

**oerli  
ophthalmedic®**

[www.oerli-ophthalmedic.ch](http://www.oerli-ophthalmedic.ch)



EYE SURGERY ESSENTIALS.

>

A New Paradigm  
in Ophthalmology  
and Beyond



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①  
The  
Espansione  
Group

—WHY WE'RE HERE

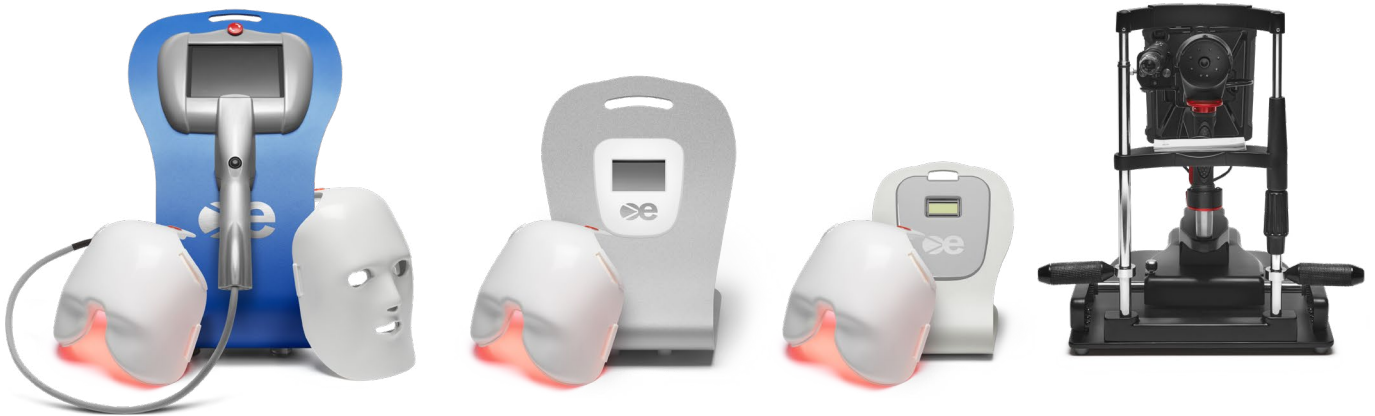
Helping people, through science.  
That's the privilege we take pride in.

We have the ambition to establish new paradigms in ophthalmology, driven by our desire to provide our customers and their patients with the best, certified medical technologies.

We have always delivered the highest standard in the industry—pushed on by expert craftsmanship and family-owned values coupled with a global mindset and aspiration. Every day, we invest heavily in researching and developing the Espansione Ecosystem of technologies and solutions to achieve our ambition.



—ECOSYSTEM



## Technologies

Our technologies are at the very core of the Espansione Ecosystem—they leverage the power of light and its outstanding ability to benefit the human condition.

- > LM<sup>®</sup> LLLT
- > OPE<sup>®</sup> IPL

## Solutions

Our technologies are seamlessly built into all our solutions, from diagnosis to treatment. We design, craft and test with the greatest attention and care in Italy.

- > eye-light<sup>®</sup>
- > meibomask<sup>®</sup>
- > my-mask<sup>®</sup>
- > me-check<sup>®</sup>

—BENEFITS

Ecosystem is the term we use to describe the synergy between our technologies and the solutions that leverage on them.

Every interaction within the Espansione Ecosystem has been designed to provide both patients' and operators' with the best experience possible.

## ① Integration

Our technologies and solutions are seamlessly integrated for operators and patients to benefit from their unique capabilities. We developed our solutions' software and hardware from scratch to work together as one—from diagnosis to treatment, every step is as easy as it gets.

## ② Simplicity

We put great effort and energy in building hassle-free solutions. From how we craft our devices and terminals, to the materials we chose, all the way to the design of our solutions' software. Everything has been done to maximize simplicity in utilization.

## ③ Effectiveness

It's not only about making it simple and easy, though. Our technologies just work. Indeed, the resonance of Espansione technology has been impressive with the scientific community—every day, thought leaders from all over the world leverage the possibilities of the Espansione Ecosystem in their practices.

## ④ Consistency

Our technologies and solutions are consistently reliable in their ability to deliver. In the words of one of our global Key Opinion Leaders in ophthalmology, when asked about what made the Espansione Ecosystem great, he answered “It works, every single time.” Consistency is a promise we make our partners and patients—one that we love to live up to.

—WHERE WE'RE GOING

Our ambition isn't limited to that of becoming the undisputed thought leader in diagnosing and treating ocular surface conditions.

Beyond that, we aim at leveraging our know-how and apply it synergically in other fields beyond ophthalmology.

We have already delivered great degrees of innovation to the fields of ophthalmology and dermatology through our patented technology Light Modulation® Low-Level Light Therapy and its seamless integration in the Espansione Ecosystem of solutions.

LM® LLLT has set a new medical standard in painlessly and effectively treating the majority of ocular surface conditions, on top of being extremely effective in its dermatology applications.

—WHERE WE ARE

Enabling progress through science for the betterment of all isn't an easy purpose to work towards—yet it's our north star, the guiding principle of all our actions.

That's what guided us for over four decades. That's what moved us to become the one and only company to develop, patent and certify a unique photobiomodulation technology, Light Modulation® LLLT, for use in medical fields such as ophthalmology, dermatology and dentistry.

We've done all of this by believing in challenging the status quo, innovating with care and ingenuity, and believing in the power of our people.



10<sup>+</sup> Technology Patents

40<sup>+</sup> Scientific Papers

50<sup>+</sup> Countries

②

Technologies



## LM<sup>®</sup> LLLT

LM<sup>®</sup> Low-level Light Therapy is a unique, light-based photobiomodulation technology. We developed and patented for medical use the technology originally employed by NASA (i.e., Low-level Laser Therapy) to treat wounds of astronauts in space.

## Light Modulation<sup>®</sup> The power of light, cubed.

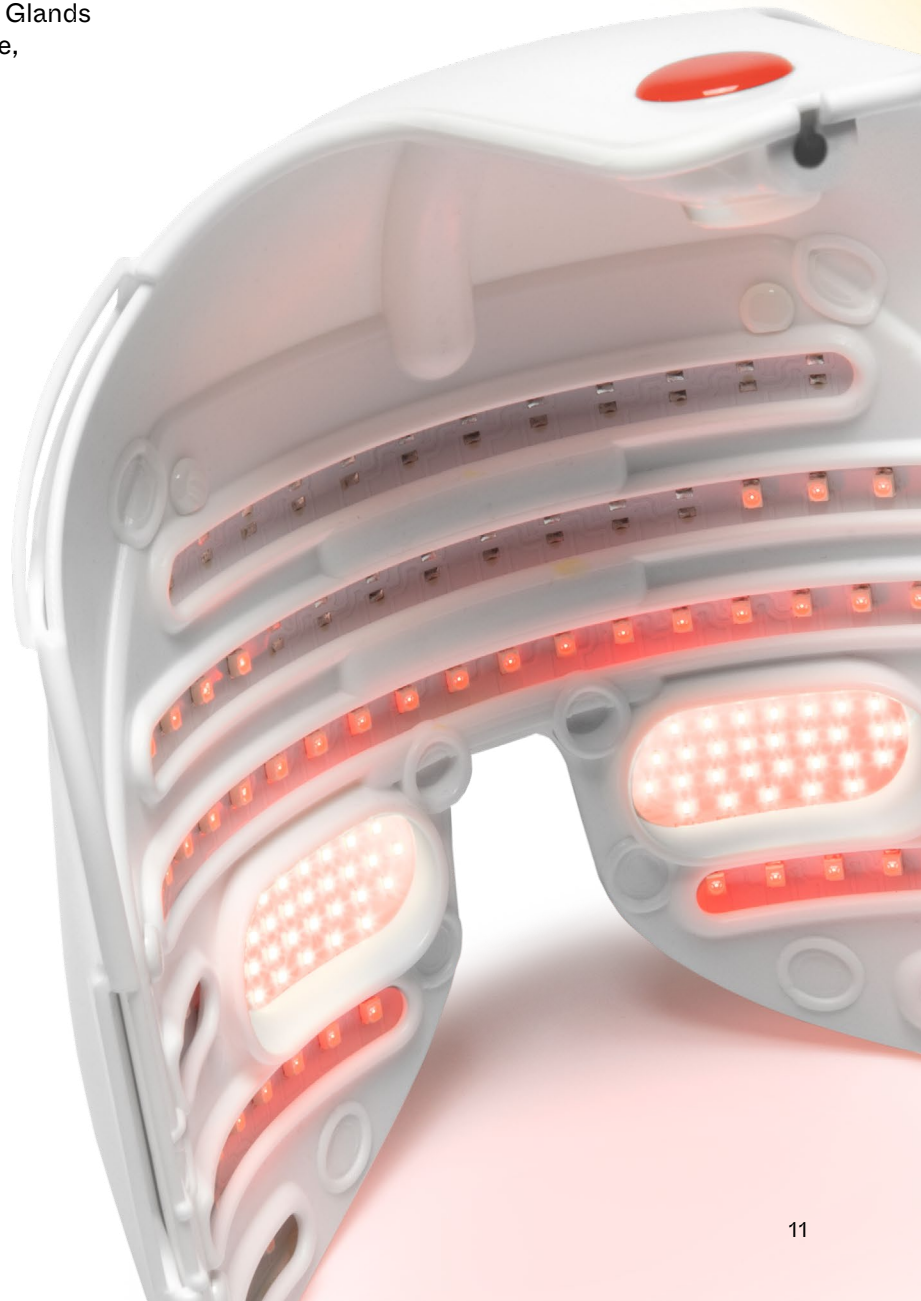
LM<sup>®</sup> LLLT has nothing to do with Red Light Therapy (RLT), which only acts on the surface of the dermis—instead, LM<sup>®</sup> LLLT works at biological level, generating endogenous heat through powerful LEDs stimulating ATP production in cells.

# Discover the Science behind LM<sup>®</sup> LLLT

No pain,  
Extreme gains.

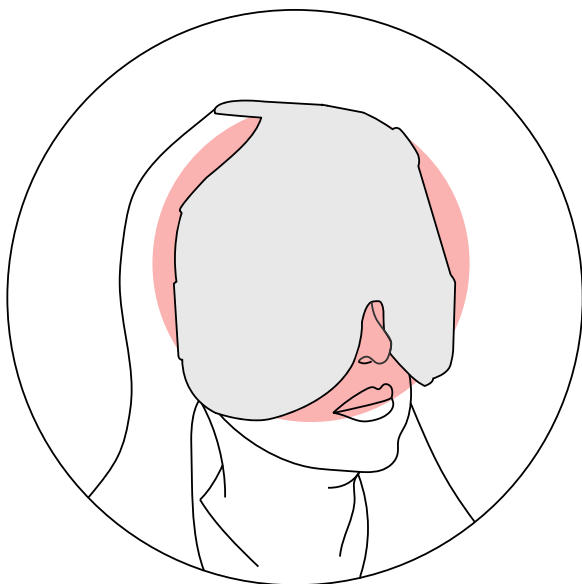
Photobiostimulation therapy enabled by LM<sup>®</sup> LLLT is a unique kind of near-infrared light therapy (NILT) that's completely painless for the patient—yet extremely effective in managing a vast number of ocular surface conditions such as Meibomian Glands Dysfunction. Different wavelengths (Red, Blue, Yellow) are available, for different use cases.

CERTIFIED FOR  
MEDICAL USE



# Maximum convenience, exceptional value.

The degree of simplicity offered by LM<sup>®</sup> LLLT technology to the operator, and the convenience hence provided to the patient benefitting from its therapy is, put simply, unmatched. These benefits are complemented by LM<sup>®</sup> LLLT exceptional efficacy in treating MGD—although global thought leaders in the scientific community have leveraged it beyond MGD to treat the ocular surface (e.g., Chalazia, Blepharitis, Sjögren’s Syndrome).



