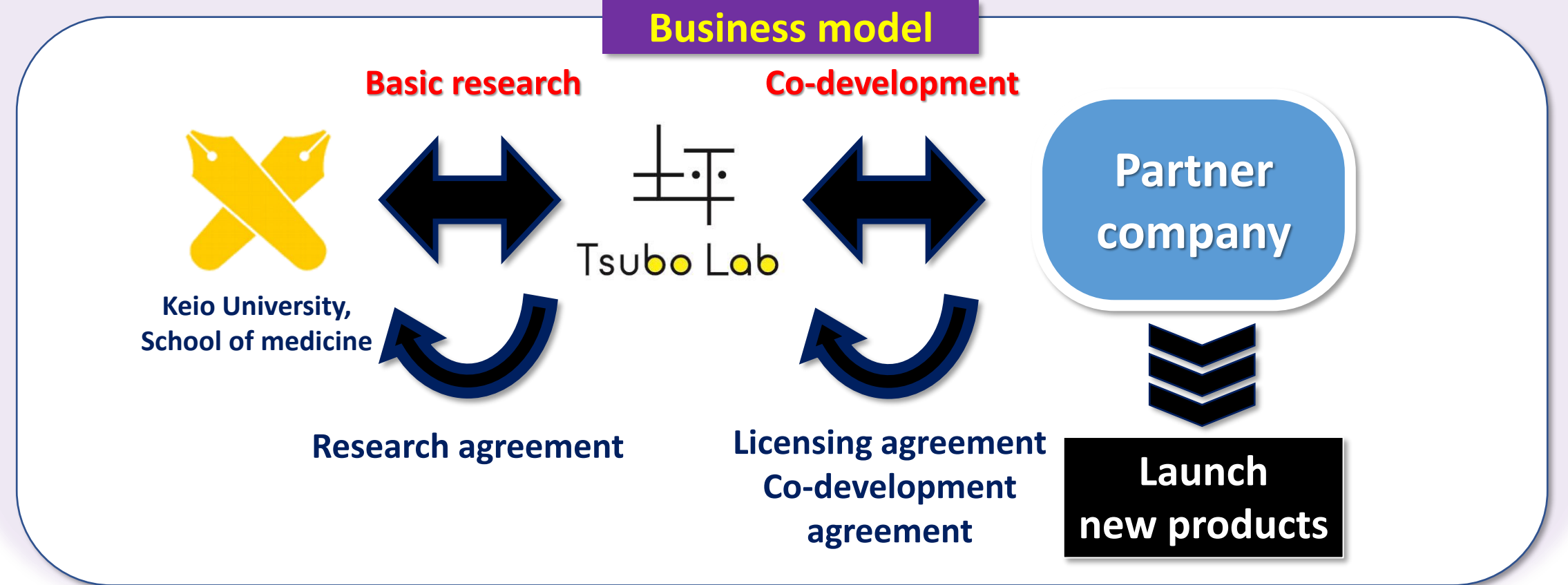


Company Profile/会社概要

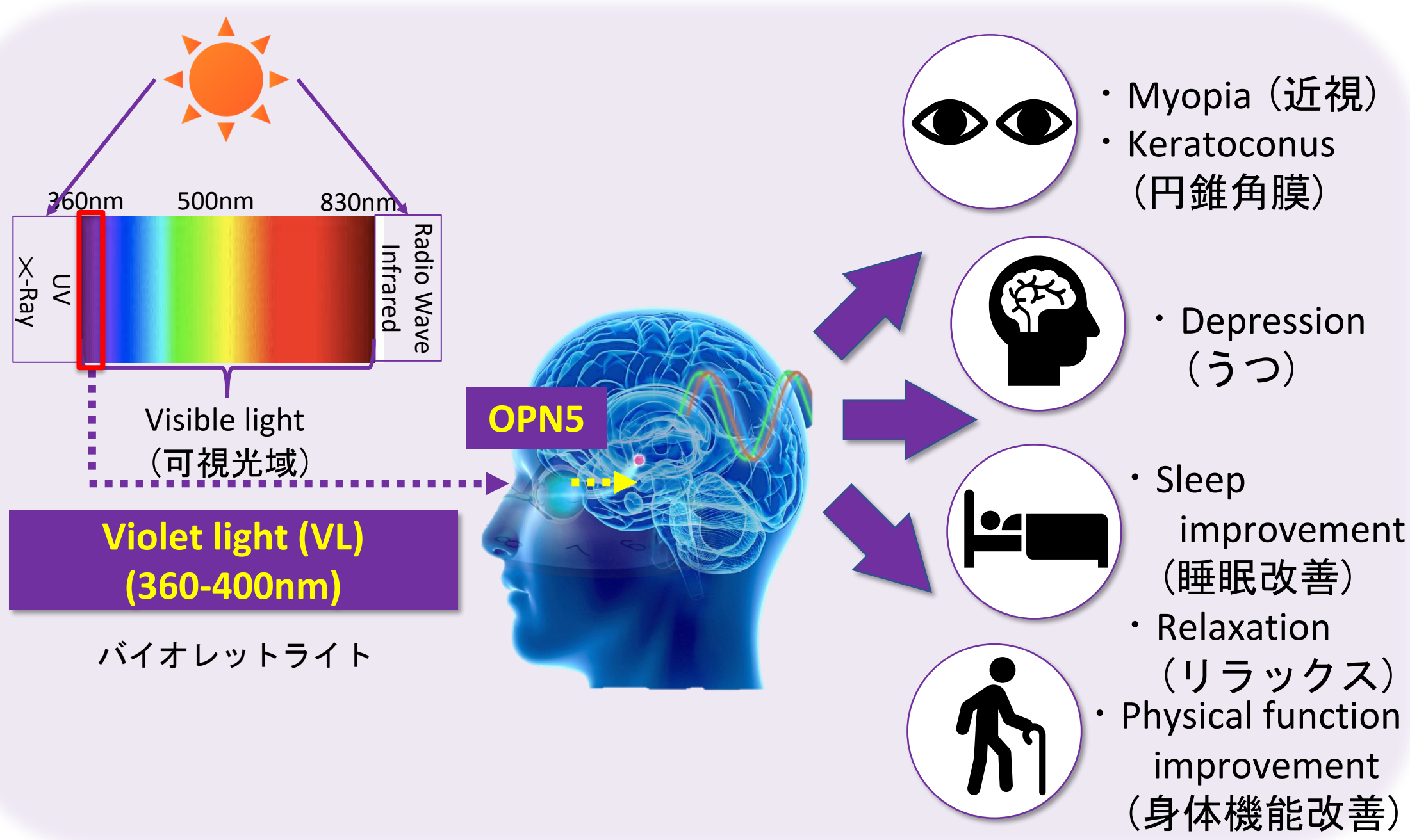


Company name: Tsubota Laboratory, Inc.
Foundation: Feb 19, 2015
Capital: 201.553M JPY
Founder: Kazuo Tsubota, MD, PhD, MBA,
 Prof. at Keio University, School of Medicine,
 Department of Ophthalmology

