite Attack

59-year-old female

CC: Eyelid itching and self-reported mite infestation

Patient believes she contracted mites while visiting her hospitalized husband. Presents with eyelid scabbing from excessive scrubbing to remove mites.

Mite Attack



Demodex Blepharitis vs Delusional Parasitosis

ARTICLE

DRY EYE DX AND TX

DEMEX CAN MAKE YOUR PATIENTS SEE CLEAR...

10/15/2017 10:00 AM | 10/15/2017 10:00 AM | 10/15/2017 10:00 AM



The American Academy of Optometry's 2017 meeting included a number of classes and workshops dedicated to the diagnosis and management of Demodex. Demodex folliculorum and its cousin Demodex brevis, are parasitic commensal follicular mites found in human hair follicles primarily around the cheeks, nose, eyebrows, eyelashes, and forehead. Demodex overpopulation has been proposed as an etiologic factor in blepharitis and blepharosis.

I am confident that you daily encounter patients who have self-diagnosed their ocular condition as an "insect infestation." In fact, an internet "delusional" group posts up information regarding the causes of blepharitis from the respected Mayo Clinic (<http://www.mayoclinic.org/diseases-conditions/blepharitis/symptoms-causes/slc-20553217>).

Demodex are included in the differential diagnosis, so it is no surprise, therefore, that patients who carry the diagnosis of blepharitis may question whether the Demodex mite is contributing to their malady.

Possible Impact of Demodex Diagnosis

Formication, a sensation resembling that of insects crawling on or under the skin, is a specific form of the general set of abnormal skin sensations known as paresthesias (itching, tingling, sensation of "pins and needles") and tactile hallucinations. Formication is a well-documented symptom that has numerous possible causes (Table 1, Table 2). These skin sensations can be a physical or psychological side effect of substance abuse, diabetic neuropathy, diseases of the spinal cord and peripheral nerves, multiple sclerosis, or alcohol withdrawal. It is associated with autoimmune disease, hepatic disease, thyroid disease, lymphoma, arthritis, and stroke. A number of prescription and over-the-counter drugs may also cause formication.

Interestingly, a small percentage of menopausal women report itchy skin symptoms or formication. In fact, skin paresthesias are included in the Kupperman/Madwed Kupperman Menopausal Index. The Kupperman Index (Kupperman et al. 1973), along with the Menopausal Rating Scale (Hosner et al. 1966), are tools for the assessment of menopausal complaints.

It should be noted that susceptible individuals who "bore in" the sensation of formication may develop delusional parasitosis (also known as Ekbom's Melger's syndrome) (Hucumet and Lepping, 2009). Classified as a primary psychiatric disorder, affected patients have no primary skin pathology; all skin findings are secondary to skin manipulation by patients, for example excessive scratching. The primary patient is an older woman.

Matrosta K. CL
Spectrum December 1
2017

Ekbom syndrome



Private conversation



Ekbom syndrome

Delusional parasitosis

Ekbom syndrome

Morgellons disease

Delusional infestation [DI]

Delusions of parasitosis [DOP]

Brownstone N, Howard J, Koo J. Management of delusions of parasitosis: an interview with experts in psychodermatology. Int J Womens Dermatol. 2022 Jul 8;8(3):e035

Ekbom syndrome

Matchbox signs

Zip lock bag signs

Self-referral

Internet searches

Reich A, Kwiatkowska D, Pacan P (December 2019). "Delusions of parasitosis: an update". *Dermatol Ther (Heidelb) (Review)*. 9 (4): 631–638.

Koo J, Lebwohl A (December 2001). "Psycho dermatology: the mind and skin connection". *Am Fam Physician*. 64 (11): 1873–1878.

Moriarty N, Alam M, Kalus A, O'Connor K (December 2019). "Current understanding and approach to delusional infestation". *Am. J. Med. (Review)*. 132 (12): 1401–1409.