## Science told us. It just works.

LM<sup>®</sup> LLLT has recently been studied in a piece of research that compared it directly against IPL. The study has confirmed the efficacy of LM<sup>®</sup> LLLT, proving also its superior performance against traditional IPL technologies.

Another recent scientific paper has confirmed that LM<sup>®</sup> LLLT, employed jointly with OPE<sup>®</sup> IPL, is the key factor in effectively managing the most severe cases of recalcitrant MGD-induced DED and other ocular surface diseases.



# Beyond treatments, elevating cataract & refractive surgery routines.

LM<sup>®</sup> LLLT's potential doesn't end with direct treatment of most ocular surface diseases. Literature tells us that unresolved ocular surface disease (OSD) represents a major risk factor for suboptimal outcomes in refractive surgery (Labetoulle M. Et Al, 2019). That's why the Espansione Ecosystem, above all through LM<sup>®</sup> LLLT, is the best option to elevate your surgery routine.

## A technology Like no other.

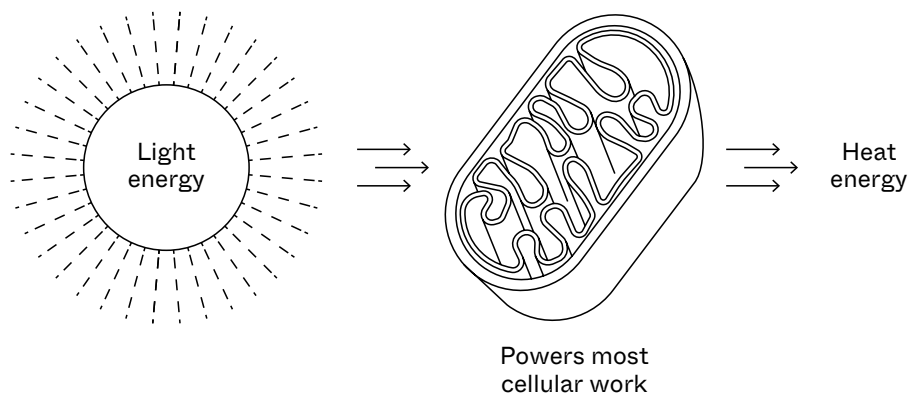
Operators and patients can enjoy the unique benefits of LM<sup>®</sup> LLLT technology.

- ① It's fast—a treatment lasts 15'
- ② It's painless
- ③ It grants immediate relief to the patient
- ④ It's easy and safe for the operator
- ⑤ It's plug&play—it doesn't require the operator to be constantly present during the treatment



# Light Science

LM<sup>®</sup> LLLT is our patented photobiomodulation technology—it works by triggering endogenous heating of both eyelids, stimulating ATP production.



## Three frequencies. Endless possibilities.

Light Modulation<sup>®</sup> Low-level Light Therapy can be leveraged employing three different light frequencies—each with its own unique benefits and use cases.

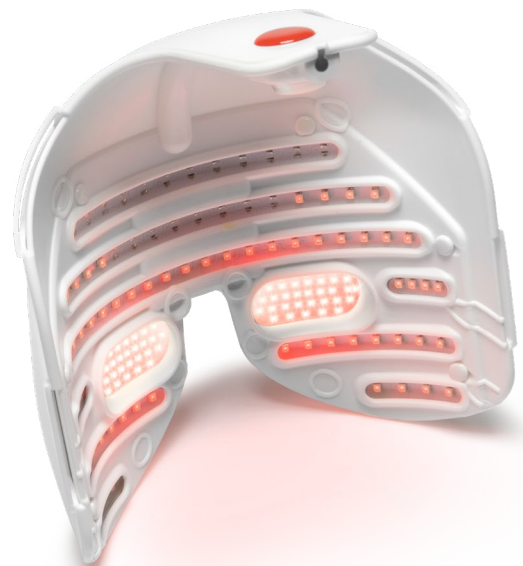
### • Red Light

Used for Inflammation Reduction and ATP Production Stimulus

Key facts on Red LM<sup>®</sup> LLLT:

- ① Improves cells metabolism due to increased ATP production within mitochondria
- ② Reduces inflammation by regulating anti-oxidant defenses and reducing oxidative stress
- ③ Light-induced activation of transcription factors and signaling pathways
- ④ When a 15-minute treatment is applied, the total fluence in the treated area is 100 Joules/cm<sup>2</sup>
- ⑤ The photobiomodulation device has an emission power of 100 mW/cm<sup>2</sup>

Known Use Cases in Ophthalmology:  
DED/MGD, Chalazion, Sjögren's Syndrome, Stye, Blepharitis, Ocular Surgery.



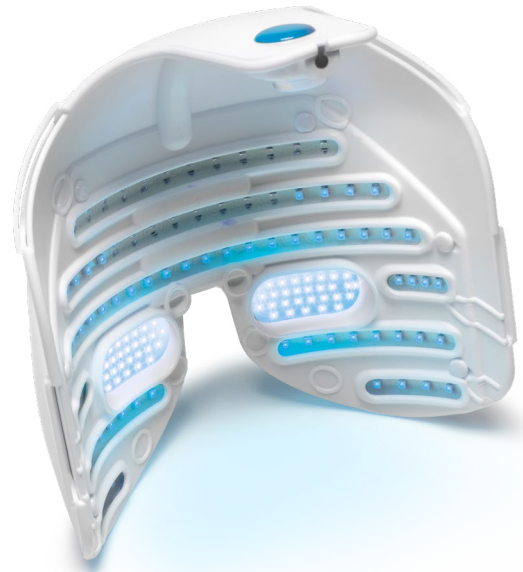
## • Blue Light

Used for Bacteria Elimination

Key facts on Blue LM® LLLT:

- ① Blue light energy is absorbed by molecules called porphyrins within bacteria and photosensitization occurs
- ② Exposure to the light can result in photodynamic inactivation, a process in which bacteria are killed by light
- ③ The membrane-bound porphyrin molecules generate singlet oxygen radicals that damage or disrupt the cell wall of a variety of gram-positive bacteria and lead to cell death
- ④ The relatively weak defense mechanism in bacteria against singlet oxygen induces damage, contributing to the high efficiency of the photodynamic inactivation

Known Use Cases in Ophthalmology:  
Demodex, Blepharitis, Rosacea



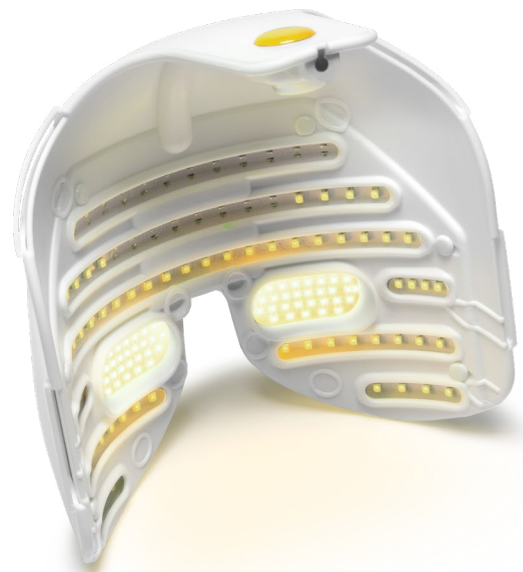
## • Yellow Light

Used for Drainage and Swelling Reduction

Key facts on Yellow LM® LLLT:

- ① Yellow light also acts on mitochondrial respiration and increases ATP production
- ② Promotes the release of nitric oxide to assist in neuro-transmission and tissue repair
- ③ Decreases the inflammatory response by reducing the oedema
- ④ Increases skin elasticity and decreases metalloproteinases activity

Known Use Cases in Ophthalmology:  
Post-Invasive Surgery (e.g., Blepharoplasty)







# OPE® IPL

Optimal Power Energy®  
The best IPL on the market.

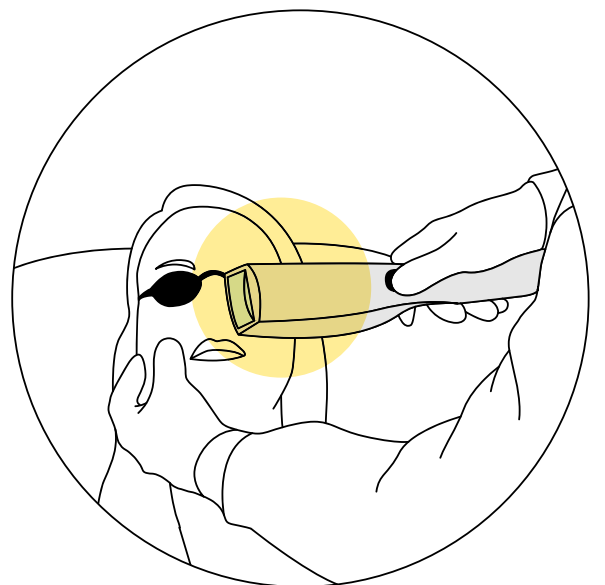
OPE® IPL is our patented Intense Pulsed Light technology. We designed OPE® as a polychromatic light whose thermal impulses are calibrated through software to always be emitted at just the right intensity, providing an extremely high degree of safety and effectiveness.

# Safe, quick, with no side effects.

We invested heavily in designing an IPL technology that could minimize risk during treatment for the patient whilst maximizing ease of use for the operator administering the therapy—whether we're talking meibomian gland dysfunction (MGD) or dermatological conditions such as rosacea.



## Maximum convenience, exceptional ease of use



OPE® IPL is the only pulsed light in the world allowing for usage without any protective gel. This is made possible by our patented, software-enabled technology providing a light impulse that's emitted at just the right frequency, every time, throughout every beam. This provides both operators and patients with an invaluable asset: the convenience of an exceptional, frictionless experience.

③  
Solutions

# Espansione Ecosystem of Solutions

Screening-to-treatment,  
delivered today.

The Espansione Ecosystem of solutions is an end-to-end portfolio of certified medical devices, designed and manufactured focusing on patients' and operators' needs, whilst preserving the maximum degree of safety and reliability.

We developed me-check® and other solutions of the Espansione ecosystem in partnership with valued key opinion leaders.



HEIKO PULT—OD, PHD

## QUALIFICATIONS

Optometrist at College of Optometry Munich, Germany  
MSc (Optometry) at PCO Salus University, Philadelphia, USA PhD (Vision Sciences) at School of Optometry and Vision Sciences, Cardiff University, Cardiff, UK Hon. – Vis. Prof. at Cardiff University, Cardiff, UK Academic Fellow at Aston University

## MEMBERSHIPS

Fellowship+Founding Member European Academy of Optometry and Optics (EAOO) Fellowship, American Academy of Optometry (AAO) Fellowship, British Contact Lens Association (BCLA) Association of Research in Vision and Ophthalmology (ARVO) Tear Film and Ocular Surface Society (TFOS)



JAMES WOLFFSOHN—OD, PHD

## QUALIFICATIONS

Honours degree in Optometry (first class), University of Manchester Institute of Science and Technology (UMIST) PhD (Cardiff University) Diplomate of American Academy of Optometry University of Houston: Adjunct Professor Aston University: Senior Lecturer

## MEMBERSHIPS

Fellowship, American Academy of Optometry Fellowship, Higher Education Academy Fellowship, International Association of Contact Lens Educators Fellowship, British Contact Lens Association Fellowship of Society of BiologyZ



me-check®

Actionable, versatile,  
modular screening.

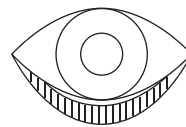
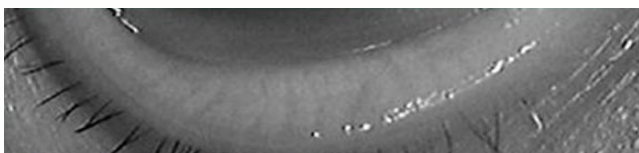
We believe screening for MGD and other ocular surface conditions shouldn't be hard nor expensive, for both operators and patients alike. That's why we invested heavily in building a diagnosis+screening device that could tackle this challenge easily, quickly and effectively for all—introducing me-check®.



