



# Pascal<sup>®</sup> Synthesis<sup>™</sup>

Pattern Scanning  
Laser



[iridexretina.com](http://iridexretina.com)

# Industry-Leading Pattern Scanning Laser Technology

## Pascal® Synthesis™

Pascal represents a quantum leap in ophthalmic treatment technology and is committed to helping you deliver effective results for your patients. Demanding ophthalmologists choose Pascal because of its speed and ease of use.

Developed in partnership with Stanford University, the Pascal method of photocoagulation treats retinal conditions using a single spot or a user-selected pattern array. Most importantly, it was designed to provide control and flexibility in the treatment of eye conditions.



Pattern scanning method  
is the preferred way and I  
believe it's standard of care.

Mark S. Blumenkranz, MD  
HJ Smead Professor and Chair Director of the Byers Eye Institute at Stanford University

# The advantages of Pascal

The collaboration between researchers and clinical experts resulted in a laser system recognized and used by physicians worldwide.

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## Overview of Pascal Synthesis



The Pascal technology was developed in partnership with Stanford University



Exclusive Precision Spots with Multi-Fiber Beam Technology



Reduced power and short pulses produce less discomfort during treatment



Rapid pattern scanning laser delivery



Precise alignment and continuous laser pulse directed by high speed galvanometers



Enhanced laser delivery slit lamp



Endpoint Management for sub-threshold treatment<sup>1</sup>



Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> for IOP reduction<sup>2</sup>

1. Optional

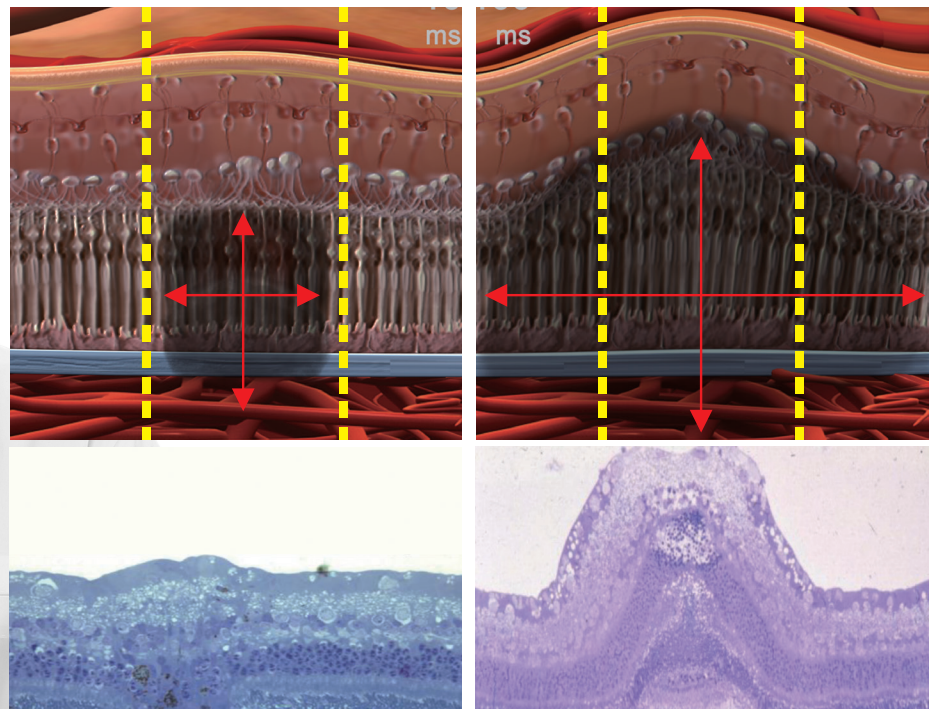
2. Mauricio Turati, Felix Gil-Carrasco, Adolfo Morales, Hugo Quiroz-Mercado, Dan Anderson, George Marcellino, Georg Schuele, Daniel Palanker. "Patterned Laser Trabeculoplasty." Ophthalmic Surg Lasers Imaging 2010;41: 538-545.

Unlike conventional laser burns, Pascal's shorter pulse duration (10ms) results in faster procedures with less pain, collateral damage and scarring for your patients.<sup>3</sup>



Pascal

Conventional Laser



Courtesy: Dr. Daniel Palanker Associate Professor Department of Ophthalmology, School of Medicine, and Hansen Experimental Physics Laboratory Stanford University.

