Why transPRK is better than LASIK and SMILE

Prof. Farhad Hafezi, MD PhD, FARVO

PRK hurts

PRK recovers slowly

PRK is limited

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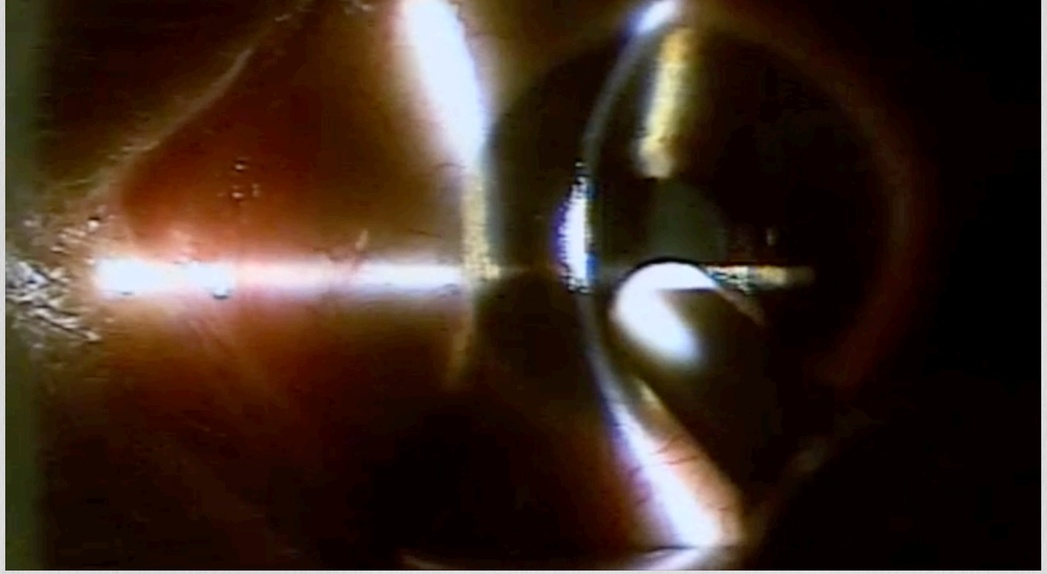
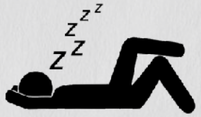
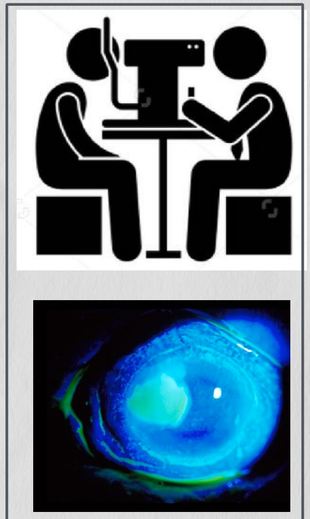
Until 2015



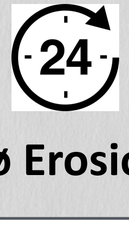




CL removed

+ Paracetamol

+ Tramadol (Reserve)



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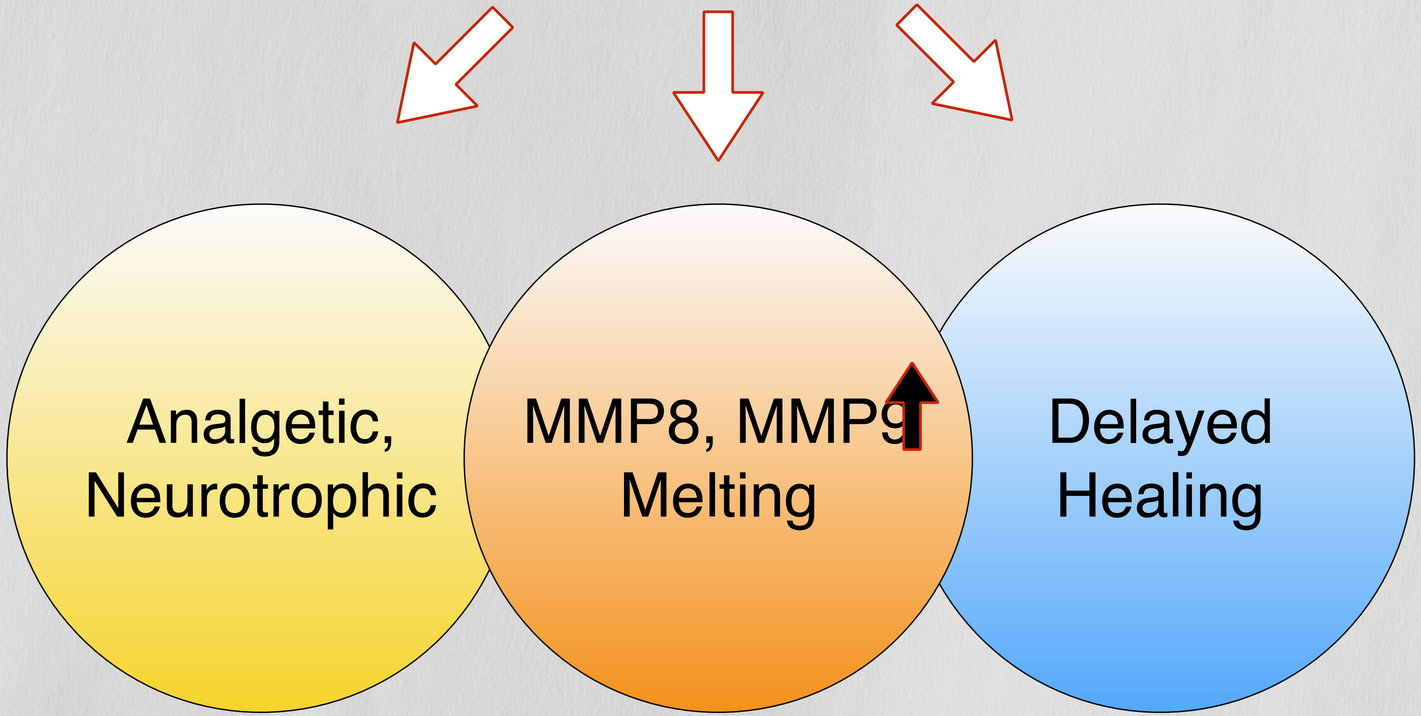
NSAR