# Developed with practitioners, for practitioners

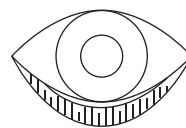
me-check® is the ultimate solution to screen for MGD, although practitioners also use it to screen for Demodex and other ocular surface conditions. It's the only device certified (CE Class II A Device) for use also in optic centers.

We developed me-check® in cooperation with Dr. Heiko Pult and Prof. James Wolffsohn. It features the Meiboscale developed by Dr. Heiko Pult, alongside the OSDI-6 test developed with Prof. James Wolffsohn. This means me-check® software was built from scratch through complex mathematical algorithms, yet packaged with a fresh, operator-oriented UI to provide specialists with the simplest, most effective screening—actionable in under 5 minutes.

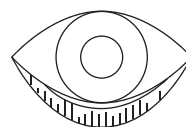
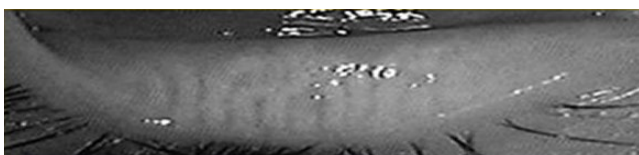


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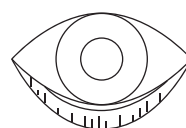
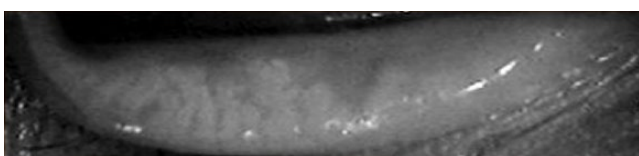
MEIBOSCALE  
BY DR. PULT



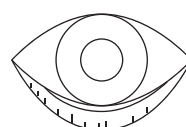
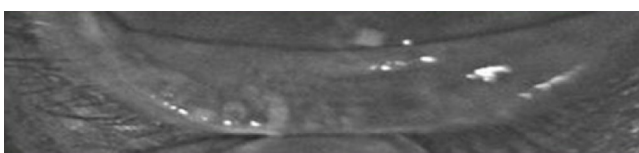
Degree 1  
< 26%



Degree 2  
26% - 50%



Degree 3  
51% - 75%



Degree 4  
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## ① Eye Test

Both eyes are tested—e.g., through a 2D/3D Meibography for MGD/DED. The average eye test is conducted within 5', start to finish, with no harm nor discomfort for the patient. The result is repeatable and consistent, and a wide variety of tests are available (i.e., Demodex, OSDI-6).

## ② OSDI-6

An OSDI-6 questionnaire is conducted to complete the results of the eye test. The questionnaire is conducted by the practitioner, requires no more than 5' and the results are input straight into me-check® OS.

## ③ Diagnosis

The me-check® OS provides a comprehensive overview of the patient's conditions leveraging Dr. Pult's scale for MGD/DED.

## ④ Treatment

If possible, diagnosis is seamlessly loaded straight into any Espansione solution—e.g., eye-light®, meibomask®, for treatment. If the me-check® workflow is brought forward without the possibility of an immediate treatment, the diagnosis is sent over directly from the software via email to whoever will treat the patient.

# Two different solutions:

## SCREENING OS, BASIC SOLUTION

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The simplest, fastest device, made for any eye care operator.

### AVAILABLE TESTS

2D Meibography  
OSDI-6 Test

### KEY BENEFITS

- ① Quick (5')  
> rapid patient turnover
- ② Intuitive  
> no training needed
- ③ Objective Measurement  
> repeatable+consistent

## DIAGNOSIS OS, FULL-FLEDGED SOLUTION

---

The most complete solution, designed for eye care professionals.

### AVAILABLE TESTS

HD Meibography  
12-Level Meibography  
Five-zone Glands  
Evaluation  
3D Meibography  
OSDI-6 Test  
Demodex Screening

### KEY BENEFITS

- ① Quick (5')  
> rapid patient turnover
- ② Intuitive  
> no training needed
- ③ Objective Measurement  
> repeatable+consistent
- ④ Upgradable  
> always up to date
- ⑤ Automatic  
> no input needed
- ⑥ Comprehensive Reporting  
> all analyses in one place

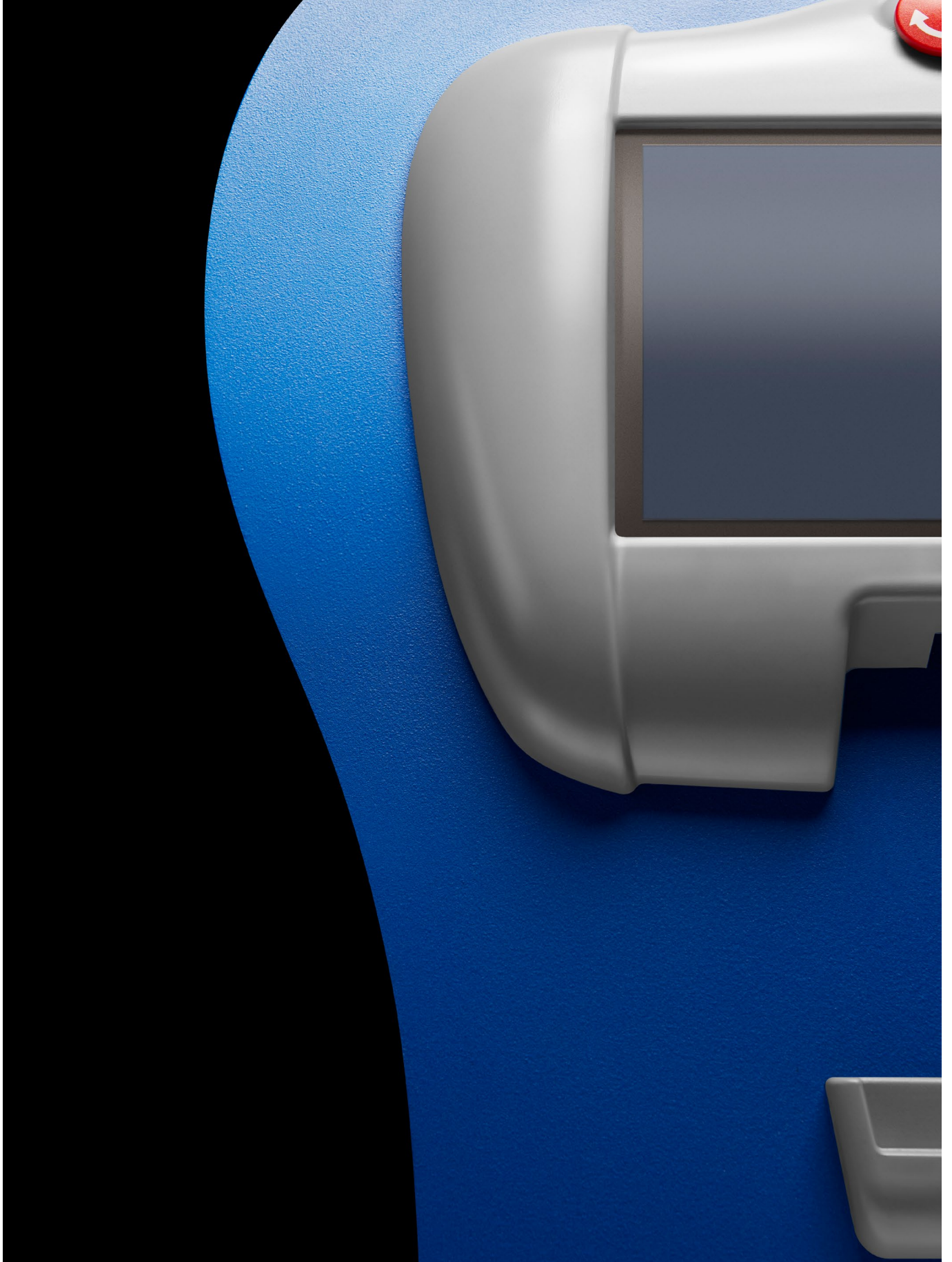


## eye-light®

An all-in-one powerhouse for ocular surface health.

eye-light® is our flagship solution featuring both our core technologies, Light Modulation® LLLT and Optimal Power Energy® IPL, for an optimal, non-invasive treatment of most ocular surface conditions from Dry Eye Disease (DED) induced by Meibomian Glands Dysfunction (MGD) to Sjögren's Syndrome.





Our eye-light® solution was built to last and keep on delivering value to eye practitioners and patients alike. A beautifully crafted, durable stainless steel body houses a technological wonder, developed entirely in-house to be future-proof, thanks to an upgradable operating system.



Hardware and software work hand in hand to provide effective, painless care to patients, whilst being extremely easy to program and operate.





## About OPE® IPL

Leveraging OPE® IPL on eye-light® is as easy as turning on the flashlight on your phone. The first step of most treatments consists in few, painless shots of light around the eye, focusing on the lower eyelid. Our OPE® IPL technology improves blood circulation by dissipating blood vessels, improving the secretion of anti-inflammatory cytokines.

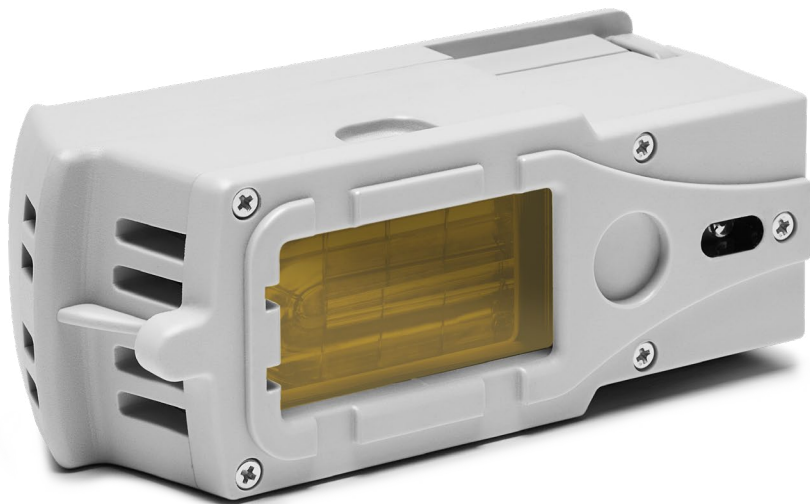
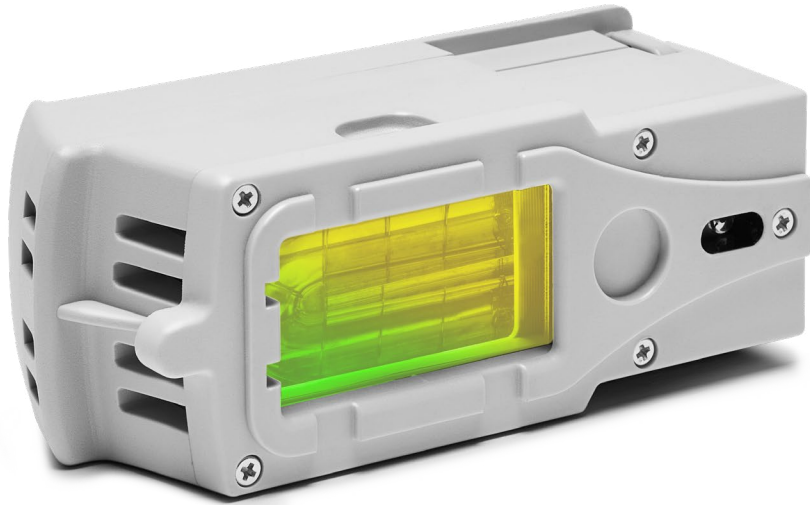
## About Light Modulation® LLLT

The power of our Light Modulation® LLLT technology gets unleashed to the fullest on eye-light®. On top of our Red Light, eye-light® is the only solution featuring Blue and Yellow LM® LLLT technology to administer the photobiostimulation therapy for most ocular surface diseases.











meibomask®

Photobiomodulation  
champion.

meibomask® is our answer to professionals that want to focus on the unique benefits of our LM® LLLT technology for the treatment of most ocular surface diseases.