3. Manish Nagpal et. al., "Comparison of laser photocoagulation for diabetic retinopathy using 532-nm standard laser versus multispot pattern scan laser." RETINA 30:452-458,2010

# Now Featuring A New Laser Delivery Slit Lamp

## SL-PA04



### Ergonomic Design and Improved Optical Design

Improved coaxiality between the slit illumination and the aiming beam provides better visibility of the peripheral retina.



### Comfortable Observation with our NEW Binocular System

The CB-8 binocular system with 8-degree angle provides clear vision. The smooth movement of the PD adjustment makes it easier to find a comfortable PD range. New magnification configuration improves visibility of the treatment area. The 5x, 8x, 13x, 20x and 32x magnification grouping allows for a wider view of the treatment area.



### Power Adjustment Knob

Quick and precise adjustment of the laser treatment power.



### LED Illumination

Sharp and homogeneous LED illumination for comfortable viewing.



### Gooseneck Fixation Target

Easy to adjust the fixation target.



### Micro-manipulator

Allows precise alignment of aiming beam and treatment delivery.



# Endpoint Management™ Sub-threshold Treatment for Retinal Disorders

Endpoint Management (EpM)\* is a pattern sub-threshold retinal laser therapy that uses a unique algorithm to control laser power and pulse duration, optimizing the therapeutic effect of the laser at sub-visible levels.

## Endpoint Management is Mathematically Precise

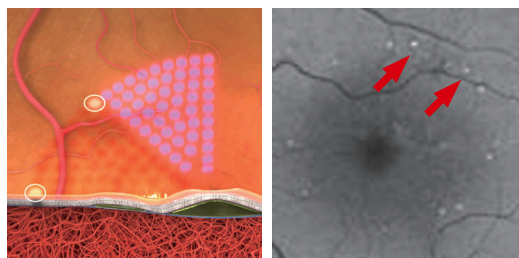
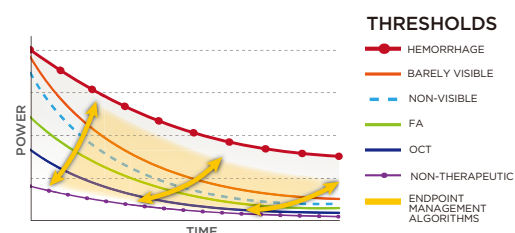
The Arrhenius Integral coupled with extensive data on retinal laser-tissue interactions defines the algorithms for Endpoint Management. By use of this formula, heat induced changes in the retina are controlled as Endpoint Management simultaneously modulates the laser power and duration, providing linear control over a non-linear process.

## Landmark™ Patterns

The Landmark feature is a useful tool for tracking the sub-visible areas which have been treated, assisting with the treatment process and taking the guesswork out of successive treatments.

## Easy Operation

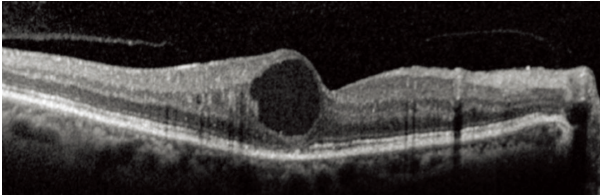
The yellow dots displayed on the user interface treatment pattern display indicate the laser spots that will be delivered using the energy level set by Endpoint Management. While Endpoint Management is active, the red dots indicate the laser spots that will be delivered at the titration energy level ("100% level") and will provide the "Landmark" reference points outlining the treated area.



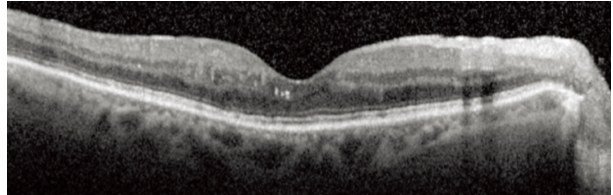
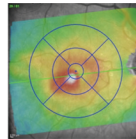
\*EpM is optional software

