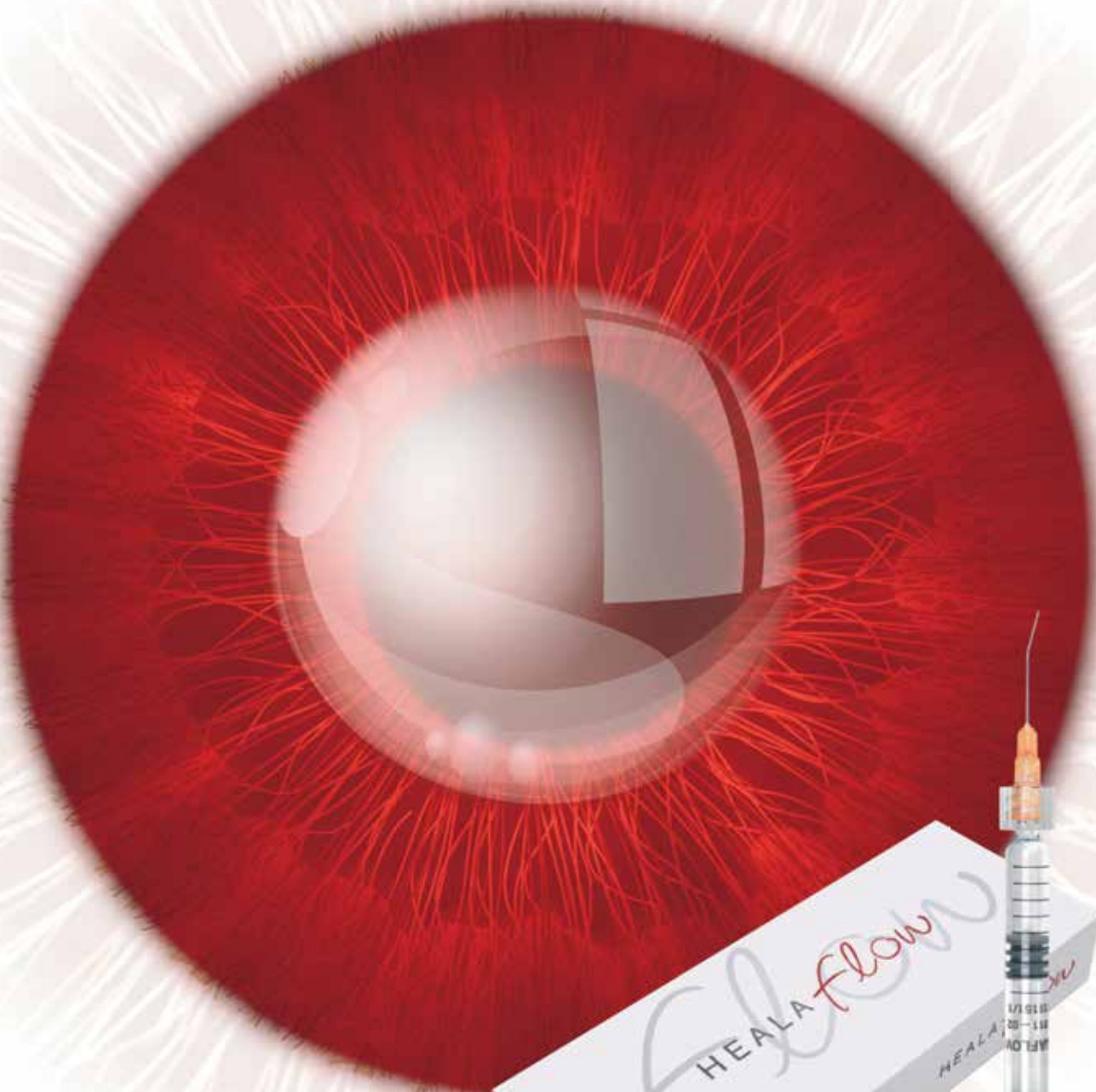


APTISSEN FOR GLAUCOMA SURGERY

# HEALA *Flow*

SLOW RESORPTION DRAINAGE IMPLANT FOR GLAUCOMA SURGERY



aptissen



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|--|----|
| 1   CROSS-LINKING MAKES THE DIFFERENCE | 03 |
| 2   GLAUCOMA FILTERING SURGERIES       | 04 |
| 3   HEALAFLOW KEY ASSETS               | 06 |
| 4   WHY USE HEALAFLOW?                 | 07 |
| 5   HEALAFLOW CHARACTERISTICS          | 08 |
| 6   FREQUENTLY ASKED QUESTIONS · FAQ   | 09 |
| 7   BIBLIOGRAPHY                       | 10 |