# What are the benefits?

Built with the same industrial design of our other solutions, meibomask® packs a punch when it comes to photobiomodulation technology—enabling patients and operators to benefit from everything Light Modulation® Low Level Light Therapy (LM® LLLT) has to offer:

## ① Complete + Direct Treatment

meibomask® enables a full therapy, covering both lower and upper eyelids, to grant maximum efficacy in treating Dry Eye Disease (DED) induced by Meibomian Glands Dysfunction (MGD), Chalazion, Blepharitis, Sjögren’s Syndrome, Post-blepharoplasty.

## ② Totally Painless

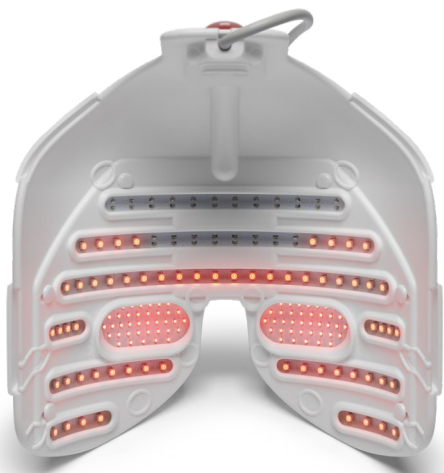
meibomask® and LM® LLLT provide patients with an entirely painless therapy. Near-infrared light is emitted on the skin at a medically-certified wavelength, generating endogenous heating by stimulating cells’ ATP production.

## ③ Quick

For patients, this means immediate relief, just 15’ after the therapy—for operators, it means delivering greater value to patients, with much less effort.

## ④ Easy

No training needed, no set-up time. It just works.



## About Light Modulation® LLLT

Our patented photobiomodulation technology solicits cells’ mitochondria, triggering biochemical and biophysical reactions that stimulate them to a better protein synthesis. Thanks to the near-infrared emission of light, the tear lipid layer is increased and stabilized.

meibomask® provides patients with custom treatments based on the MGD severity level detected with me-check® screening. According to the severity of meibomian glands loss, meibomask® releases the correct amount of energy and treatment duration for every specific patient.



## my-mask®

Portable. Powerful.  
Light Therapy.

We developed my-mask® with convenience in mind. Miniaturizing our Light Modulation® LLLT technology into such a portable, small package was a challenge we faced with the intention of providing operators and patients with a convenient yet powerful solution to benefit from light-based therapy wherever they feel like.

# What are the benefits?

Built with the same, iconic industrial design of other Espansione solutions, my-mask® is powered by photobiomodulation technology enabling patients and operators to benefit from everything Red Light Modulation® Low Level Light Therapy (LM® LLLT) has to offer. The main difference with other solutions lies in my-mask®'s extremely lightweight, portable form factor. We developed this innovation to deliver the power of our Red Light Modulation® LLLT treatment to patients in the comfort of their home—or wherever they feel like.

## ① Convenient

my-mask® is an extremely lightweight, portable and convenient solution. Both the device's body and the mask terminal have been designed to grant patients with the greatest comfort in administering (or self-administering) our light-based therapy (Light Modulation® LLLT).

## ② Complete + Direct Treatment

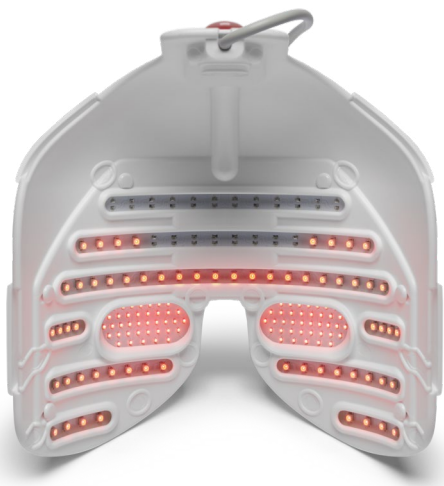
my-mask® enables a full therapy, covering both lower and upper eyelids, to grant maximum efficacy in treating Dry Eye Disease (DED) induced by Meibomian Glands Dysfunction (MGD) and other ocular surface conditions.

## ③ Totally Painless

my-mask® and LM® LLLT provide patients with an entirely painless therapy. Near-infrared light is emitted on the skin at a medically-certified wavelength, generating endogenous heating by stimulating cells' ATP production.

## ④ Quick + Easy

For patients, this means immediate relief just after the 15' therapy—for operators, it means delivering greater value to patients, with much less effort.



## About Light Modulation® LLLT

Our patented photobiomodulation technology (PBM) isn't just like any other red light therapy. We patented and certified it for medical use, designing it to leverage near-infrared light beams that solicit cells' mitochondria, triggering biochemical and biophysical reactions that stimulate them to a better protein synthesis. Thanks to this process of endogenous heating, the tear lipid layer is increased and stabilized.

④

# Scientific Compendium



# Ophthalmology

Our main focus today lies on ocular surface conditions—thanks to our unique photobiomodulation technology, LM<sup>®</sup>LLLT. Thanks to our constant collaboration with global thought leaders, we're setting the standard in this field.

Looking forward, we are researching new ways to apply Light Modulation<sup>®</sup> LLLT beyond the ocular surface, starting with retina applications.



**BEATRICE COCHENER**  
MD, PHD, FORMER PRESIDENT ESCRS



**SARAH FARRANT**  
OD, TFOS AMBASSADOR



**PAUL KARPECKI**  
OD, TFOS AMBASSADOR



**GIUSEPPE GIANNACCARE**  
PROFESSOR, MD, PHD, FEBOPHTH



**KARL STONECIPHER**  
MD, AAO, ISRS, ASCRS AMB



**ROHIT SHETTY**  
MD, PHD, KOS, ASCRS AMBASSADOR

# LM<sup>®</sup> LLLT & OPE<sup>®</sup> IPL

Beyond the certified use of Red LM<sup>®</sup> LLLT and OPE<sup>®</sup> IPL in treating MGD-induced DED, prominent thought leaders in ophthalmology worldwide employ our technologies to manage conditions of the ocular surface and beyond.

PATHOLOGY	TECHNOLOGY	RECOMMENDED PROTOCOL	
		> Number of Treatments	> Frequency (Days Apart)
<b>MGD/DED</b> Meibomian Glands Dysfunction Dry Eye Disease	OPE <sup>®</sup> IPL + LM <sup>®</sup> LLLT 	1 to 3	5 to 10
	OPE <sup>®</sup> IPL LM <sup>®</sup> LLLT  > Meiboscale™ Degree 1 > Meiboscale™ Degree 2 > Meiboscale™ Degree 3 > Meiboscale™ Degree 4	2 to 4  2 3 3 w/ Glands Expression (Recommended) 4 w/ Glands Expression (Highly Recomm.) + 1 Maintenance Treatment (All Levels)	2 to 10
<b>Blepharitis</b>	OPE <sup>®</sup> IPL + LM <sup>®</sup> LLLT 	2 to 3	5 to 10
	OPE <sup>®</sup> IPL LM <sup>®</sup> LLLT 	4 to 5	5 to 10
<b>Chalazion</b>	OPE <sup>®</sup> IPL LM <sup>®</sup> LLLT 	2 to 4	4 to 7
<b>Demodex</b>	OPE <sup>®</sup> IPL LM <sup>®</sup> LLLT 	4 to 5	5 to 10



—SUGGESTED PROTOCOLS

LEGEND

SINGLE USAGE

JOINT USAGE

> Not all treatments can be applied in all countries.

USE CASES

RED LM® LLLT

ATP Stimulus, Cellular Function Improvement

BLUE LM® LLLT

Purification, Bacteria Elimination

YELLOW LM® LLLT

De-Toxification, Swelling Relief

PATHOLOGY	TECHNOLOGY		RECOMMENDED PROTOCOL	
			> Number of Treatments	> Frequency (Days Apart)
Post-blepharoplasty	OPE® IPL	LM® LLLT BLUE	2	1x Immediately Post-Surgery 1x 4 to 7 Post-Surgery
Rosacea	OPE® IPL +	LM® LLLT 	3 to 5	5 to 10
	OPE® IPL	LM® LLLT 		
Stye	OPE® IPL	LM® LLLT 	2 to 4	4 to 7
Sjögren's Syndrome	OPE® IPL +	LM® LLLT 	4 to 5	5 to 10
Pre-/Post-Surgery Cataract/ Refractive	OPE® IPL	LM® LLLT 	1 to 2	5 to 10

# Bibliography

Scientific publications  
on our technology.

—OCULAR SURFACE

DRY EYE DISEASE, MGD,  
CLIDE/CLD

31<sup>+</sup>

Papers + Articles

CHALAZION & STYE

5<sup>+</sup>

Papers + Articles

SJÖGREN'S SYNDROME

2<sup>+</sup>

Papers + Articles

BLEPHARITIS & DEMODEX

3<sup>+</sup>

Papers + Articles

CATARACT/REFRACTIVE  
SURGERY

4<sup>+</sup>

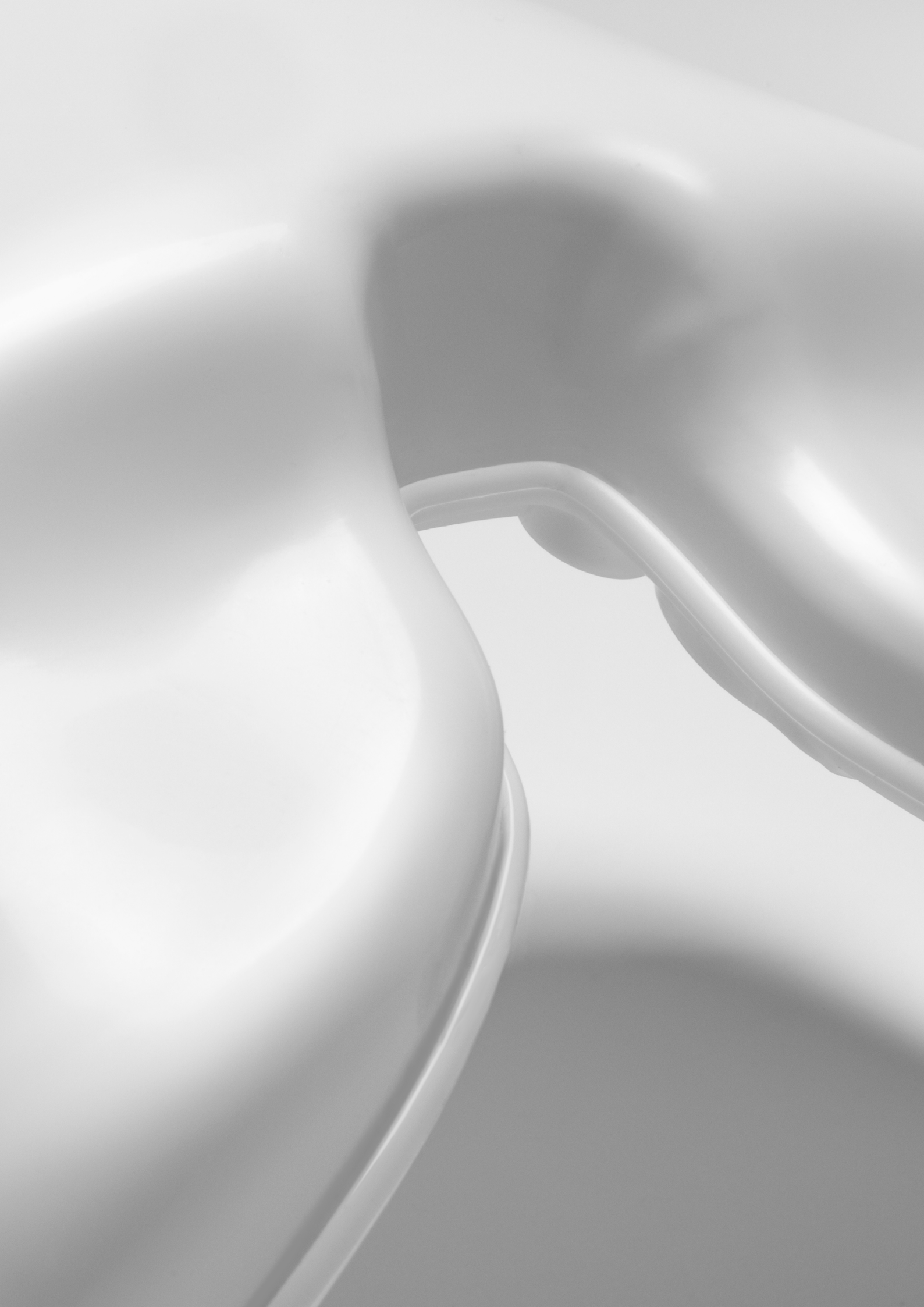
Wip Clinical Trials

—RETINA

DRY AMD

2<sup>+</sup>

Wip Clinical Trials



SCIENTIFIC COVERAGE  
> ON DED/MGD

This groundbreaking study has shown that tear production quality increases dramatically, as our treatment nearly doubles tear breakup time, resulting in immediate relief of symptoms.