会社名: 株式会社坪田ラボ
設立: 2015年2月19日
資本金: 201,553,000 円
創立者: 坪田一男、MD, PhD, MBA,
 慶應義塾大学医学部眼科学教室教授

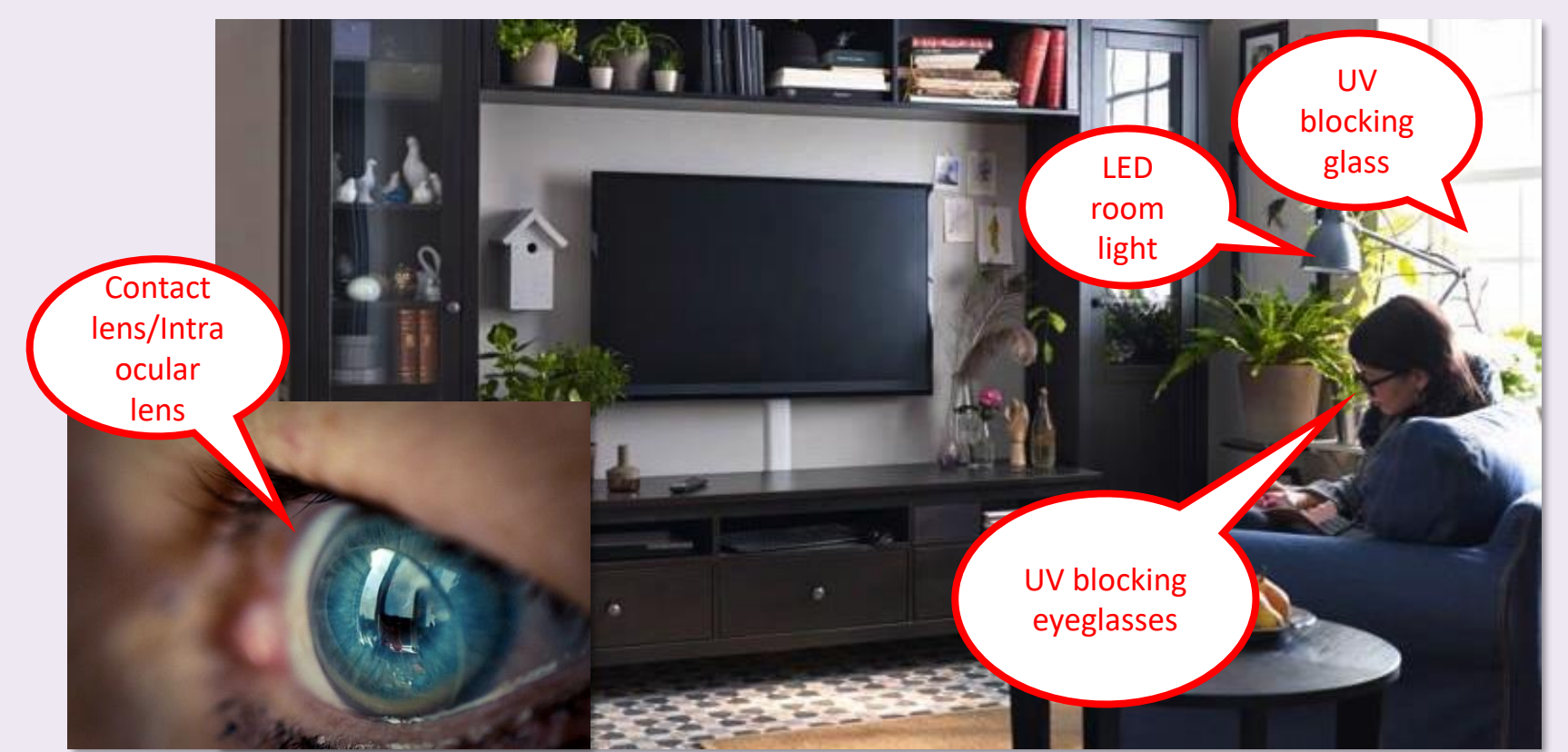


Core Technology/基盤技術

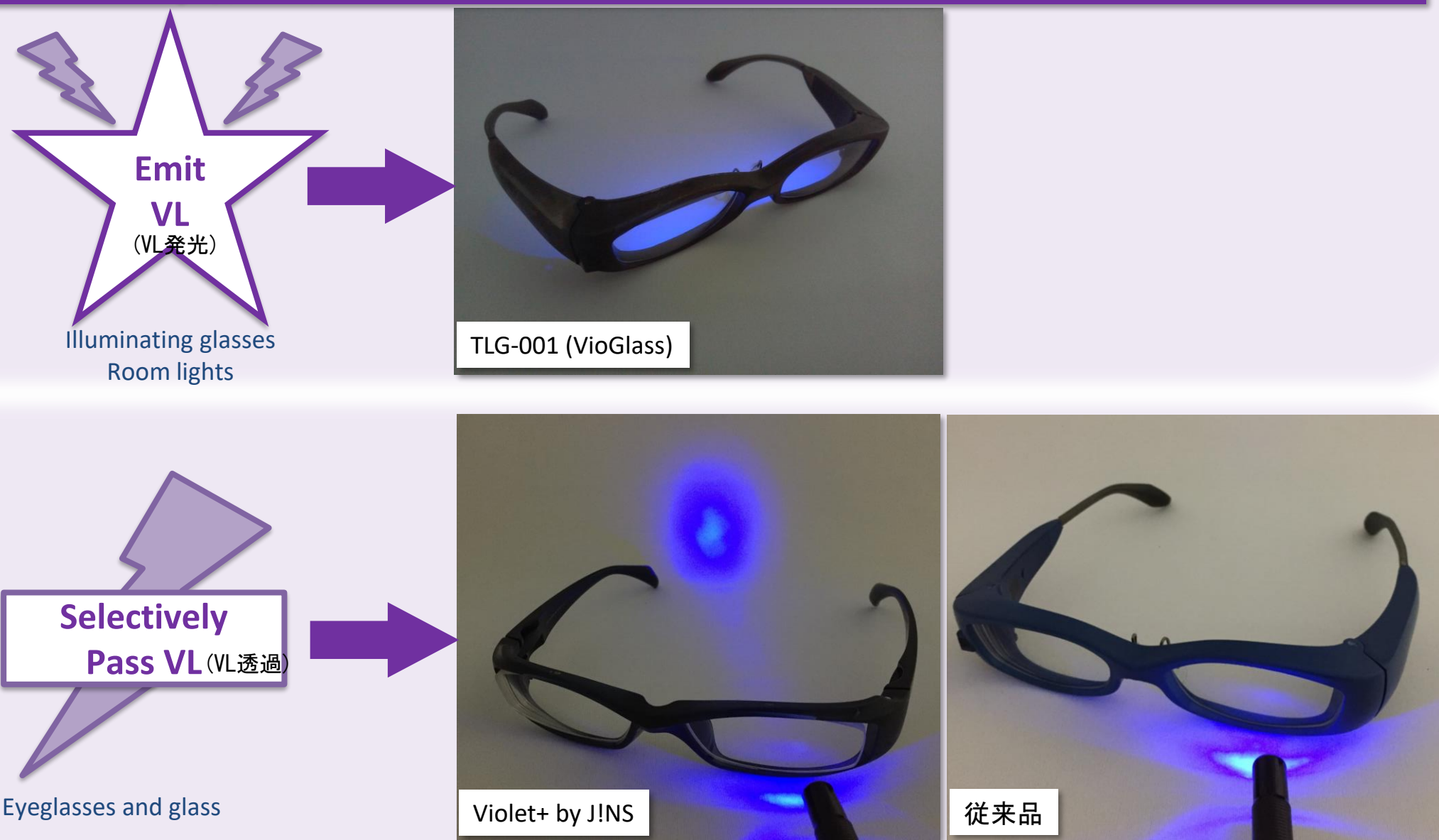


Technical challenge/課題

Sunlight contains not only VL but also harmful UV. 太陽光には有益なVLだけでなく有害なUVも含まれる。
 Indoor environment lacks VL. 一方、室内環境はVLに乏しい。