## WHAT IS HEALA *flow*?

HealaFlow is a slow resorption injectable drainage implant penetrating and non-penetrating glaucoma surgery. It is made of double cross-linked sodium hyaluronate (NaHA) from biofermentation (ie. non animal origin), thus totally biocompatible as recognized by the human body as a natural occurring component.

HealaFlow is delivered in a sterile graduated glass-syringe of 0.6ml with a 25G 7/8 canula.

## HOW IS HEALA *flow* DIFFERENT?

### Thanks to its double cross-linked matrix

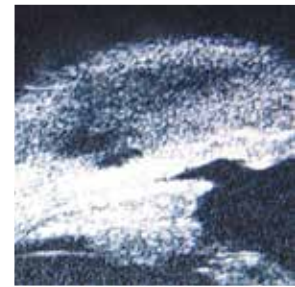
HealaFlow is double cross-linked, with hyaluronic acid chains associated by covalent bounds through BDDE:\*

- It offers long lasting presence, up to 6 months.
- Its matrix neither splits, nor fragments or dissolves within aqueous environment.
- Its cohesive\*\* structure prevents from migration risks.

### Follow up at 25 weeks\*\*\*



Diffuse subconjunctival bleb



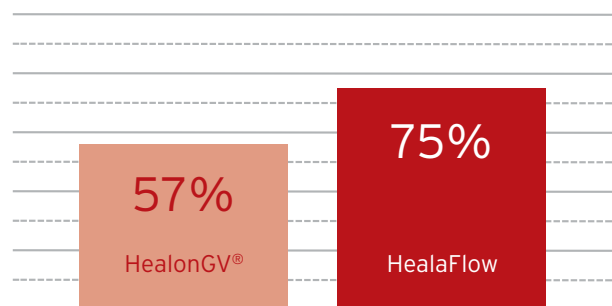
Filtration aspect (as ultrasound)

### HealonGV® vs. HealaFlow

Increase of 32% complete success rate when using double cross-linked HA (HealaFlow) vs. non cross-linked HA (HealonGV®)\*\*\*\*

Surgery without antimetabolites

### Result after 18 month follow up



Complete Success Rate (IOP ≤ 18 mmHg)

\* BDDE: 1,4-Butanediol Diglycidyl Ether is the safest cross-linking agent. \*\* Cohesiveness: From a scientific point of view, cohesiveness is the property by which the different parts of one body adhere, are connected to each other to form a "monoblock" structure. It does not mean it is solid. \*\*\* Adapted from S. De Smedt, A. Mermoud. Healaflow in deep sclerectomy: retrospective study; ICGS 2009, poster. \*\*\*\* Adapted from S. Roy, A. Rizatto, G. Suranic-Megevand. HealaFlow for the modulation of postoperative healing after viscocanalostomy. ARVO Meeting Abstracts March 26, 2012;53:2509 and data submitted for publication.

### HOW DOES HEALAFLOW CONTRIBUTE TO IMPROVE GLAUCOMA SURGERY'S RESULTS?

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During penetrating surgery (trabeculectomy) or non penetrating surgery (deep sclerectomy or viscocanalostomy), HealaFlow helps by

- lifting the scleral flap to facilitate aqueous filtration • Fig. 1
- filling the decompression chamber (non-penetrating surgery) • Fig. 2
- lifting the conjunctiva to prevent contact to the sclera • Fig. 3



HealaFlow is injected either in the scleral space (under the scleral flap) and/or under conjunctiva.

### WHAT IS THE ACTION OF HEALAFLOW?

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As such HealaFlow plays the role of a drain, naturally regulating the filtration

- at the early stage of the surgery by controlling the filtration level in the scleral space. The volume of the implant expands from swelling of the sodium hyaluronate molecules with aqueous humour.
- at a later stage through the spongy structure of the reticulated meshwork aqueous humour outflow is facilitated to maintain the IOP at a low level.