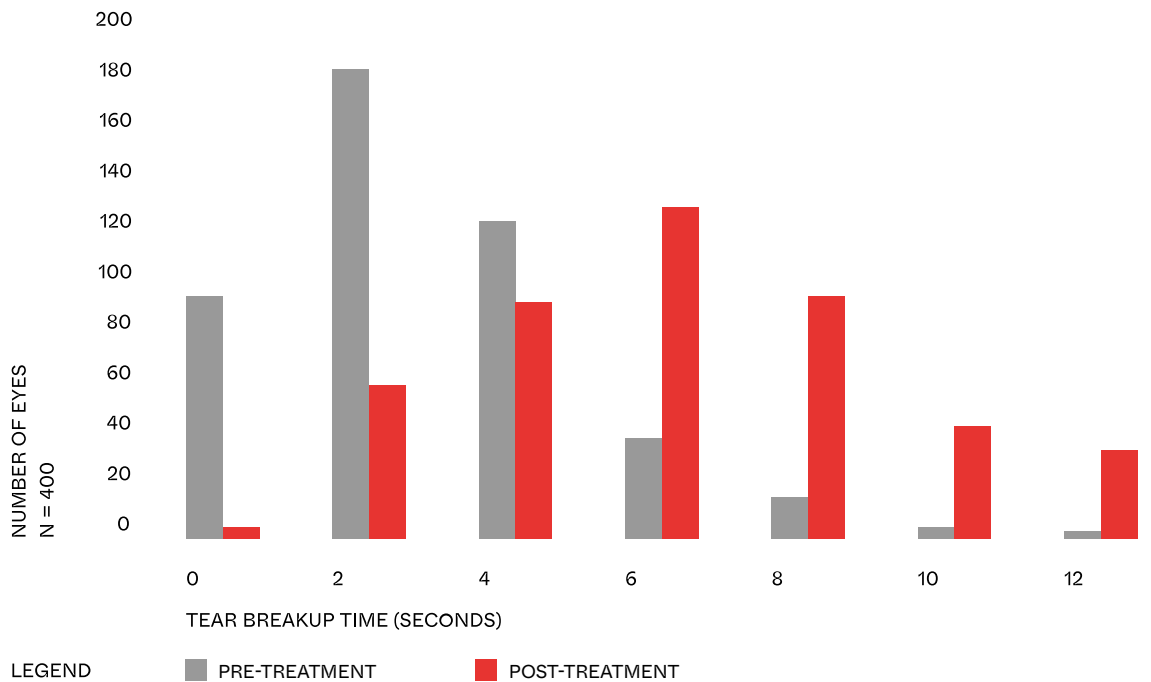
**K. STONECIPHER**

USA  
MD, AAO, ISRS, ASCRS

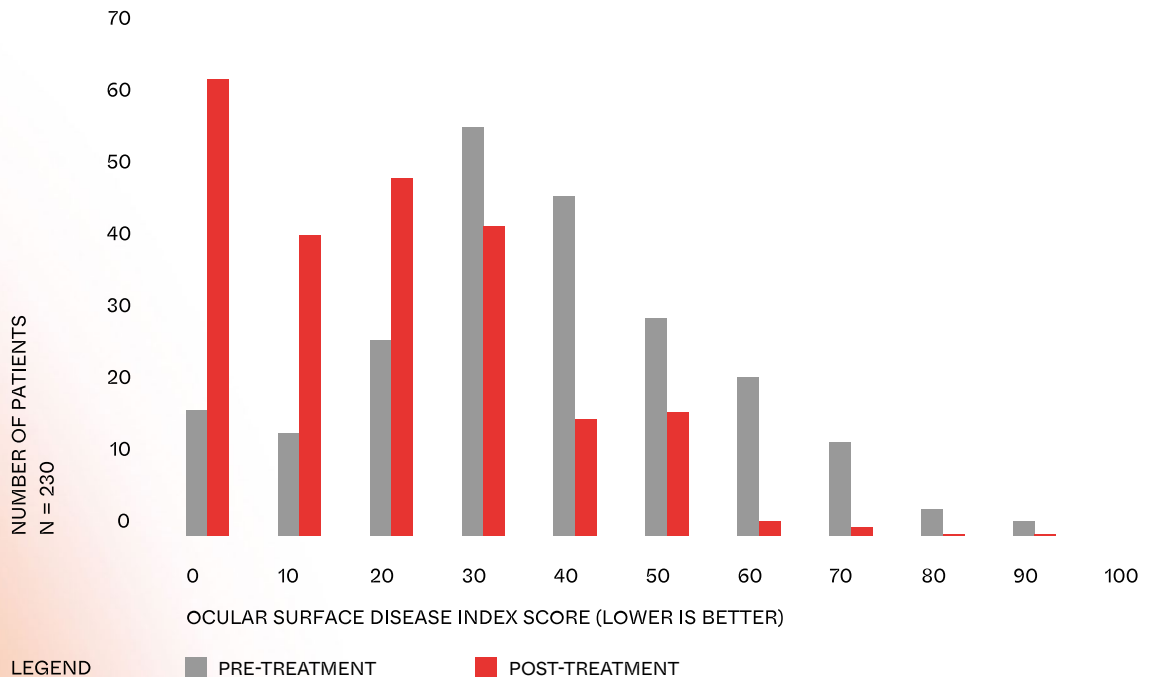
LM® LLLT treatment improved by 10 points or more the patient's ocular surface disease index (i.e., OSDI Index) in over 70% of cases with only one treatment.

STONECIPHER, Karl, et al. Combined low level light therapy and intense pulsed light therapy for the treatment of meibomian gland dysfunction. *Clinical Ophthalmology*, 2019

IMPACT  
ON TEAR  
BREAKUP  
TIME



IMPACT ON  
OCULAR  
SURFACE  
DISEASE  
INDEX



SCIENTIFIC COVERAGE  
> ON DED/MGD



**C. CASTRO**  
Portugal  
MD



**J. MARQUES**  
Portugal  
MD



**A. MARTA**  
Portugal  
MD

CASTRO C., MARQUES J., MARTA A., et al. (July 05, 2023)  
Comparison of Light-Based Devices in the Treatment of Meibomian Gland Dysfunction. Cureus 15(7): e41386.  
DOI 10.7759/cureus.41386

## Results

### LEGEND



eye-light®

[Group 1]



■ eye-light® (OPE® IPL + LM® LLLT)  
[6-Mos Follow-up Focus]

■ eye-light® (OPE® IPL + LM® LLLT)  
[T0 & W3 Follow-ups Focus]



E-Eye

[Group 2]



■ E-Swin E>Eye® (IPL)



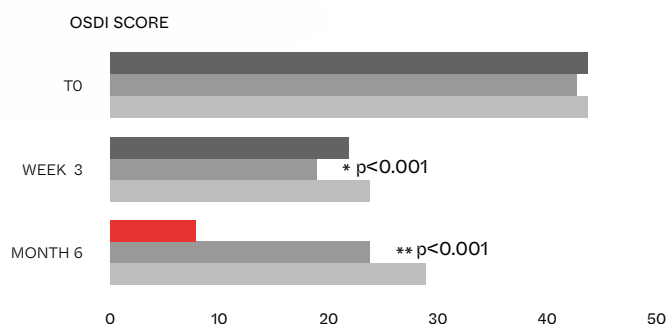
thermaeye PLUS

[Group 3]

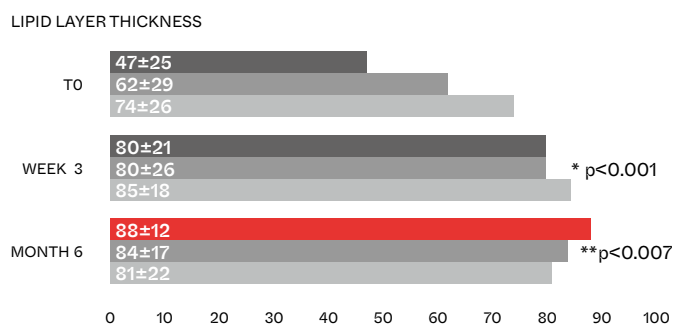


■ OptiMed Thermaeye Plus® (IPL)

Patients with superior OSDI and lower LLT at baseline had the greatest improvement in the respective parameters ( $p < 0.001$ ). At six months, compared to three weeks, there was further improvement in the OSDI ( $p < 0.001$ ) and the LLT ( $p = 0.007$ ), in Group 1:



The lipid layer thickness (LLT) increased in Groups 1 and 2 ( $p < 0.001$ ):



88 subjects  
166 eyes



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CASTRO C., ET AL.

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**A. MEDURI**

Italy  
MD, PHD

Meduri A., Oliverio G. W., Tedesco G., Aragona P. Combined intense pulsed light and lowlevel light therapy for the treatment of refractory Meibomian gland dysfunction. European Journal of Ophtalmology, August 2022.

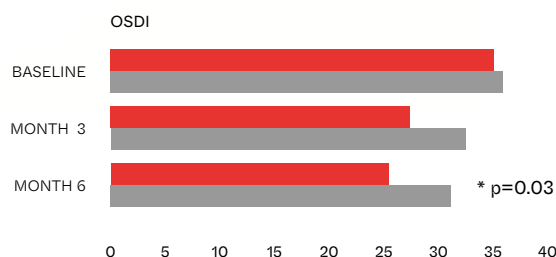
## Methods and Analysis

In this prospective study, 70 patients with refractory MGD were enrolled; group 1 received 3 consecutive sessions of IPL + LLLT treatment using Eye-light® on day 1, day 15 and day 45; group 2 received hyaluronate sodium 2 mg/ml drops 3 times a day for 6 months.

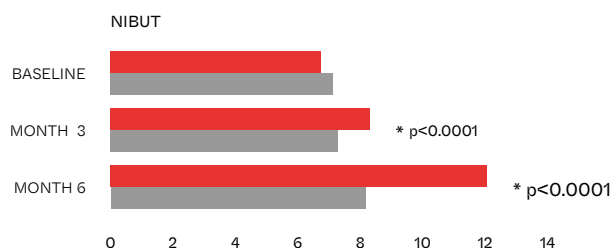
Patients underwent at baseline, and after 3 and 6 months Ocular Surface Disease Index (OSDI) questionnaire, Symptom Assessment in Dry Eye (SANDE), tear-film breakup time (TBUT), fluorescein ocular surface staining, meibum expressibility and quality evaluations. Keratograph 5M (Oculus, Germany) was used to assess NIBUT, tear meniscus height (TMH), meibography, and bulbar redness score.

## Results

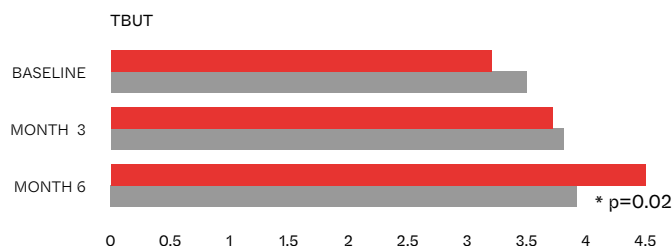
The OSDI scores decreased significantly in both groups, indicating an improvement in symptoms. However, the decrease was more significant in the light therapy group.