Our solutions/解決策

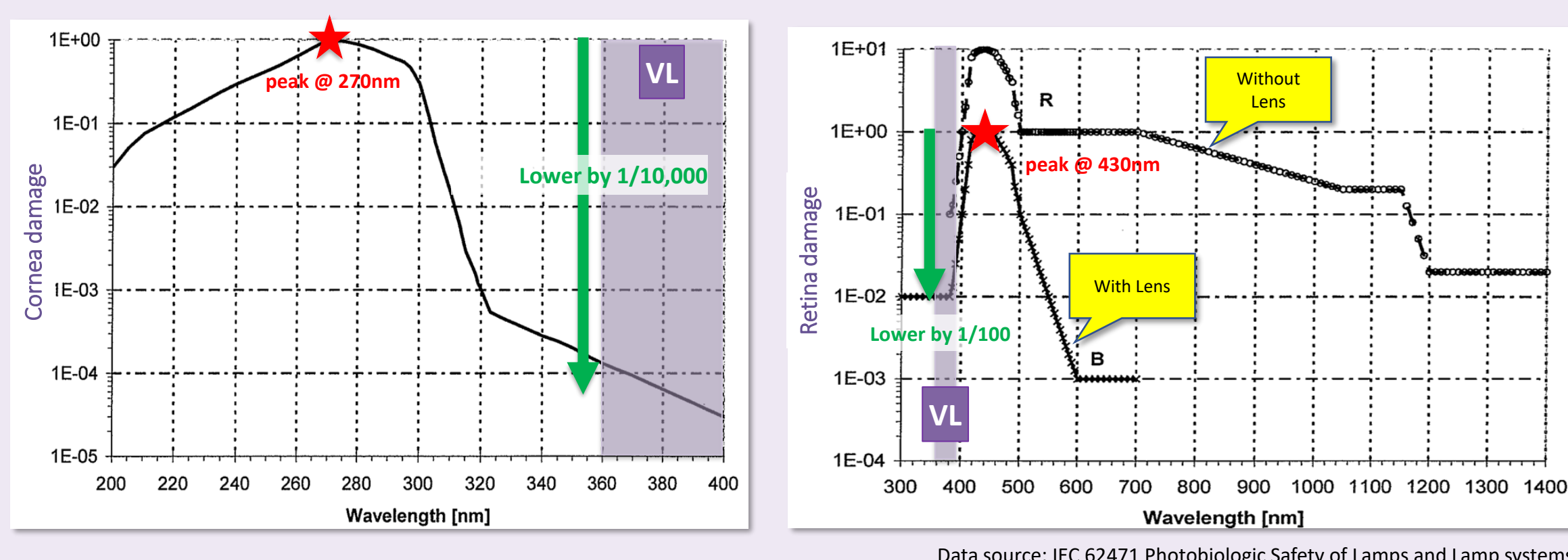


Pipeline/パイプライン

Product	Indication	Research	Pre-clinical	Clinical research	Feasibility study	Pivotal study	Launch	Partner
TLG-001 (VioGlass)	Suppression of Myopia (近視進行抑制)	Japan				2021		JINS
TLG-003 (KeraVio)	Keratoconus (円錐角膜)	Global ex. Japan						Open
TLG-005	Depression (うつ)	Global						Open