*"HealaFlow, a slow resorbable highly crosslinked sodium hyaluronate drainage implant, helps to prevent fibrosis and maintains the intrascleral space created with VCS, improving aqueous humour outflow from the trabeculum through the intrascleral lake."<sup>[1]</sup>*

## USING HEALAFLOW ACCORDING TO THE SURGICAL PROCEDURE

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Whatever the glaucoma filtering surgery – penetrating or non penetrating – the aqueous humour filtration process is similar.

### DURING TRABECULECTOMY

#### 1 | Objective

- Enhance the postoperative aqueous humour filtration while preventing postoperative complications.
- Contribute to postoperative hypotonia risk decrease.

#### 2 | Required adaptation of the surgery

- No surgical technique modification.

#### 3 | HealaFlow use

- The resorbable implant is injected and left into the posterior half of the scleral space to prevent any risk of migration into the anterior chamber. It can also be injected under the conjunctiva.

### DURING DEEP SCLERECTOMY

#### 1 | Objective

- Maintain the surgically created space (the sclerectomy needs to remain open) to oppose the scleral healing process.

#### 2 | Required adaptation of the surgery

- No surgical technique modification.

#### 3 | HealaFlow use

- The scleral space remains open thanks to HealaFlow injection. The surgeon modulates the volume of injection according to the needed filtration space.

### OTHER FILTERING SURGERIES

Using HealaFlow is not limited to the surgical procedures described here above. Any surgical procedure based on surgically created space (such as viscocanalostomy, canaloplasty, sclero-trabeculectomy, implantation of shunt, stent or tube) can benefit from a concomitant injection of HealaFlow.

*HealaFlow is not designed for injection into Schlemm's canal.*

## HEALAFLOW SHORT TERM ASSETS

### Improved results with

- Less hypotonia
- Deeper anterior chamber
- Less TYNDALL effect (flare) under conjunctiva filtration

### Improved postoperative monitoring with

- Fewer filtering bleb needling<sup>[3]</sup>
- Reduced glaucoma medication<sup>[4]</sup>

## HEALAFLOW LONG TERM ASSETS

|                                    | Trabeculectomy <sup>[2]</sup> | Deep Sclerectomy <sup>[3]</sup> | Viscocanalostomy <sup>[5]</sup> |
|------------------------------------|-------------------------------|---------------------------------|---------------------------------|
| Mean follow-up period (months)     | 19.7*                         | 19.7**                          | 18.4                            |
| Qualified Success Rate             | 96%*                          | 85%**                           | 88%                             |
| Complete Success Rate              | 83%*                          | 77%**                           | 75%                             |
| Mean Preop IOP (mmHg)              | 22.2*                         | 19.8**                          | 20.4                            |
| Mean Postop IOP (mmHg)             | 12.1*                         | 10.7**                          | 12.4                            |
| Mean Postop<br>Glaucoma Medication | 0.2*                          | 0.3**                           | 0.3                             |

\* J. Stuermer - updated based on personal communication \*\* M. Feusier, S. Roy, A. Rizatto, A. Mermoud. ARVO meeting 2012;53:2497 - Data updated August 2012.

## 6 MAIN REASONS TO USE HEALAFLOW

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- 01** A prolonged duration of aqueous filtration is required to lower intraocular pressure. HealaFlow is present between 3 to 6 months<sup>[4]</sup> thanks to its cross-linking process.
- 
- 02** HealaFlow improves Complete Success (CS) and Qualified Success (QS) Rates with effective and significant IOP decrease and reduction in postoperative medication. Recent clinical studies report that CS and QS rates reach 77% and 85%, respectively, after deep sclerectomy using HealaFlow.<sup>[4]</sup> These rates reach 75% (CS) and 88% (QS) after viscocanalostomy.<sup>[5]</sup>
- 
- 03** The nature of this resorbable implant and the ergonomics of the syringe permit each surgeon to easily inject the exact needed quantity, according to individual requirements. HealaFlow ejection is precise, thanks to its double cross-linked structure allowing easy ejection of a graduated syringe.
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- 04** HealaFlow is indicated in penetrating or non penetrating glaucoma surgery (trabeculectomy, sclerectomy, viscocanalostomy, shunts). The double cross-linked matrix of HealaFlow improves the gel maintenance at the site of injection and reduces the risk of undesired migration.
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- 05** HealaFlow can be combined with anti-fibroblastic (such as Mitomycin C, 5FU)<sup>[2][4]</sup> and anti Vascular Endothelial Growth Factor treatments. HealaFlow is manufactured with NaHA made from bio fermentation. It completely mimics the NaHA naturally occurring in the human body, like in the eye. There has so far been no evidence to suggest detrimental interactions with either anti-fibroblastic or anti-VEGF.
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- 06** HealaFlow does not require learning curve. It can be easily and rapidly adopted and mastered by any surgeon, whatever its favorite surgical procedure and technique. HealaFlow does not change the surgical practice, it rather improves the results.