Diclofenac-induced Acute Corneal Melt After Collagen Crosslinking for Keratoconus

Nikhil S. Gokhale, MD, DNB and Geeta K. Vemuganti, MD, DNB, FNAMS†*

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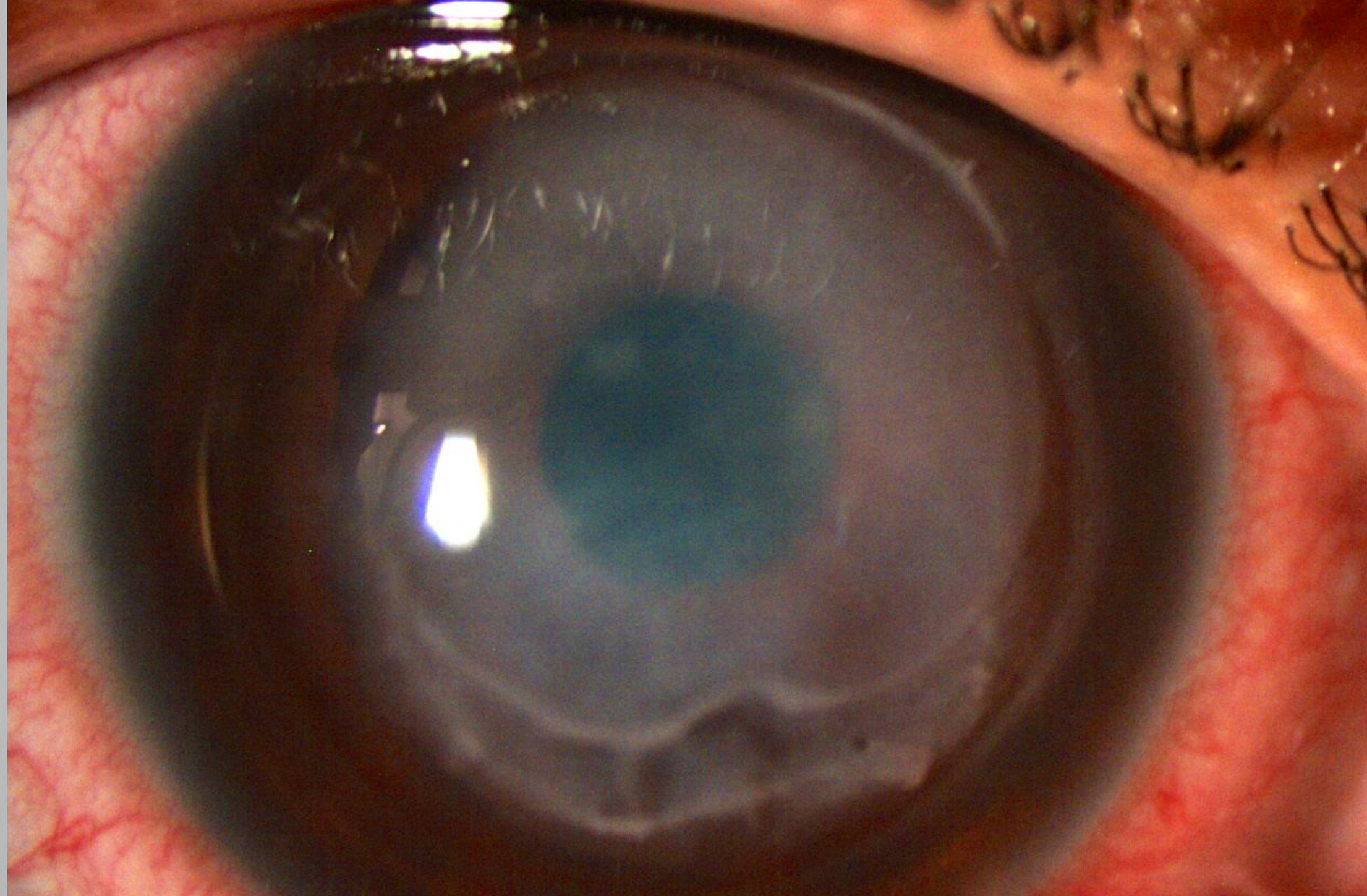

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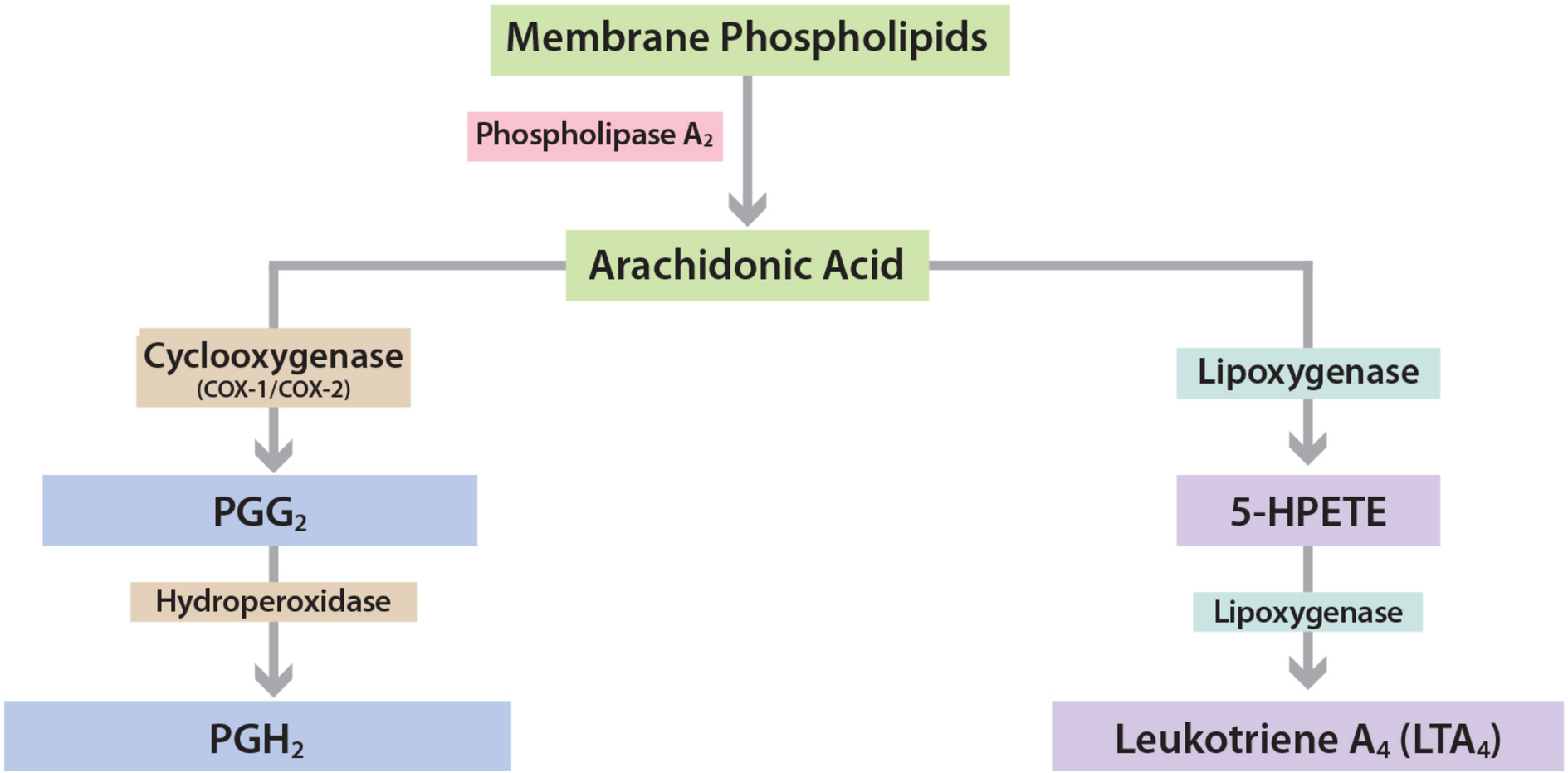