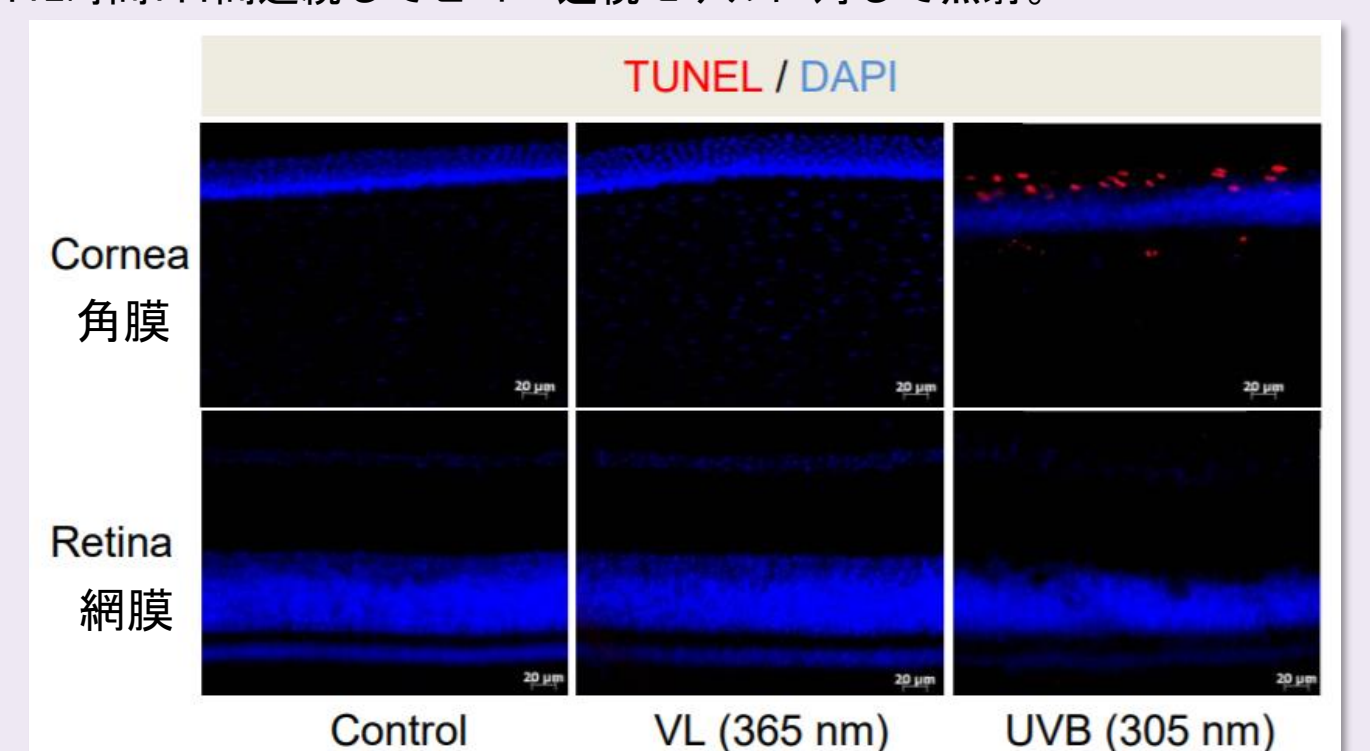
Safety of Violet Light/バイオレットライトの安全性

Phototoxicity of VL to cornea and retina is much smaller than the light in the other wavelength. VLの角膜および網膜に対する光生物学的毒性は他波長域の光と比べ極めて低い。



Safety of VL to cornea and retina was confirmed by irradiation of VL or UVB for 12 hours/day for 7 consecutive days to myopia chick model.

角膜および網膜に対するVLの安全性を評価するために、VLあるいはUVBを1日12時間7日間連続してヒヨコ近視モデルに対して照射。



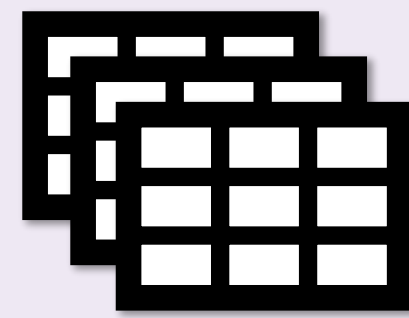
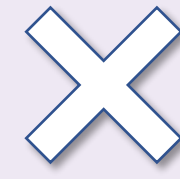
Torii H, Kurihara T, ..., Kondo S, ..., et al. Violet Light Exposure Can Be a Preventive Strategy Against Myopia Progression. EBioMedicine. 2017; 15: 210-219

TLG-001 (VioGlass) for Suppression of Myopia Progression/近視進行抑制VL発光メガネフレーム

TLG-001 (VioGlass)