\* M. Feuzie, S. Roy, A. Rizzato, A. Mermoud. ARVO meeting 2012;53:2497 - Data updated August 2012

IMPROVED CLINICAL OUTCOMES BASED ON TECHNOLOGICAL INNOVATION



**HealaFlow double cross-linked matrix for:**

- an optimal combination of cohesiveness
- elasticity and malleability
- an easy injection

**ZOOM ON HYALURONIC ACID**

It is an endogenous glycosaminoglycan, thus endowed with a very high capacity to capture and keep water molecules.



**As a natural occurring component of cellular matrix, it is**

- chemically, physically, and biologically identical in all species
- present in all connective tissues
- totally biocompatible

**The Biological activity of NaHA offers**

- cellular recognition (membrane specific receptor)
- inflammatory process inhibition
- positive interference in scarring process



**SPECIFICATIONS**

|                            |  |
|----------------------------|--|
| <b>HA Concentration</b>    | 22 mg/ml                               |
| <b>Volume</b>              | 0.6 ml                                 |
| <b>Cross-linking agent</b> | BDDE (1.4 Butanediol Diglycidyl Ether) |
| <b>Polymer Origin</b>      | Non animal - Biofermentation           |
| <b>pH</b>                  | Physiological pH (7.0)                 |
| <b>Osmolarity</b>          | Isotonic (305 mOsm/kg)                 |
| <b>Endotoxin content</b>   | 0.5EU/ml                               |
| <b>Protein rate</b>        | < 50ppm                                |
| <b>Sterilization</b>       | Moist heat sterilization               |





## MOST FREQUENTLY ASKED QUESTIONS ABOUT HEALAFlow

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### 1 | What quantity should be injected? Where to place the HealaFlow implant?

- During trabeculectomy, it is convenient to inject the required quantity to lift up the scleral flap sufficiently and to put the sutures under tension. HealaFlow shall be placed with care respecting a security distance so as to avoid any risk of involuntary gel injecting into the anterior chamber through the trephination. Any injection under the conjunctiva shall be performed at a safe distance from the limbus, making sure the conjunctival flap is properly secured (rigorous water tightness). This will help in preventing any risk of postoperative Seidel/bleb leakage.
  - During deep sclerectomy, the scleral space has to be completely filled HealaFlow, not with standing the number of sutures used to tighten the scleral flap. If an injection under the conjunctiva is required, this should follow the same procedure as for trabeculectomy.
- 

### 2 | What to do if HealaFlow penetrates the anterior chamber?

Cross-linked sodium hyaluronate is not toxic for ocular tissues, including those of the anterior chamber. In addition, the nature of this implant (a double cross-linked gel, thus endowed with a «compact» structure) considerably limits the risk of gel migration into the anterior chamber.

Nevertheless, should the gel be unexpected present in the anterior chamber after trabeculectomy (detected through a deepening of the anterior chamber and a slight concavity of the iris), this would require removal of the gel to avoid hypertension risk.

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### 3 | Can HealaFlow be simultaneously used with anti fibroblastic (such as MMC, 5FU)?

#### Can we substitute HealaFlow for Mitomycin C, and reverse?

The combination of HealaFlow and Mitomycin is routinely used to create a synergical action. Indeed, HealaFlow is dedicated to long-term preservation of the filtering space. On the other hand it cannot fully control the fibrosis process especially for patients at risk. Thus, HealaFlow cannot be used as a substitute for any anti fibroblastic. Reverse, an anti fibroblastic cannot be used for keeping the filtering bleb open or acting in the regulation of the aqueous humour outflow. The combination between the structural properties of HealaFlow and the pharmacological action of a device such as Mitomycin C is beneficial and synergetic.