At 3 months the NIBUT increased significantly in group 1, that was maintained at 6 months.



The TBUT increased significantly in both groups, but the increase was more pronounced in the light therapy group.



### LEGEND

- LLLT + IPL
- CONTROL [Eye Drops]

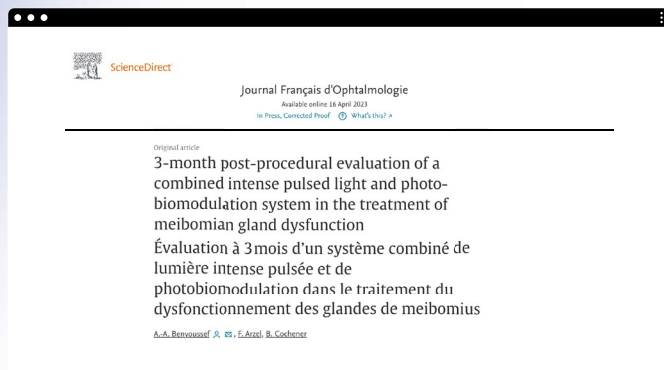
75 subjects  
150 eyes



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MEDURI A., ET AL.

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SCIENTIFIC COVERAGE  
> ON DED/MGD



**A. BENYOUSSEF**

France  
MD, UNIVERSITY HOSPITAL OF BREST  
PROF. B. COCHENER EQUIPE



**B. COCHENER-LAMARD**

France  
MD, PHD, UNIVERSITY HOSPITAL OF BREST

BENYOUSSEF, A.-A.; ARZEL, F.; COCHENER, B. 3-month post-procedural evaluation of a combined intense pulsed light and photo-biomodulation system in the treatment of meibomian gland dysfunction. Journal Français d'Ophtalmologie, April 2023.

## Results

### > Efficacy of Treatments

The study has shown the clinical efficacy of combined therapy of intense pulsed light (OPE® IPL) with Low-Level Light Therapy (LM® LLLT) in treating meibomian gland dysfunction (MGD).

### > Tear Breakup Time (TBUT)

The SPEED score, TBUT, Oxford score, Meibomian gland atrophy and NIBUT were also statistically and significantly improved at 1 and 3 months.

### > Ocular Surface Disease Index (OSDI)

The study demonstrates a significant improvement of OSDI scores at 1 month ( $P < 0.0001$ ) and 3 months ( $P < 0.0001$ ).

37 subjects  
74 eyes

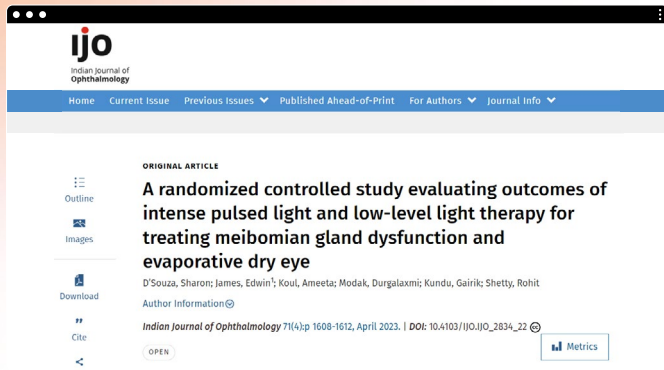


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SCIENTIFIC COVERAGE  
> ON DED/MGD



**S. D'SOUZA**  
India  
MBBS, MS, FCE



**R. SHETTY**  
India  
MD, PHD, KOS, ASCRS

D'Souza, S.; James, E.; Koul, A.; Modak, D.; Kundu, G.; Shetty, R. A randomized controlled study evaluating outcomes of intense pulsed light and low-level light therapy for treating meibomian gland dysfunction and evaporative dry eye. Indian Journal of Ophthalmology 71(4):p 1608-1612, April 2023.

Results

LEGEND

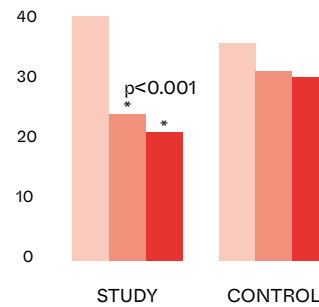
- PRE
- 1 MONTH
- 3 MONTHS

50 subjects  
100 eyes

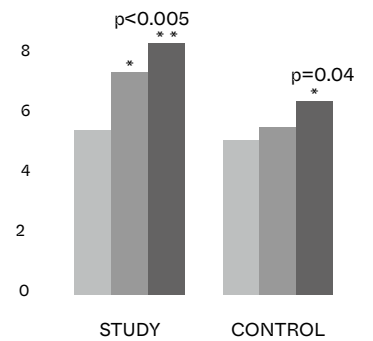


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D'SOUZA S., ET AL.  
[Go to the PDF Study](#)

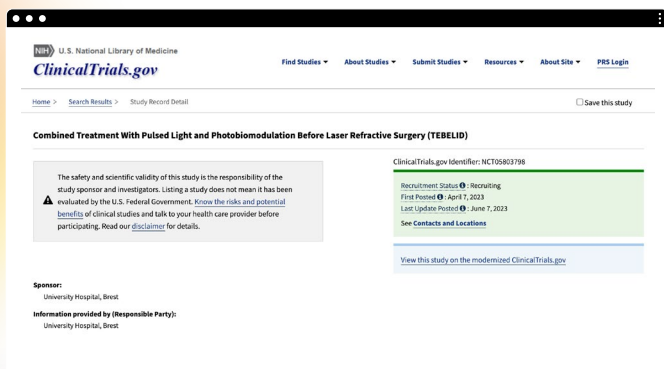
OSDI  
> LOW IS BETTER



NIBUT  
> HIGHER IS BETTER



> ON CATARACT & REFRACTIVE SURGERY



**B. COCHENER-LAMARD**  
France  
MD, PHD, UNIVERSITY HOSPITAL OF BREST

COCHENER LAMARD, Béatrice et al. Combined Treatment With Pulsed Light And Photobiomodulation Before Laser Refractive Surgery (TEBELID). Initiated 2023.

62\* subjects  
124\* eyes

\*enrolled



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COCHENER-LAMARD B.  
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Launching a clinical study with Univ. Hospital Brest, France, testing OPE® IPL and LM® LLLT treatments via eye-light® before LASIK, to prevent dry eye in 62 patients.



SCIENTIFIC COVERAGE  
> ON CATARACT & REFRACTIVE SURGERY



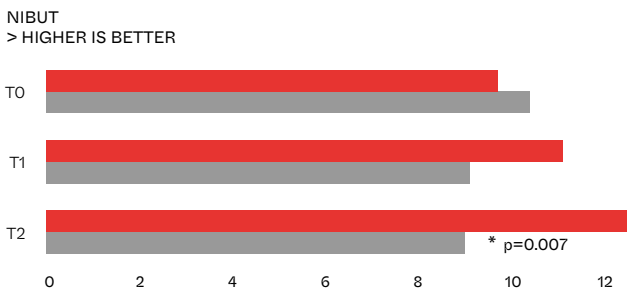
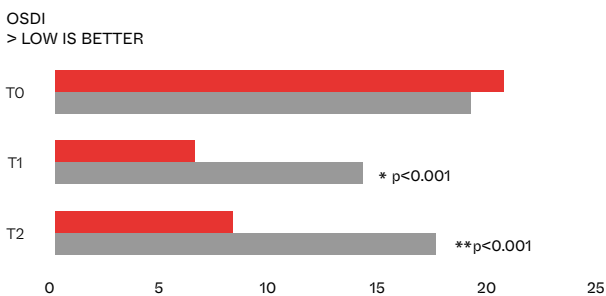
G. GIANNACCARE

Italy  
MD, PHD, FEBO

GIANNACCARE, Giuseppe et al. Outcomes of LLLT for the prophylaxis of iatrogenic Dry Eye after Cataract Surgery: A Prospective Randomized Double-Masked Controlled Clinical Trial. British Journal of Ophthalmology, May 2023.

This randomized controlled clinical study showed that, unlike sham treatment, two sessions of LLLT performed one week before and after cataract surgery were effective in significantly ameliorating tear film stability and ocular discomfort symptoms in otherwise healthy patients, thus preventing the postoperative decline of ocular surface parameters and the consequent occurrence of iatrogenic DED.

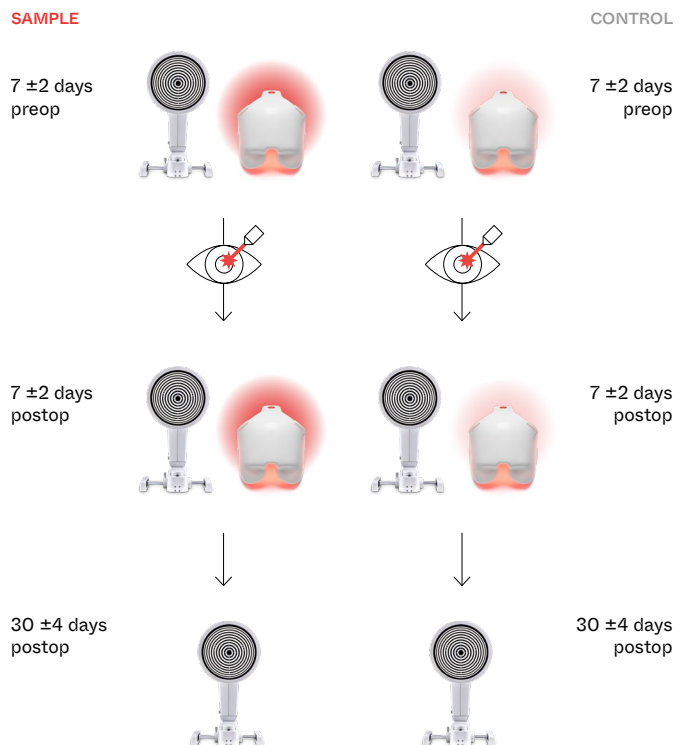
## Results



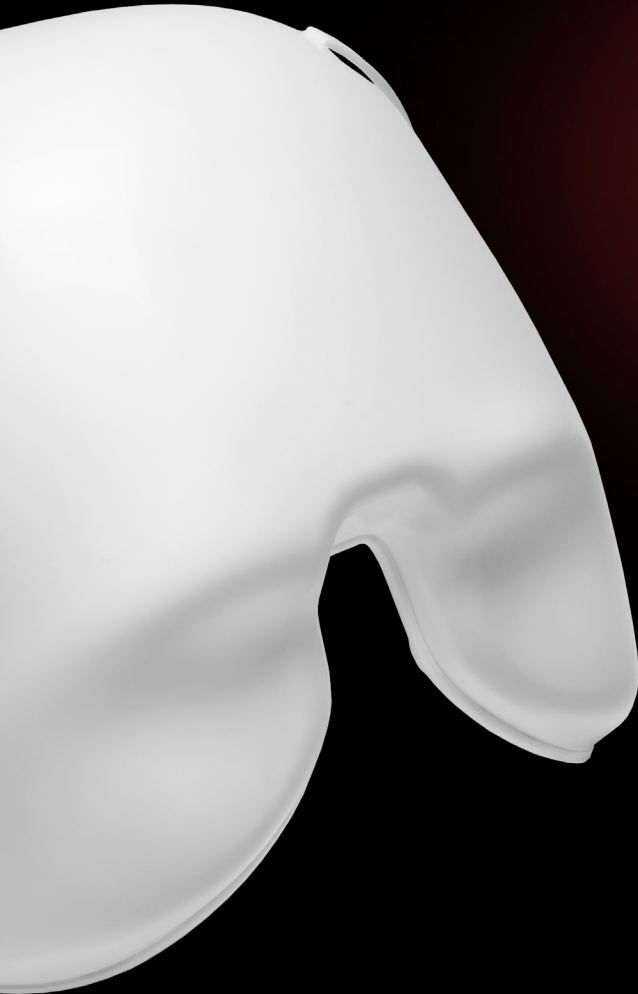
LEGEND



## Protocols



WHAT'S NEXT  
> ON RETINAL CONDITIONS



# Onto the Retina LightWave I

Our **first, multi-centric**  
clinical trial studying **PBM**  
**tech for retinal diseases.**

Through **LightWave I** we're **pioneering** what's  
next in retinal care, starting with **dry AMD**  
(AREDS 2 & 3).