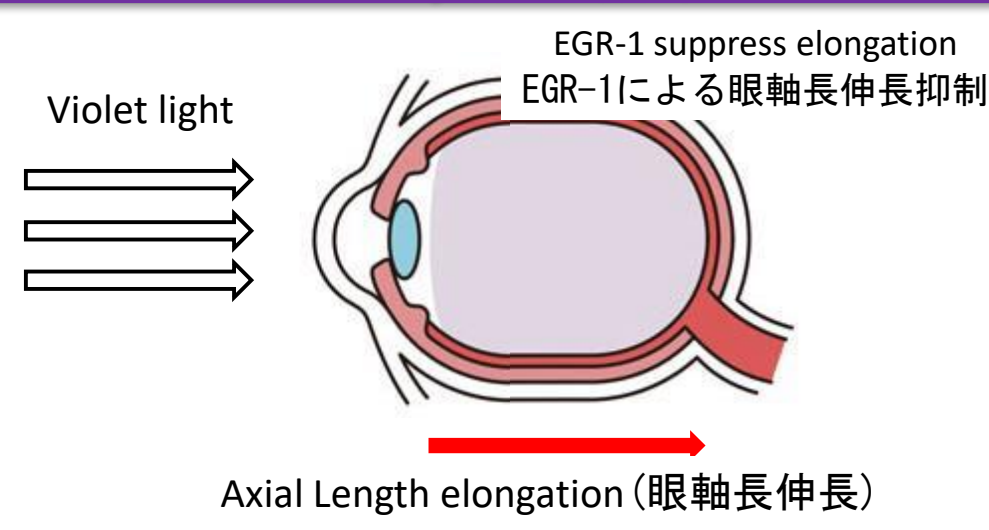


3 hours/day



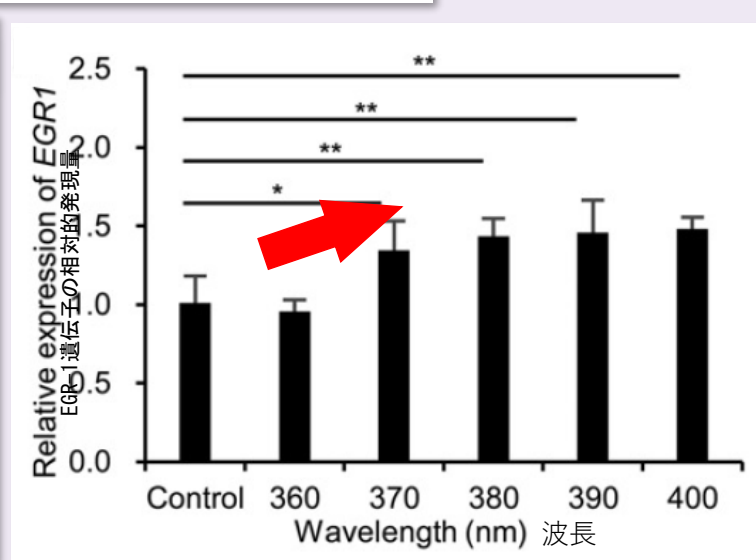
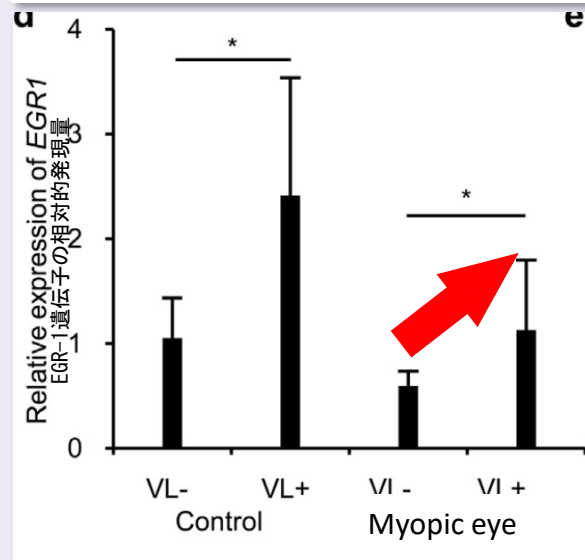
Min 1 year

Mode of action/作用機序



EGR-1 is known as a myopia protective gene. EGR-1 suppress elongation of axial length. Violet Light upregulates the expression of EGR-1.

EGR-1は近視を抑制する遺伝子である。EGR-1は眼軸長伸長を抑制する。VLはEGR-1遺伝子の発現を促進する。



Chick myopia model was exposed to Violet Light for 7 days in 12 hour light and dark cycle.

ヒヨコ近視モデルに対してVLを1日12時間7日間連続して照射。

Torii H, Kurihara T, ..., Kondo S, ..., et al. Violet Light Exposure Can Be a Preventive Strategy Against Myopia Progression. *EBioMedicine*. 2017; 15: 210-219

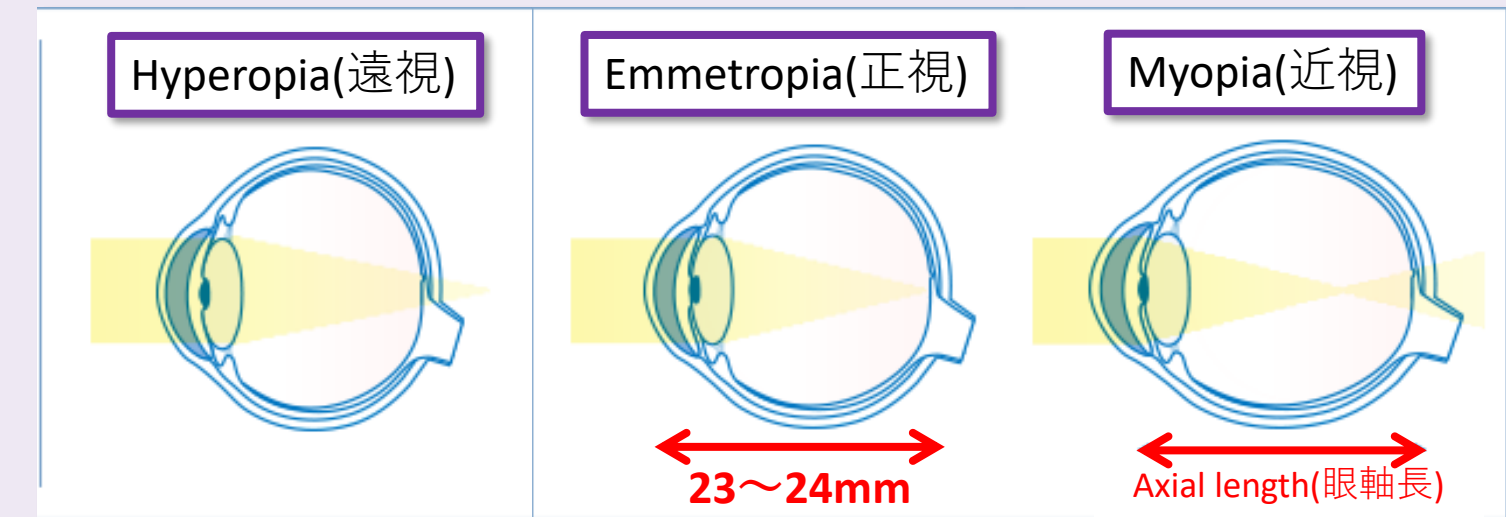
What is myopia?/近視とは？

Visual images are focused in front of the retina, resulting in defective vision of distant objects. May lead to blindness.