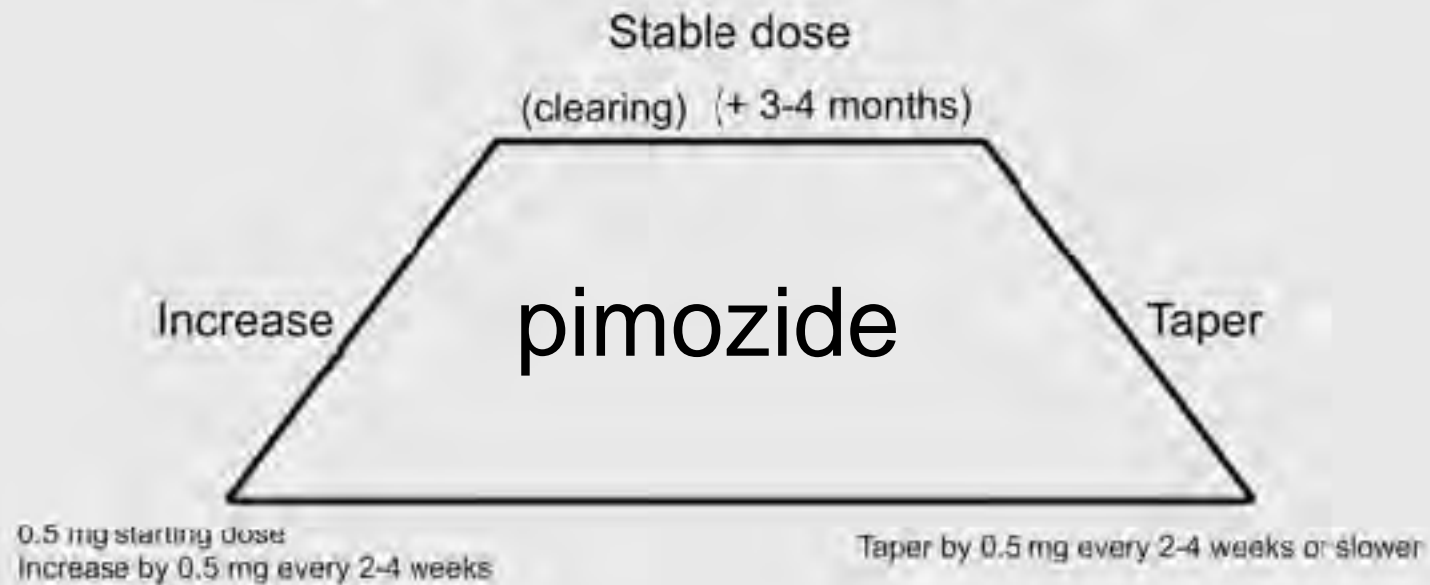
Delusional parasitosis

“studies have demonstrated cortical and subcortical atrophy in DI [delusional infestation] patients”

Lai JB, Xu Z, Xu Y, Hu SH. Reframing delusional infestation: perspectives on unresolved puzzles. Psychol Res Behav Manag. 2018;11:425-432

Ekbom syndrome

Trapezoid dosing plan



Brownstone N, Howard J, Koo J. Management of delusions of parasitosis: an interview with experts in psychodermatology. Int J Womens Dermatol. 2022 Jul 8;8(3):e035

Thoughts & Pearls

Demodex: Total eradication? Be kind to your mites

Vast majority of blepharitis is demodex

Do not use ivermectin and spinosad together (toxicity)

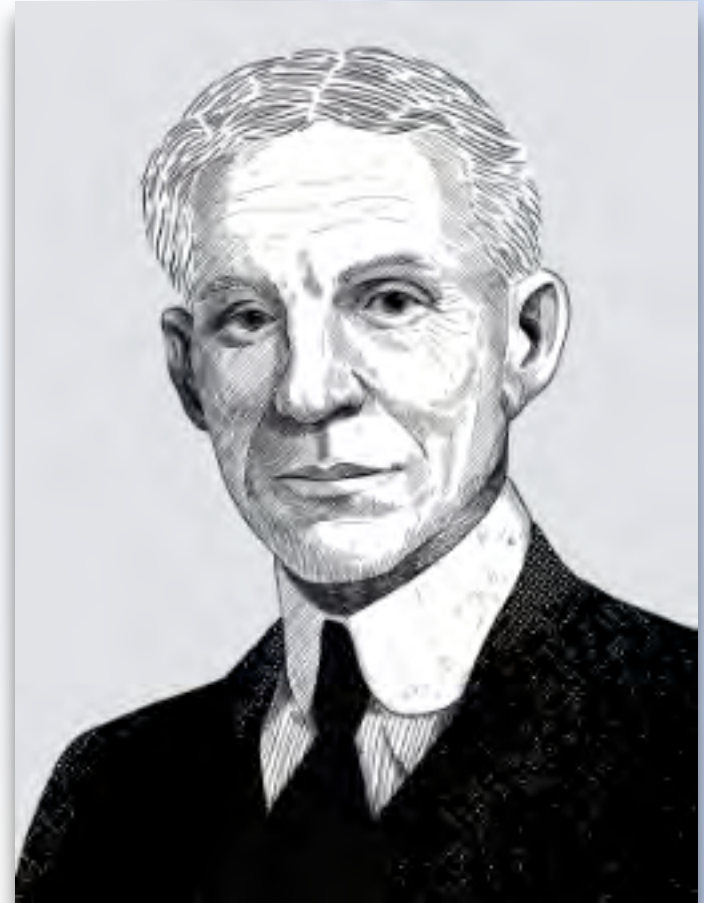
Newer drugs work faster

Presently, there are no drugs that treat CL discomfort

Delusional parasitosis: Handle with care

Dunn ST, Hedges L, Sampson KE, Lai Y, Mahabir S, Balogh L, Locuson CW. Pharmacokinetic interaction of the antiparasitic agents ivermectin and spinosad in dogs. *Drug Metab Dispos.* 2011 May;39(5):789-95. doi: 10.1124/dmd.110.034827. Epub 2011 Feb 14. PMID: 21321059.

“If you always do what you’ve
always done, you’ll always get
what you’ve always got.”
—Henry Ford



thank you!

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