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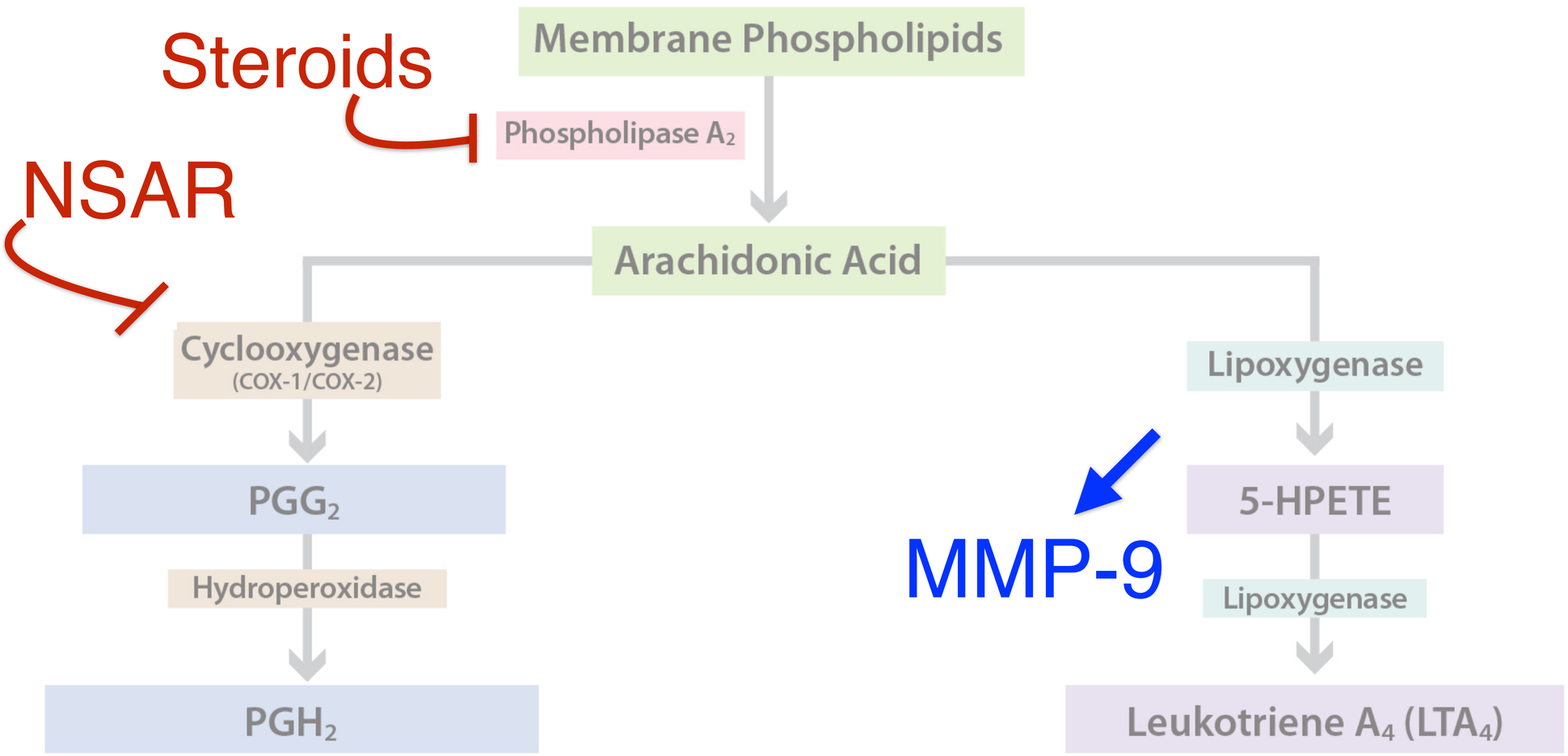