映像が網膜の前方で像を結ぶため対象がぼやけて見える状態。最悪の場合失明に至る。

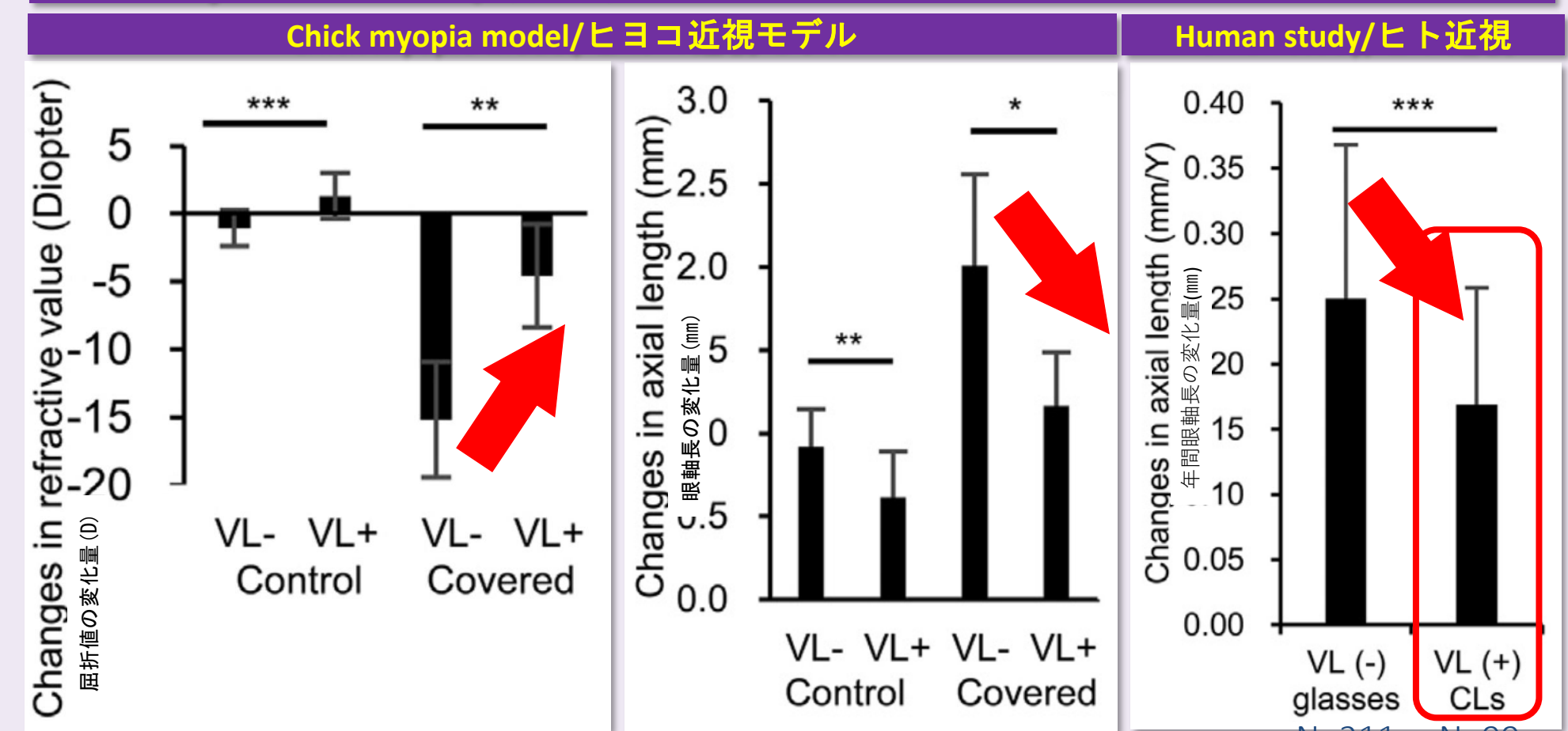
Progression of myopia almost means prolongation of axial length.

近視の進行は眼軸長の伸長とほぼ同義。



Data source: Myopia society Japan (<http://myopia.jp/definition/>, <http://myopia.jp/myopia/>)

Efficacy of VioGlass/有効性



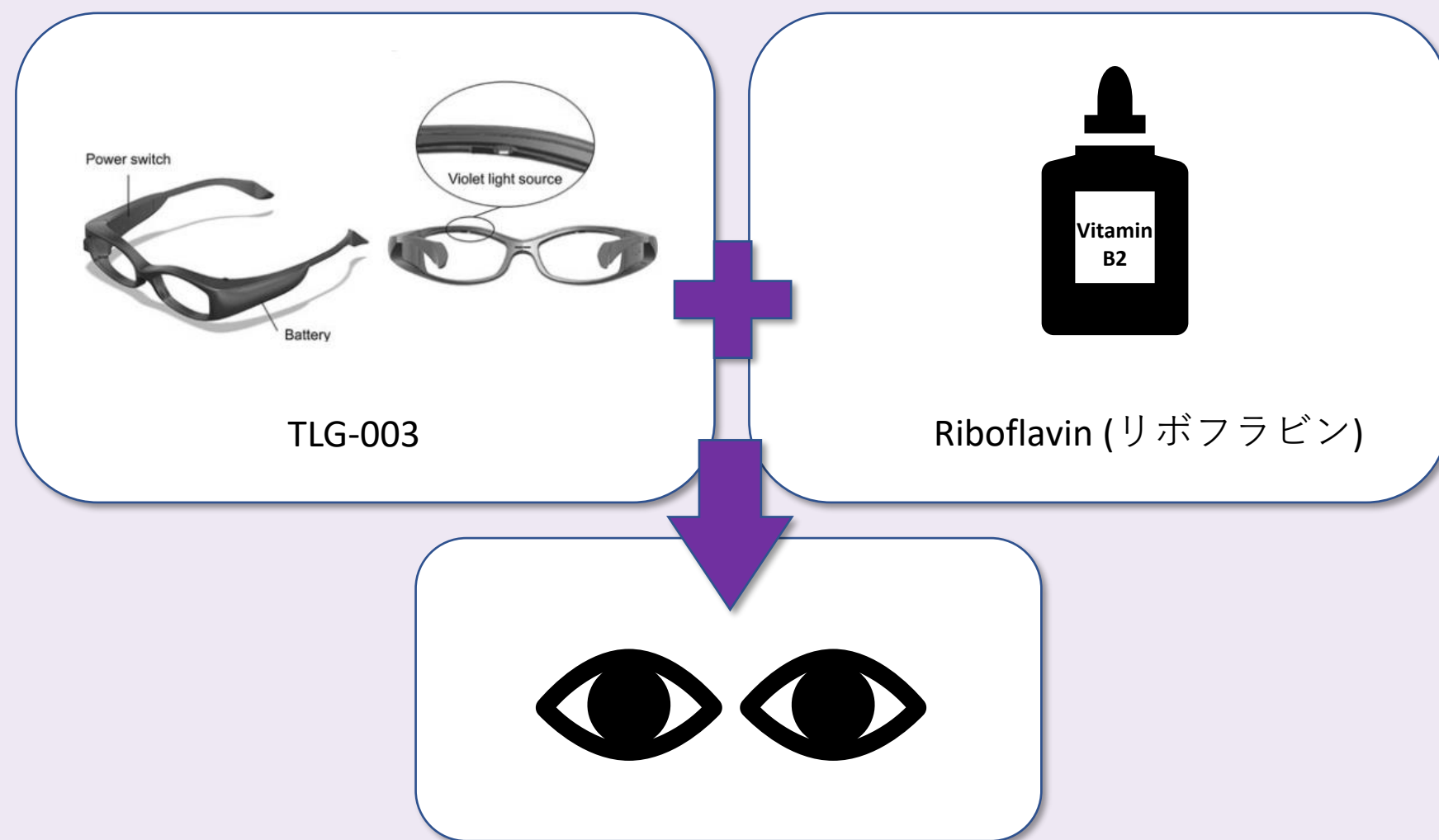
Chick myopia model was exposed to Violet Light for 7 days in 12 hour light and dark cycle.