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**Modern Retina**  
from Ophthalmology  
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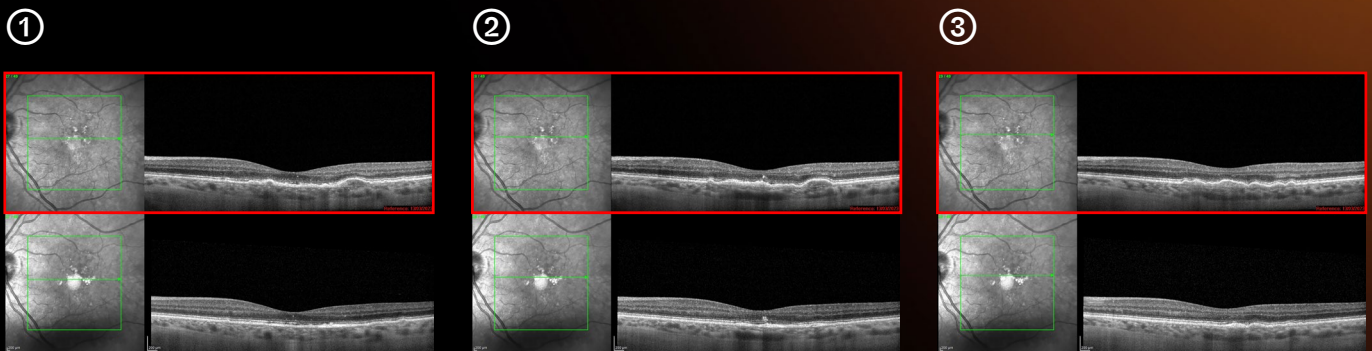
# Espansione Group Announces Kick-off of LightWave I: First Dry AMD Multi-centric Study

We've selected **key case studies** and **real-world** evidences from the **forefront** of retinal care.

## > CASE REPORT #1

[WOMAN, 68 Y/O,  
AREDS 3]

A 68-year-old female with Age-Related Macular Degeneration (AMD) underwent a LightWave I trial involving bi-weekly photobiomodulation sessions using LM<sup>®</sup> LLLT via eye-light<sup>®</sup> for four weeks. Post-treatment, her visual acuity improved from 50 to 55 ETDRS letters, and soft drusen resolved.



Retinal images (Fig. 1-3) confirmed a significant reduction in drusen volume.



Not all solutions and use cases available in all countries. Every piece of information shown ought to be considered as fact-based evidence deriving from publicly available literature, for the sole purpose of scientific exchange.

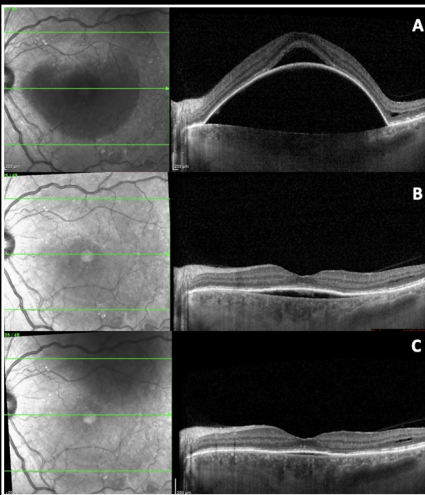
WHAT'S NEXT  
> ON RETINAL CONDITIONS

> CASE REPORT #2

[MAN, 55 Y/O,  
NON-NEOVASCULARAMD]

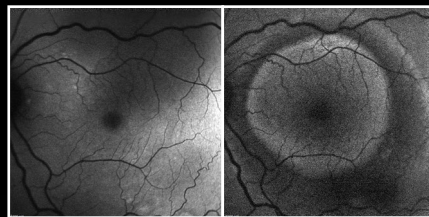
A 55-year-old male with non-neovascular age-related macular degeneration underwent photobiomodulation using LM<sup>®</sup> LLLT via eye-light<sup>®</sup>. The treatment involved weekly sessions for four weeks, followed by bi-weekly sessions for two months. At baseline, his visual acuity was 25 ETDRS letters with significant pigment epithelial detachment (PED) and subretinal fluid. Post-treatment, the subretinal fluid was fully absorbed, PED collapsed, and visual acuity improved to 60 ETDRS letters.

①



① The picture delineates the SD-OCT images at baseline (A) which exhibit a pronounced pigment epithelial detachment (PED) with subretinal fluid. The SD-OCT image at the one-month follow-up (B) reveals a flattening of the PED with the persistence of flat PED accompanied by hyper/hyporeflective material. The SD-OCT image at the three-month follow-up demonstrates further flattening of the PED.

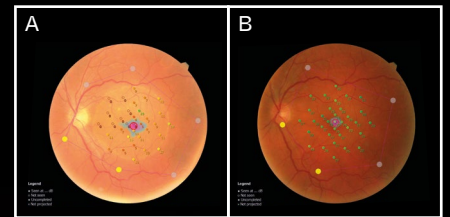
②



② The exhibit portrays the baseline fundus autofluorescence (FAF) which exhibits a hyperautofluorescent ring at the periphery of the PED. The three-month follow-up image reveals isoautofluorescence in the macular region without any legacy of retinal pigment epithelial atrophy.

③

A) Mean sensitivity in polygon: 7.4  
B) Mean sensitivity in polygon: 26.5



③ Illustrates the microperimetry at baseline (A) which shows a reduction in retinal sensitivity in the macular area with a mean value of 7.4 dB. The microperimetry at the three-month follow-up exhibits a significant enhancement in retinal sensitivity in the macular area with a mean value of 26.5 dB.



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LIGHTWAVE I  
CASE REPORT  
PRESS RELEASE  
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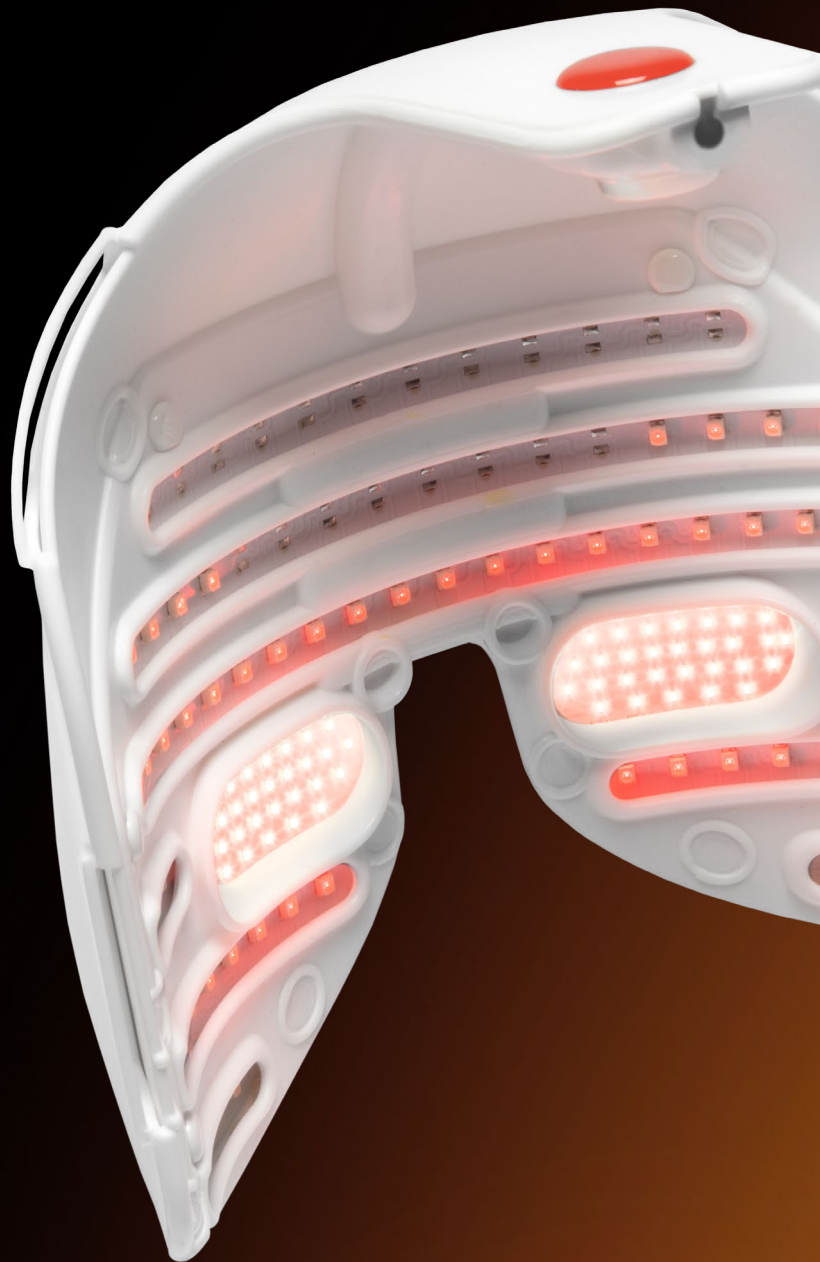
Not all solutions and use cases available in all countries. Every piece of information shown ought to be considered as fact-based evidence deriving from publicly available literature, for the sole purpose of scientific exchange.



WHAT'S NEXT  
> ON RETINAL CONDITIONS

# LightWave II Seeing Beyond

We're pioneering what's next in retinal care through a second wave of **large-scale, global, multi-centric** research studies.



←  
APPLY & JOIN  
LIGHTWAVE II  
CLINICAL TRIALS  
[Read the Press Release](#)



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# Endogenous Heating

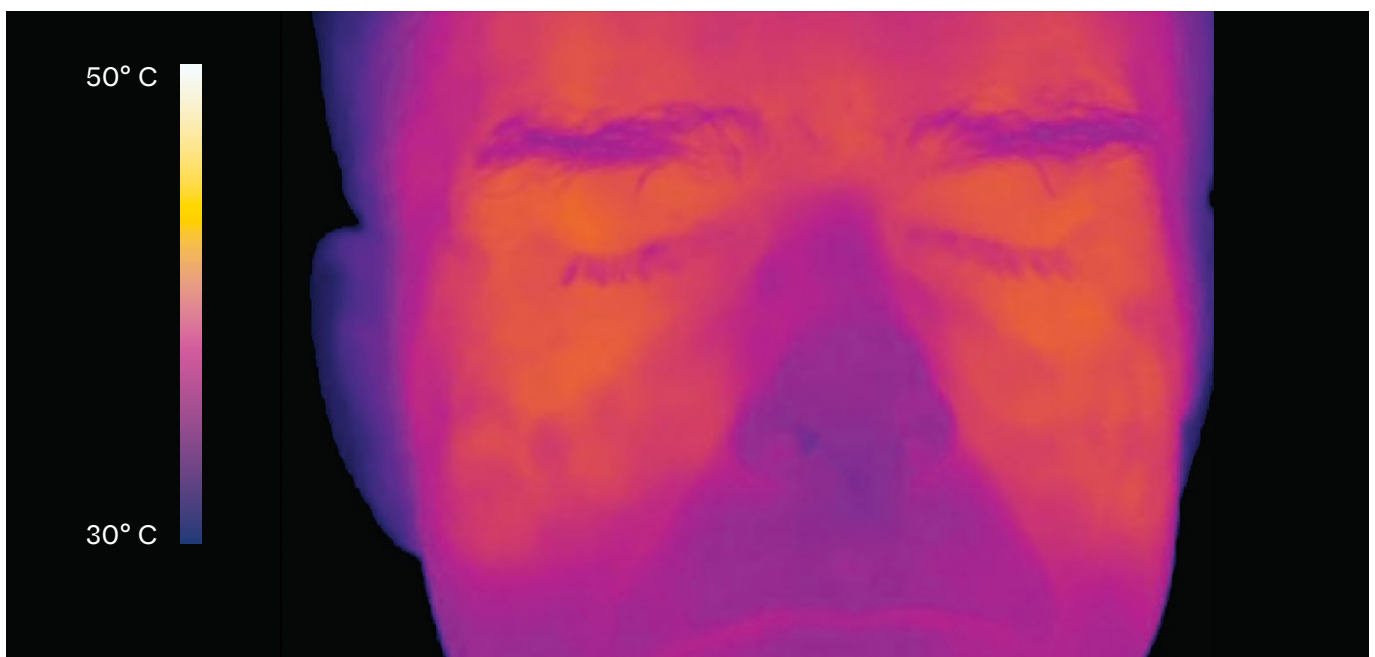
Recently run thermography studies have shown upper and lower meibomian glands being simultaneously, directly treated at optimal temperature —i.e., 42°C, through LM<sup>®</sup> LLLT.