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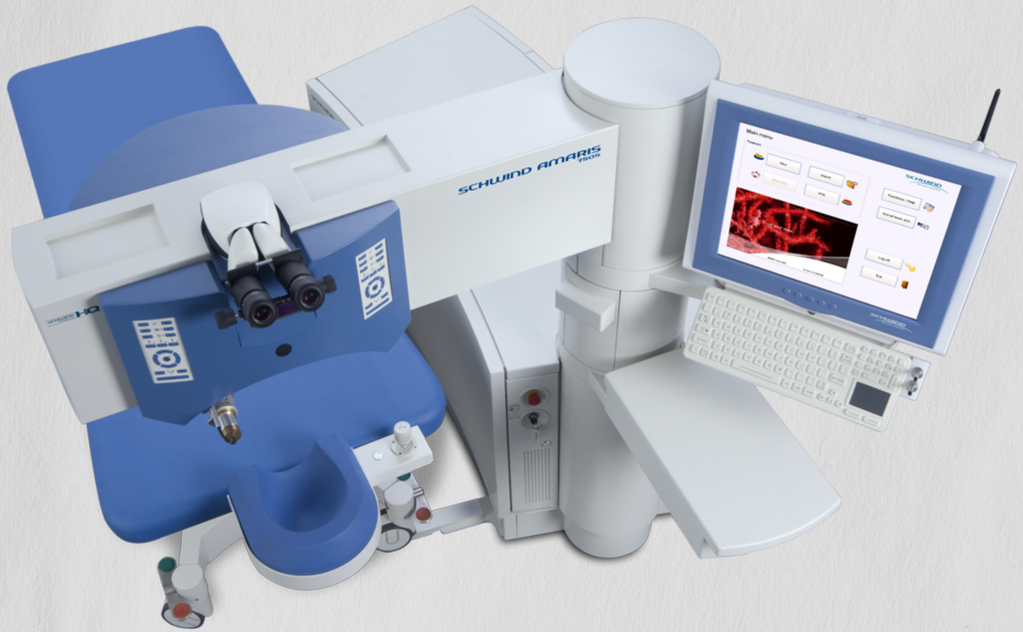
Full epithelial closure