ヒヨコ近視モデルに対してVLを1日12時間7日間連続して照射。Torii H, Kurihara T, ..., Kondo S, ..., et al. Violet Light Exposure Can Be a Preventive Strategy Against Myopia Progression. *EBioMedicine*. 2017; 15: 210-219

One year comparison between VL transmitting contact lens vs non-VL transmitting glasses. VL透過型コンタクトレンズおよびVL非透過型眼鏡を1年間装着した場合の眼軸長の変化量

TLG-003 (KeraVio) for Keratoconus Treatment/円錐角膜治療用VL発光メガネフレーム

TLG-003 (KeraVio)



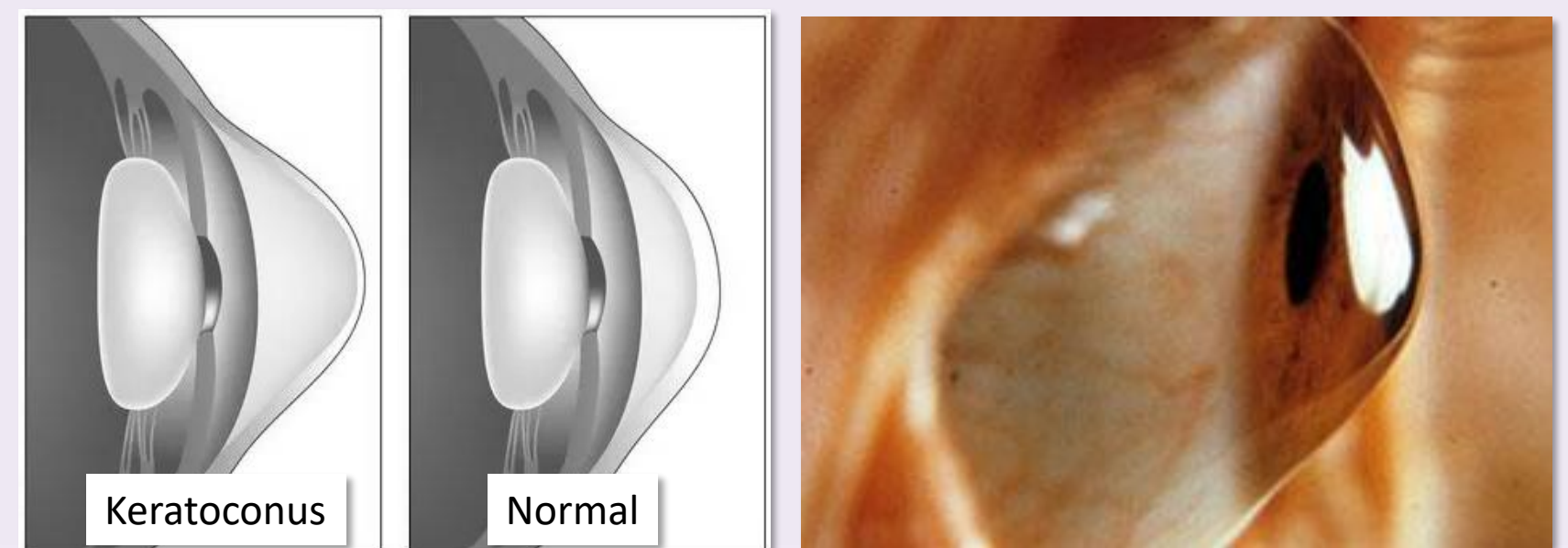
Kobashi H et al, "Clinical outcomes of KeraVio using violet light: emitting glasses and riboflavin drops for corneal ectasia: a pilot study, *Br J Ophthalmol* 2020;0:1-7