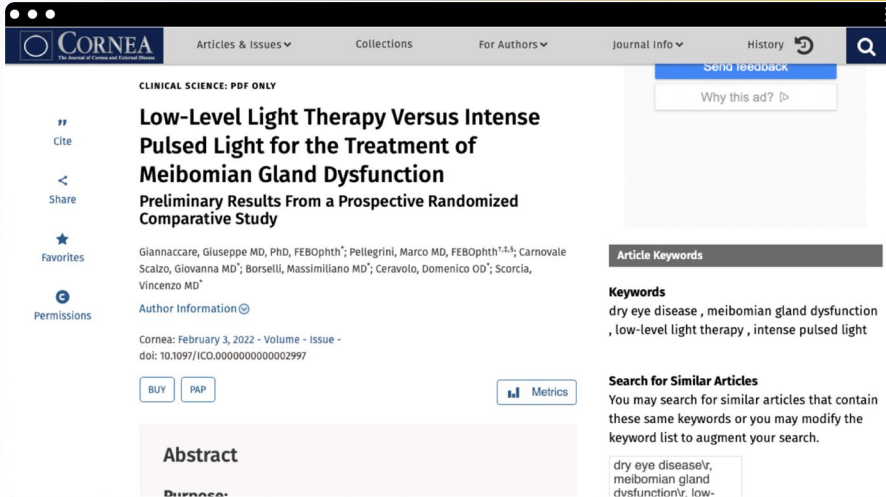
Light Modulation<sup>®</sup> LLLT triggers endogenous heating to both eyelids, stimulating ATP production and removing blockage from meibomian glands preventing proper functioning —and it does so with zero discomfort for the patient.

---

Courtesy of Dr. Heiko Pult—OD, PHD

PULT, Heiko. Low-level light therapy in the treatment of meibomian gland dysfunction. Investigative Ophthalmology & Visual Science, 2020.





# Light Modulation<sup>®</sup> LLLT: Superior Tech

We're proud to announce our Light Modulation<sup>®</sup> LLLT technology has recently been studied in a piece of research that compared it directly against IPL tech.

The study, published on Cornea, the Journal of Cornea and External Disease, by Giuseppe Giannaccare (MD, PhD) et al., has confirmed the efficacy of LM<sup>®</sup> LLLT, proving also its superior performance against IPL.

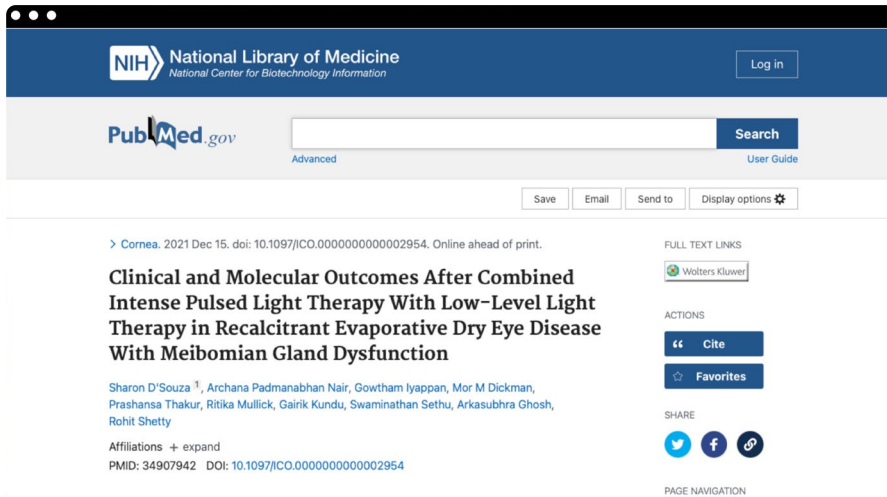
The purpose of the study was to evaluate and compare the safety and efficacy of low-level light therapy (LLLT) and intense pulsed light (IPL) for the treatment of meibomian gland dysfunction (MGD).

Directly citing the conclusions of the research paper:

Both LLLT and IPL were safe and effective in improving ocular discomfort symptoms in patients with MGD; however, the former determined a greater improvement in symptoms and an improvement of tear volume.

SOURCE:

*Giannaccare, G., Pellegrini, M., Scalzo, G. C., Borselli, M., Ceravolo, D., & Scorcìa, V. (2022). Low-Level Light Therapy Versus Intense Pulsed Light for the Treatment of Meibomian Gland Dysfunction: Preliminary Results From a Prospective Randomized Comparative Study. Cornea. ISO 690*



## LM<sup>®</sup> LLLT + OPE<sup>®</sup> IPL: Power Couple.

A recent scientific paper, published on Cornea, the Journal of Cornea and External Disease, by Sharon D'Souza (MD), Rohit Shetty (MD, PhD) et al., has confirmed that our Light Modulation<sup>®</sup> LLLT technology, employed jointly with our Optimal Power Energy<sup>®</sup> IPL technology, is the key factor in effectively managing the most severe cases of recalcitrant MGD.

The purpose of the study was that of evaluating the effects of combined light therapy [intense pulsed light (IPL) and low-level light therapy (LLLT)] on clinical and molecular outcomes in evaporative DED with meibomian gland dysfunction (MGD).

Directly citing the conclusions of the paper:

Combined light therapy shows promising results in patients with chronic MGD and DED, even in recalcitrant cases. Clinical and molecular factor alterations support the improved symptomatology and reduced inflammation.

SOURCE:

*D'Souza, S., Iyappan, G., Dickman, M. M., Thakur, P., Mullick, R., Kundu, G., ... & Shetty, R. (2021). Clinical and Molecular Outcomes After Combined Intense Pulsed Light Therapy With Low-Level Light Therapy in Recalcitrant Evaporative Dry Eye Disease With Meibomian Gland Dysfunction. Cornea.*



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Throughout the years, valued members of the scientific community have contributed to the resonance of Espansione technologies such as Light Modulation® LLLT and Optimal Power Energy® IPL by publishing a vast array of research and scientific, peer-reviewed papers.

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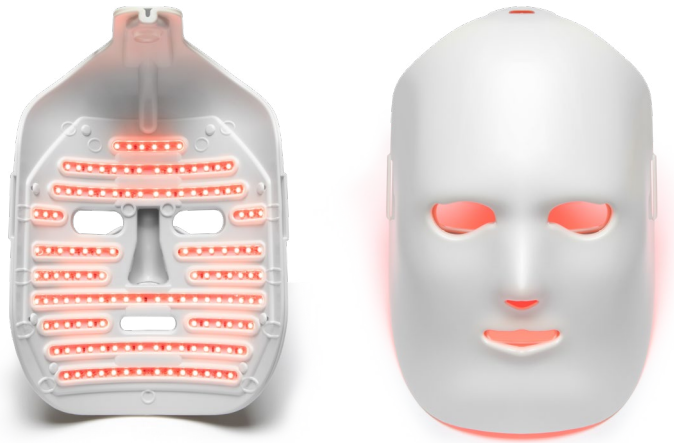
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## Dermatology

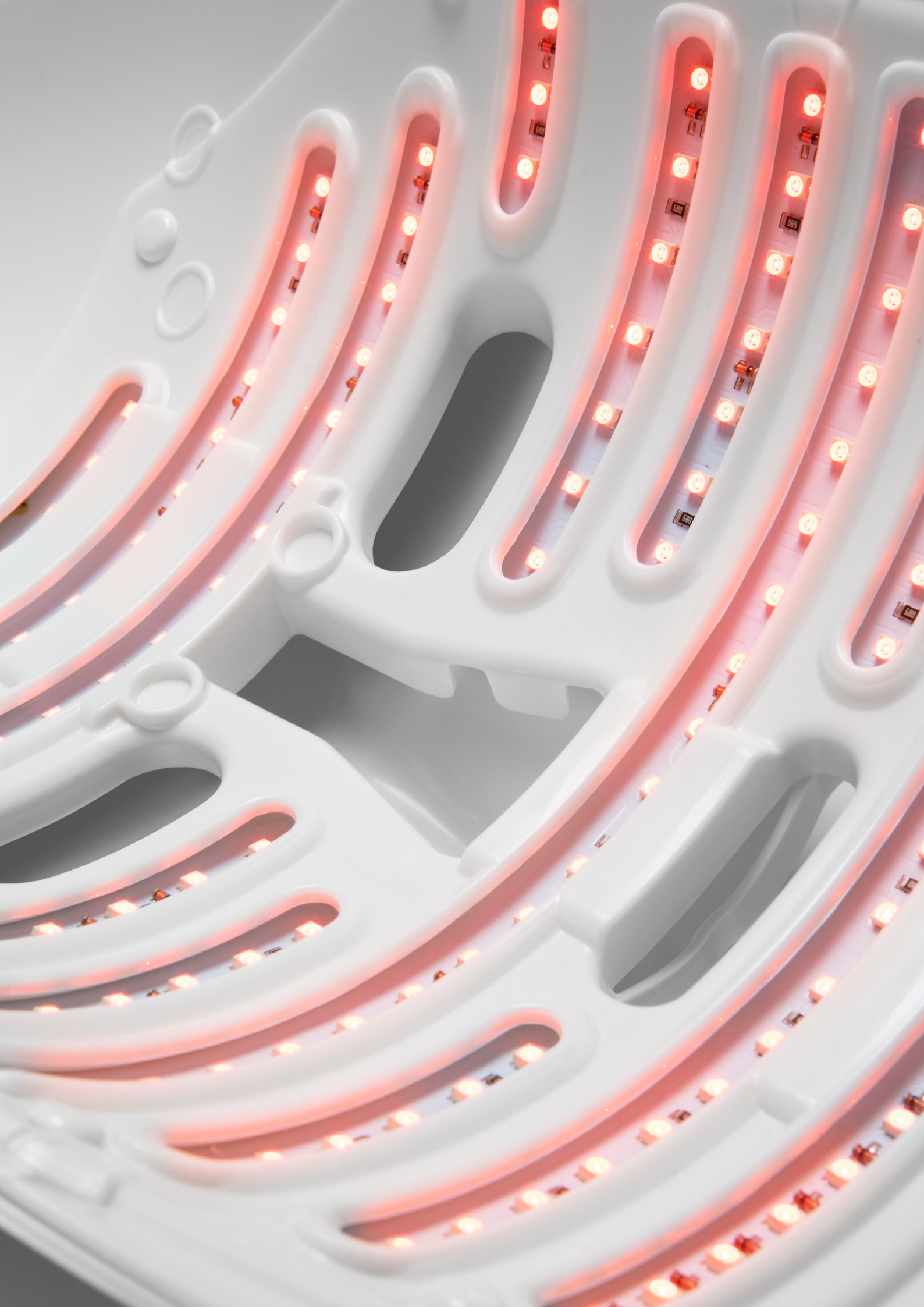
Dermatology is our heritage offering, leveraging both our technologies' unique prerogatives to provide patients with medical-grade cosmetic treatments.

## Lab

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