- Within 72 hours

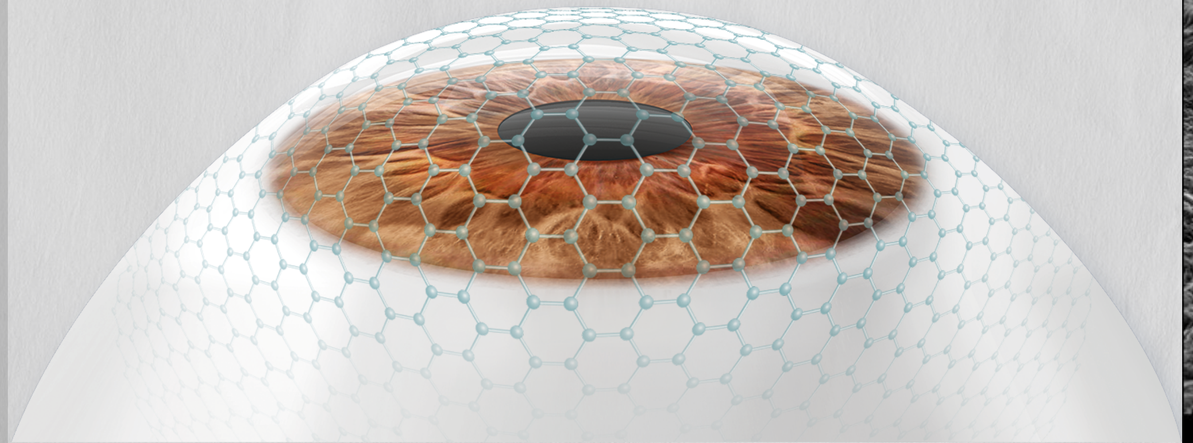
UCVA

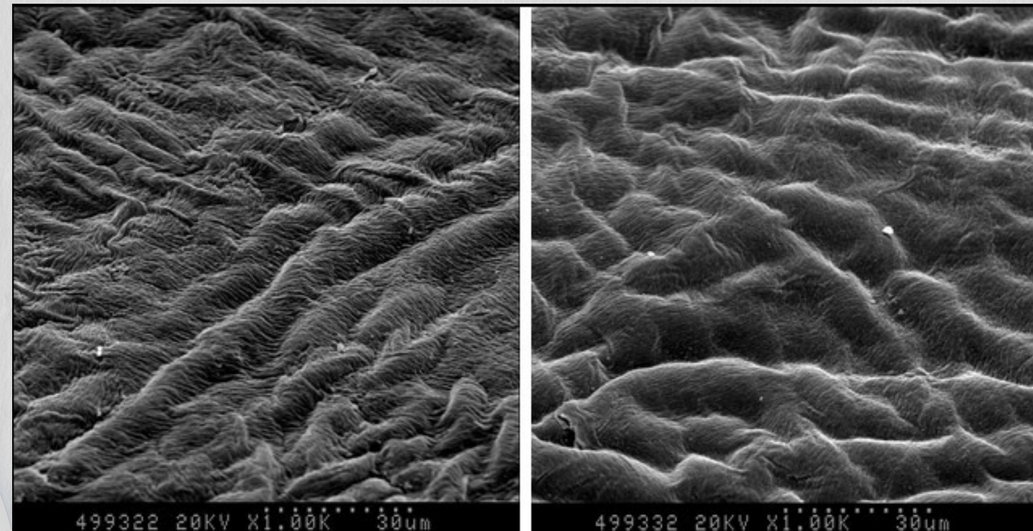
- Typically 20/40 to 20/20 on day 4

SCHWIND
eye-tech-solutions



Smart Pulse Technology





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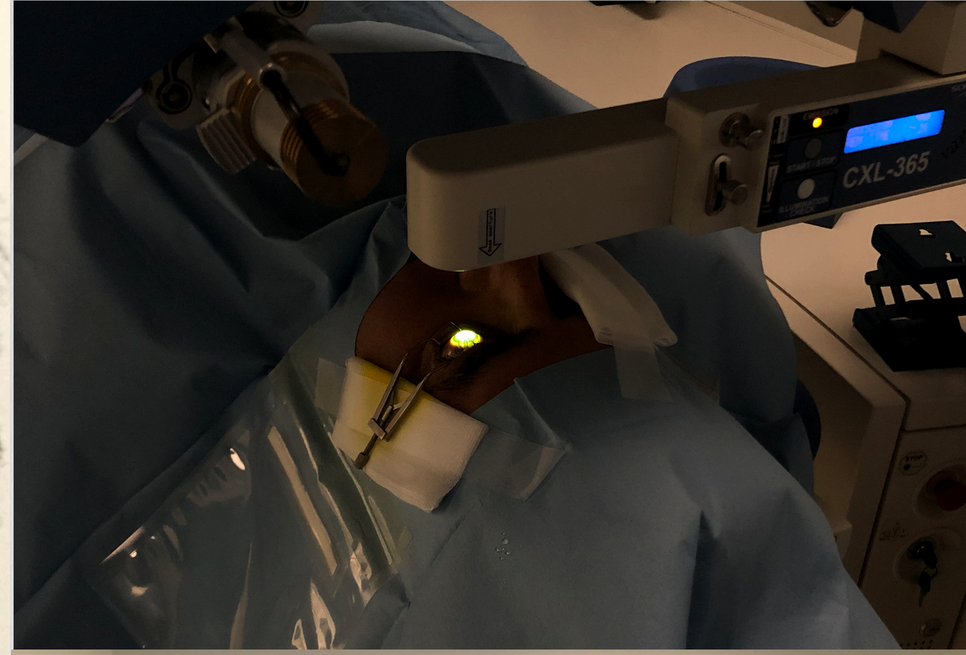

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EXCIMER LASER PHOTOREFRACTIVE KERATECTOMY IN HIGH MYOPIA: A MULTICENTER STUDY*

BY *Richard L. Lindstrom*, MD, *Neal A. Sher*, MD (BY INVITATION), *Mark Barak*, MD (BY INVITATION), *Janet DeMarchi*, COT (BY INVITATION), *Angela Tucci*, BS (BY INVITATION), *Sheraz Daya*, MD (BY INVITATION), *David R. Hardten*, MD (BY INVITATION), *Jonathan M. Frantz*, MD (BY INVITATION), *Richard A. Eifermn*, MD (BY INVITATION), *Paula Parker*, COMT (BY INVITATION), *William B. Telfair III*, PhD (BY INVITATION), AND *Stephen S. Lane*, MD (BY INVITATION)

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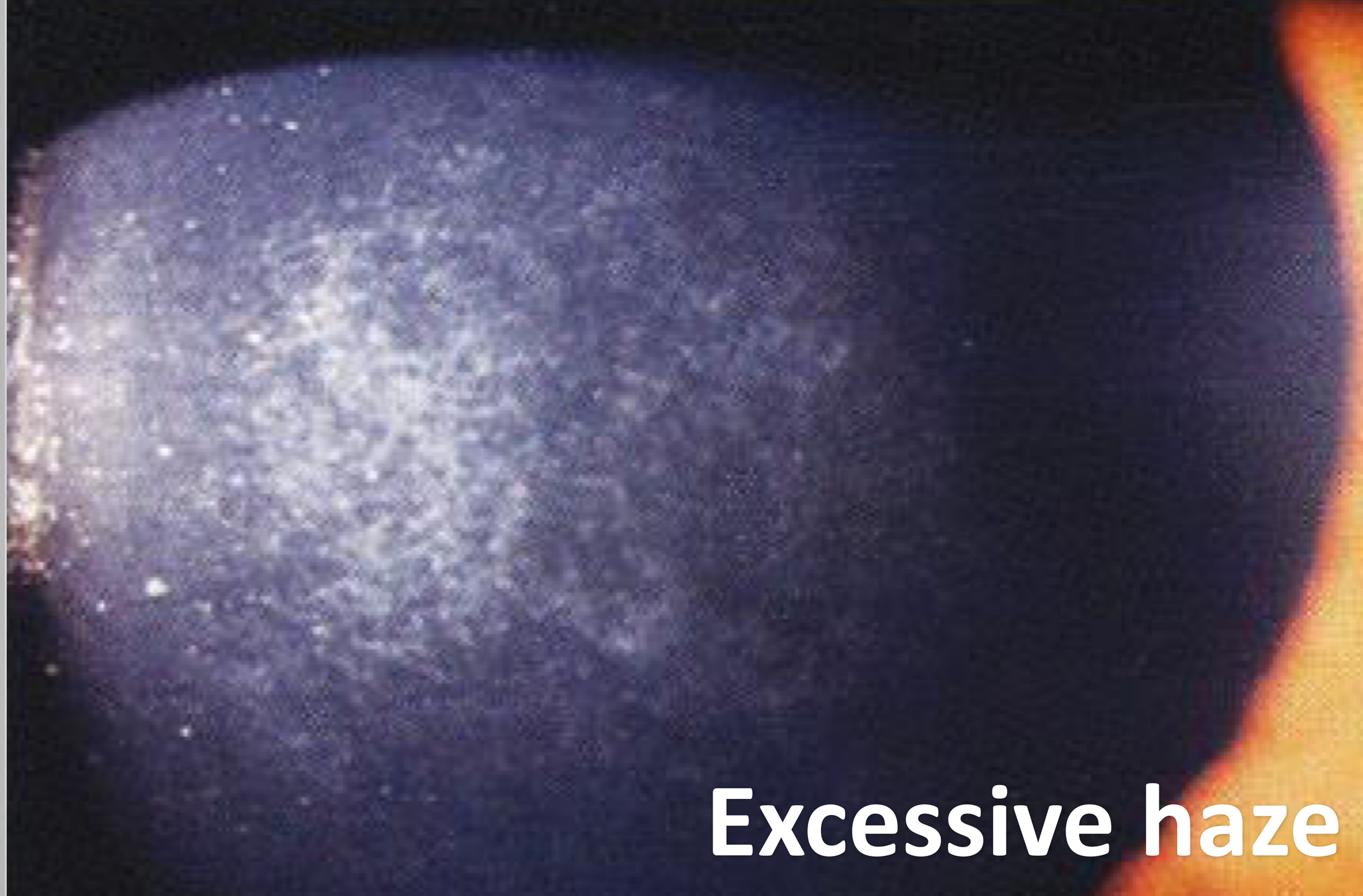