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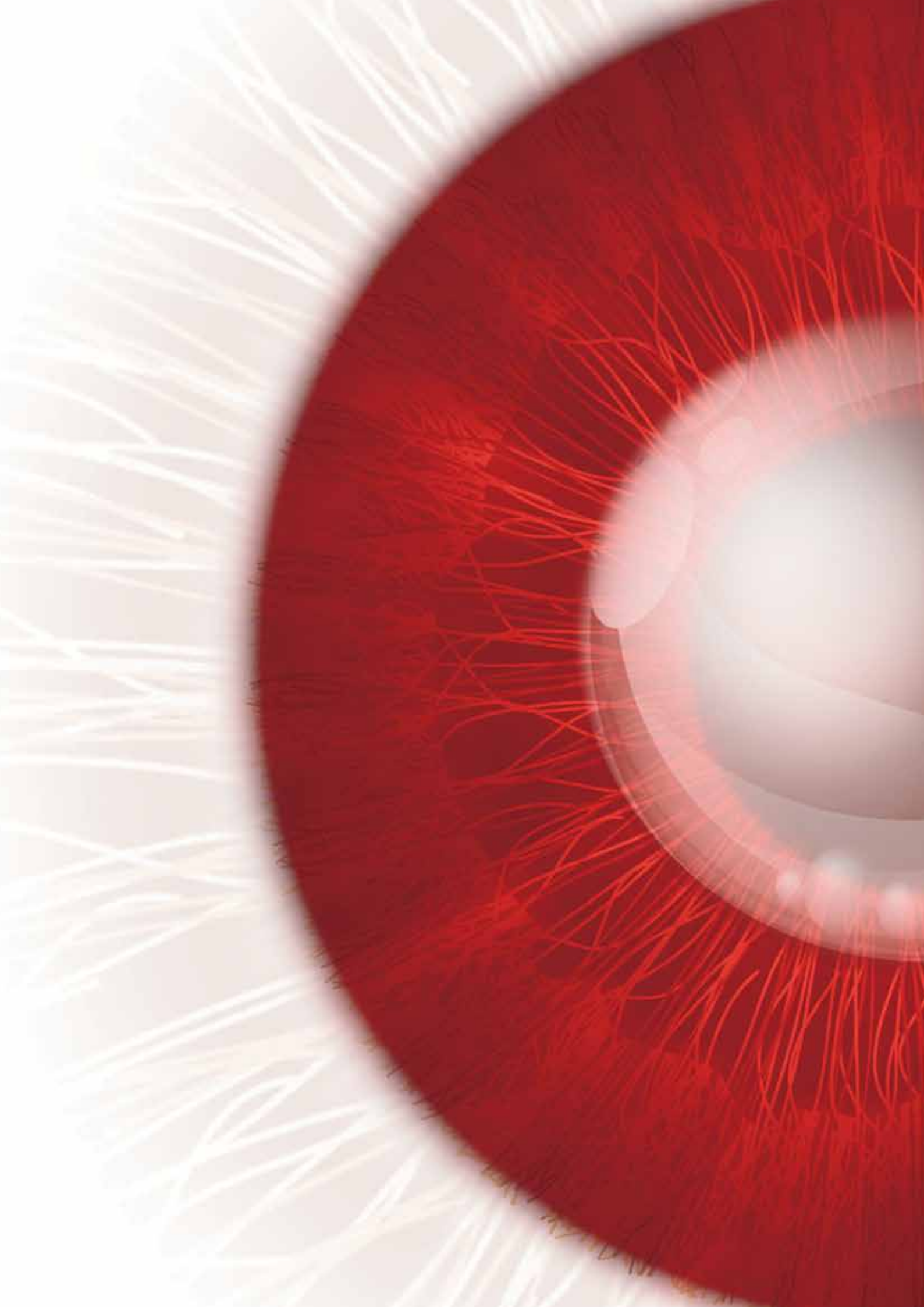
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