What is Keratoconus?/円錐角膜とは？

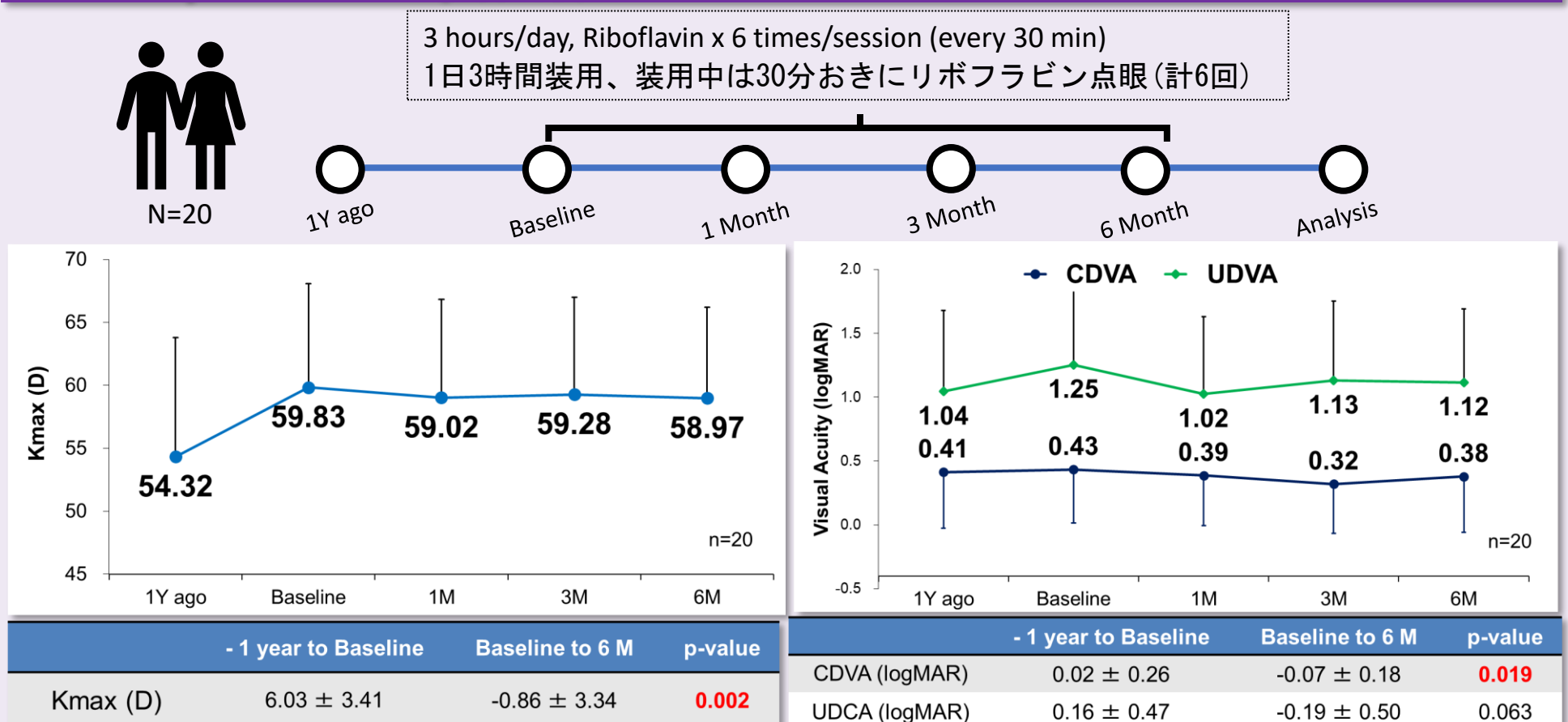
Keratoconus is a progressive, frequently asymmetric, inflammatory corneal thinning disorder characterized by changes in the structure and organization of corneal collagen, leading to myopia, irregular astigmatism and central corneal scarring.

円錐角膜は、左右非対称に進行する炎症性の角膜薄層化疾患で角膜コラーゲン層の構造変化を特徴とする。

発症に伴い近視、不規則な乱視、角膜中央部に瘢痕が生じる。



Efficacy of KeraVio/有効性



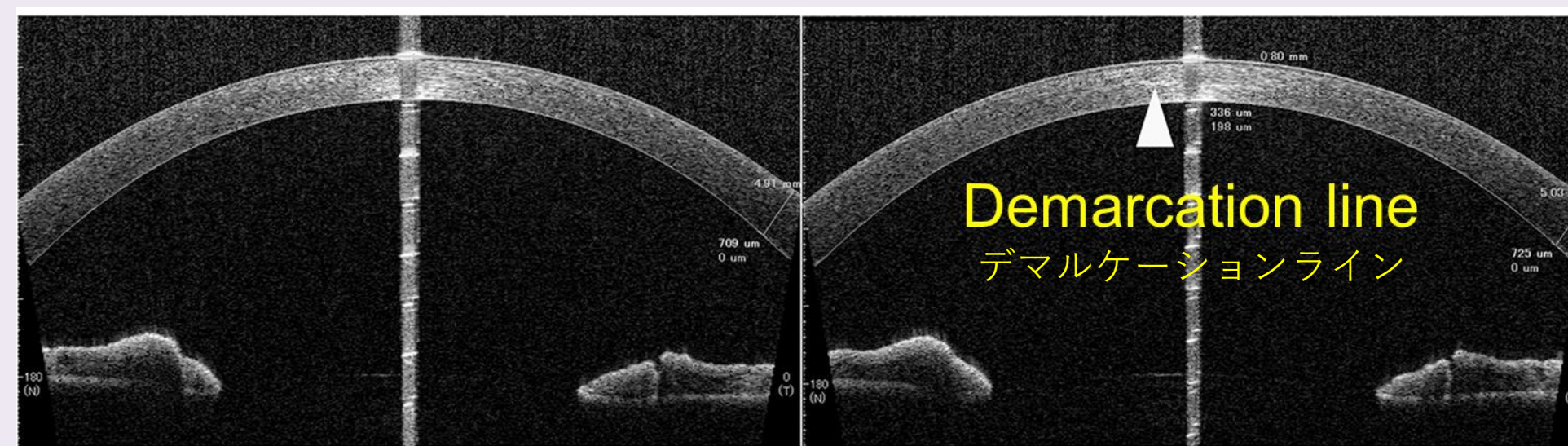
Progression of keratoconus and visual acuity deterioration have stopped immediately after initiation of KeraVio treatment.

KeraVioによる治療開始直後より円錐角膜および近視の進行が抑制された。Kobashi H et al, "Clinical outcomes of KeraVio using violet light: emitting glasses and riboflavin drops for corneal ectasia: a pilot study, *Br J Ophthalmol* 2020;0:1-7

Mode of action/作用機序

Violet light and riboflavin administration generated free radicals which promoted cross linkage of cornea stroma as evidenced by the demarcation line.

VL照射とリポフラビン点眼により、角膜部でフリーラジカルが発生し、角膜コラーゲン層の架橋が促進されたことが、デマルケーションラインから観察される。



Pre-treatment (治療前)

Post-treatment (治療後)

Kobashi H et al, "Clinical outcomes of KeraVio using violet light: emitting glasses and riboflavin drops for corneal ectasia: a pilot study, *Br J Ophthalmol* 2020;0:1-7