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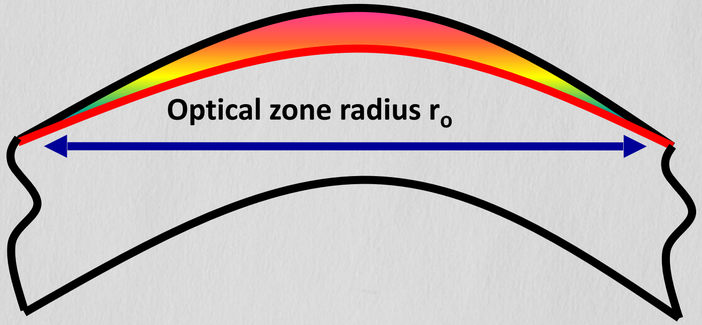
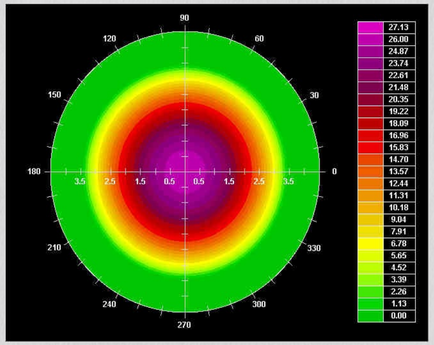
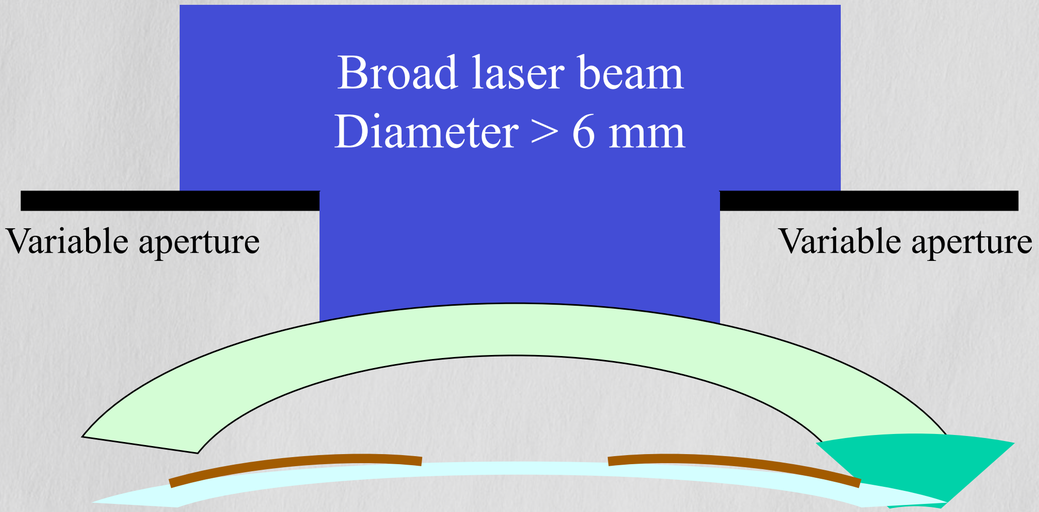
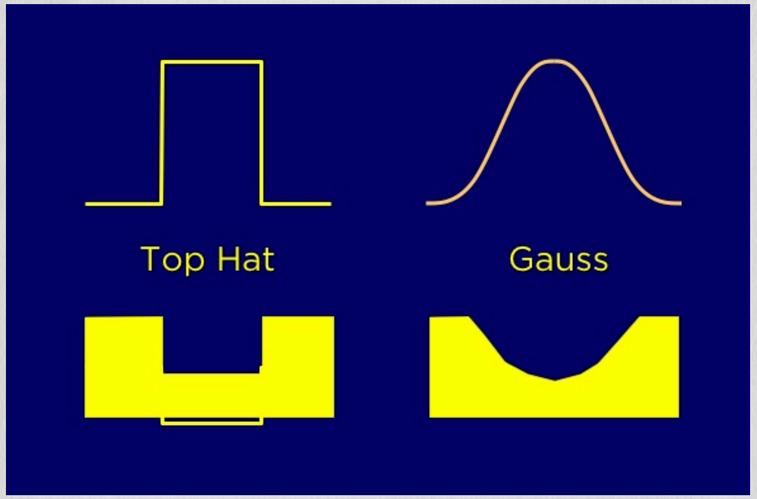


$$a(r) = y_1(r) - y_2(r)$$







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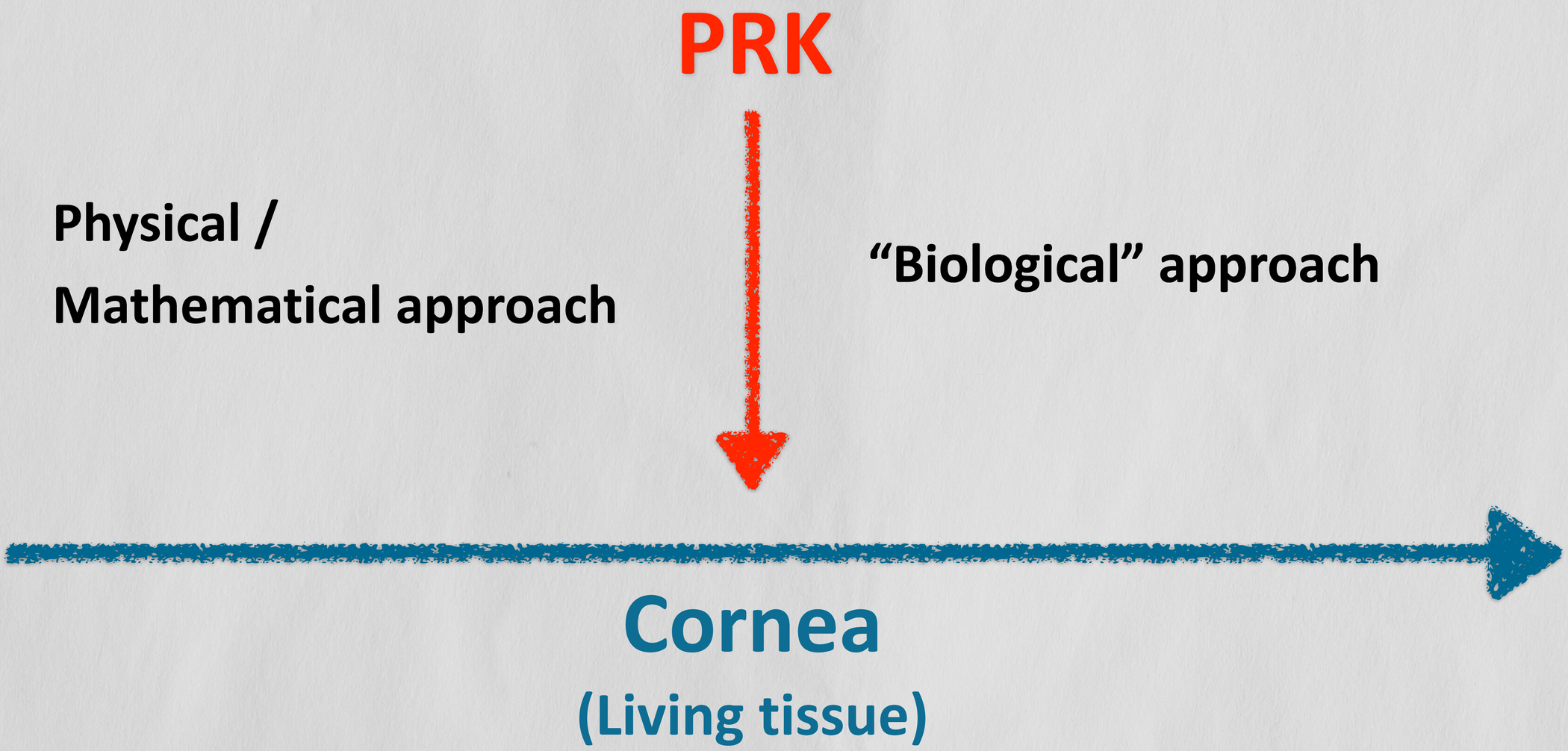

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PRK

Physical /

Mathematical approach

+

“Biological” approach

“Biological” approach

Cornea

(Living tissue)

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Can we optimize ablation profiles using biological parameters ?

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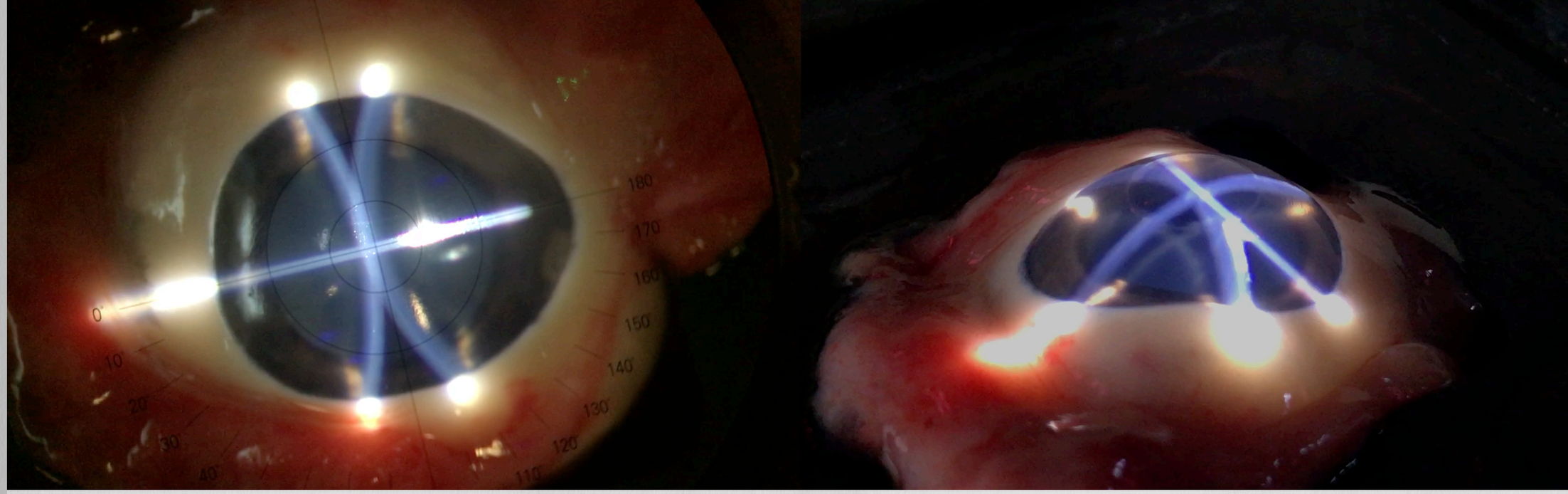

Phase 1
6 rabbits, 12 eyes

Phase 2
12 rabbits, 24 eyes

Phase 3
15 rabbits, 30 eyes

Study Timeline

2013 — 2015 — 2018 — 2019

Laboratory

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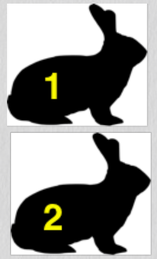
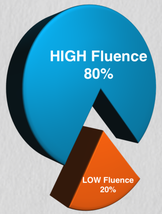
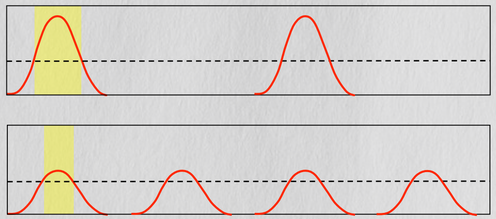


1

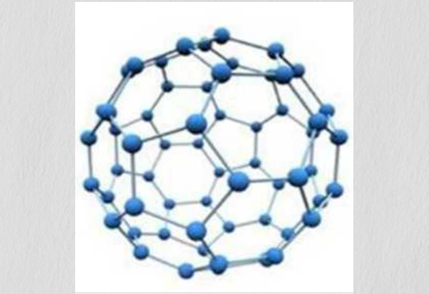
PRK

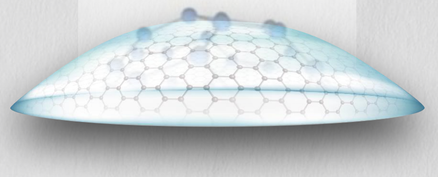




Standard ablation

Low fluence ablation

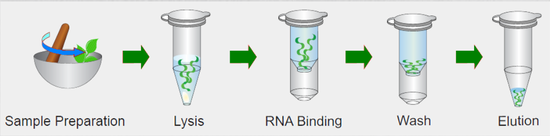


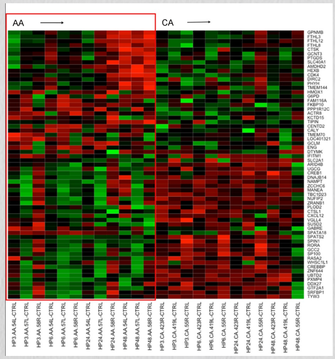


Three-dimensional fullerene model to smoothen the stromal wound bed

2

RNA extraction & gene expression analysis





3

Identify activated inflammatory genes

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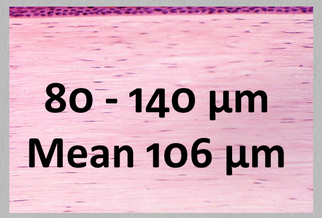
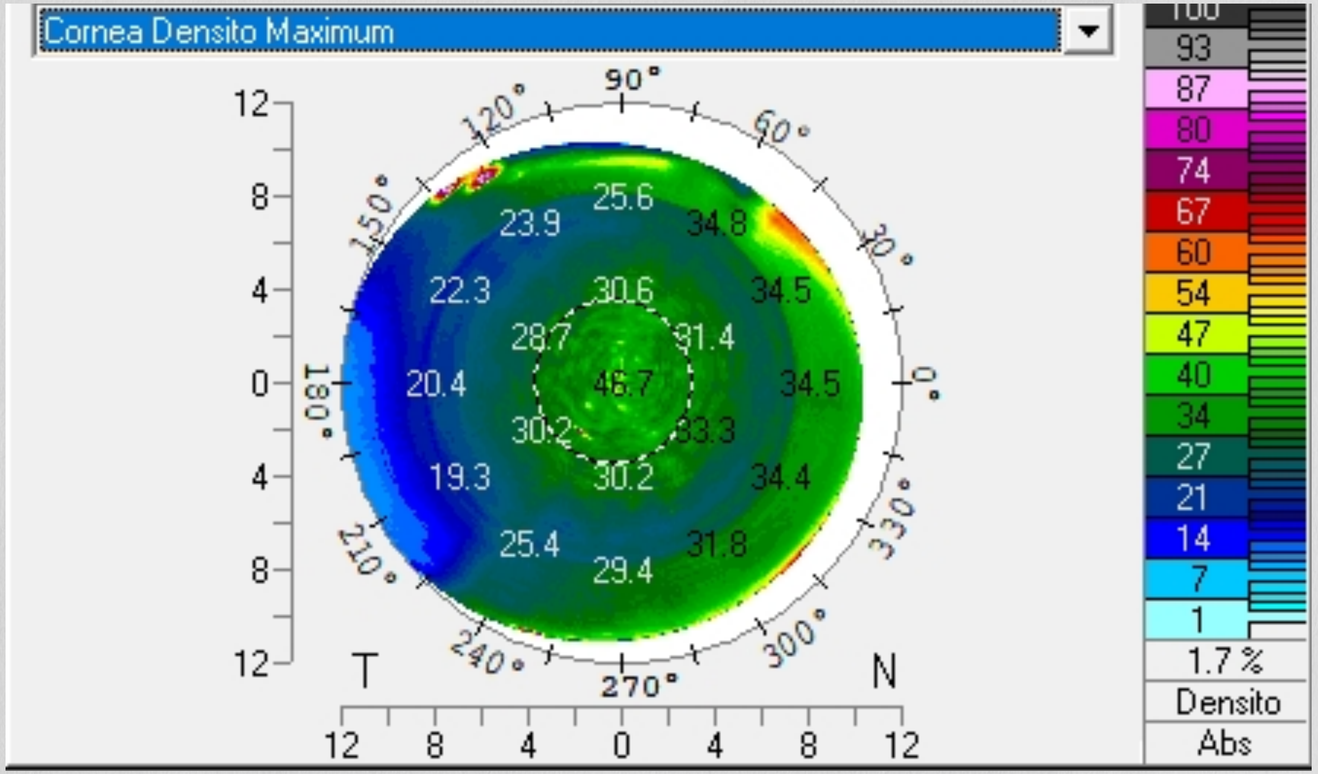
PRK is limited

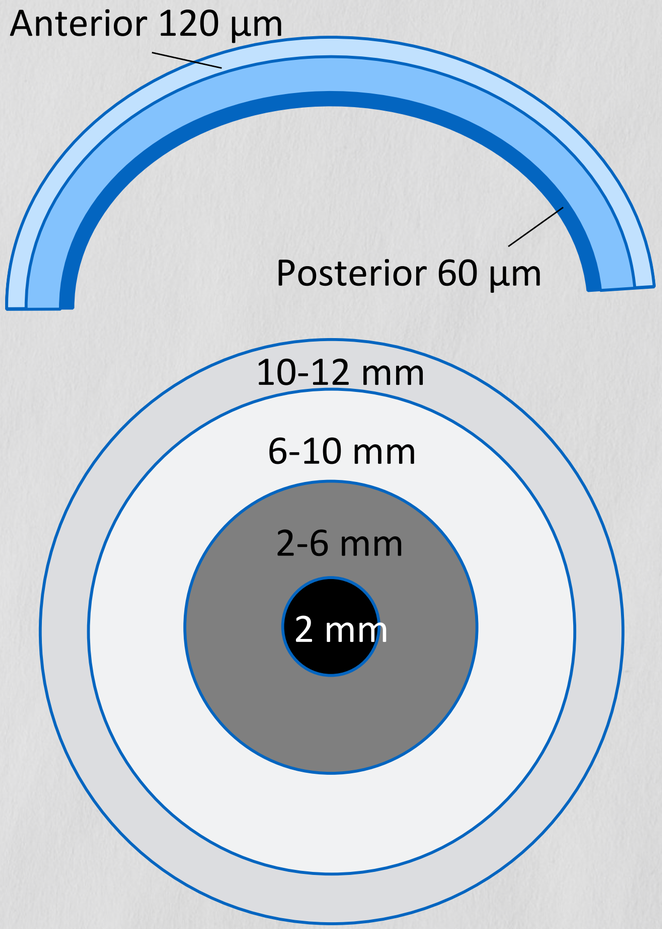
28

6 mo



MMC





Clinical study

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PRK is limited

PRK does not hurt

PRK recovers fast

PRK treats high myopia

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