# Clinical Case

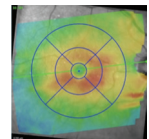
## Diabetic Macular Edema



Pre-EpM VA 20/60



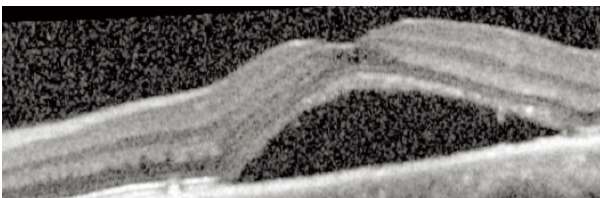
1 year and 9 months Post-EpM VA 20/20



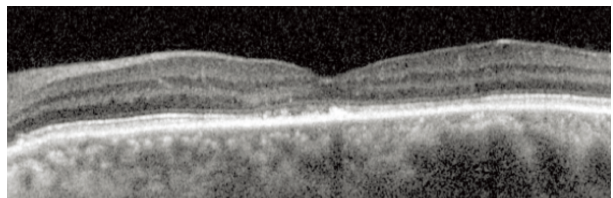
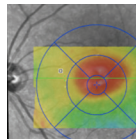
**Physician:** Dr. Daniel Lavinsky | Porto Alegre, Rio Grande do Sul, Brazil

**Patient:** 64 years old with Type 2 DM for over 20 years. Severe nonproliferative diabetic retinopathy with macular edema OU. Patient submitted to one intravitreal injection of Ranibizumab. She had a panic attack during the procedure and refused additional injections.

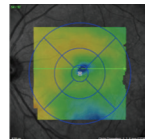
## Diabetic Retinopathy



Pre-EpM VA 20/60



1 year Post-EpM VA 20/20



**Physician:** Dr. Daniel Lavinsky | Porto Alegre, Rio Grande do Sul, Brazil

**Patient:** 46 years old, male with decreased visual acuity since childhood due to nystagmus. Patient refused use of steroids or other medications.

\* Courtesy: Lavinsky D, Palanker D. Non Damaging photothermal therapy for the retina: initial clinical experience with chronic central serous retinopathy. Retina. 2015;35(2):213-22.

# PSLT (Pattern Scanning Laser Trabeculoplasty) treatment for IOP Reduction



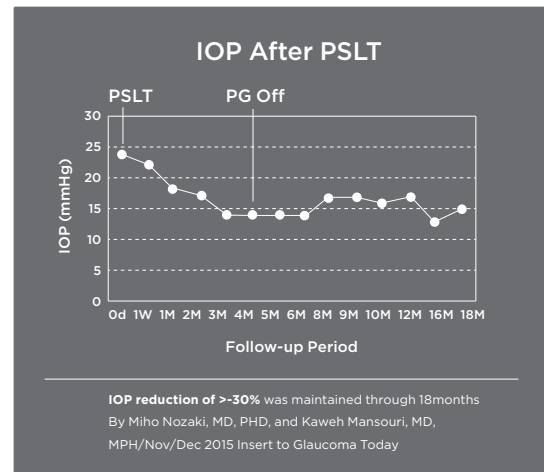
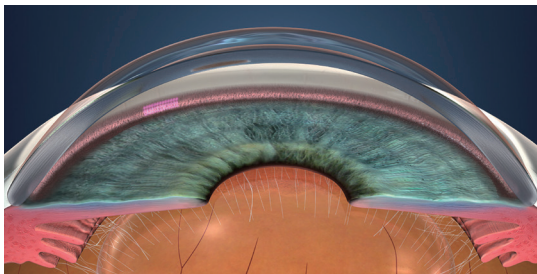
Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> is a tissue-sparing laser treatment for reducing intraocular pressure in open angle glaucoma. PSLT provides a rapid, precise, and minimally traumatic computer-guided treatment that applies a sequence of patterns onto the trabecular meshwork:<sup>2</sup>

## Clear Advantages of PSLT

- Computer guided treatment
- Sub-visible procedure
- Clinical studies show an IOP reduction of 24% in 6 months
- Ability to retreat if necessary

## Ease of Operation

PSLT provides a computer guided placement of the treatment patterns ensuring full coverage of the trabecular meshwork and eliminating the chance of overlap.



<sup>1</sup> PSLT is optional software

<sup>2</sup> Mauricio Turati, Felix Gil-Carrasco, Adolfo Morales, Hugo Quiroz-Mercado, Dan Anderson, George Marcellino, Georg Schuele, Daniel Palanker. "Patterned Laser Trabeculoplasty." Ophthalmic Surg Lasers Imaging 2010;41: 538-545.



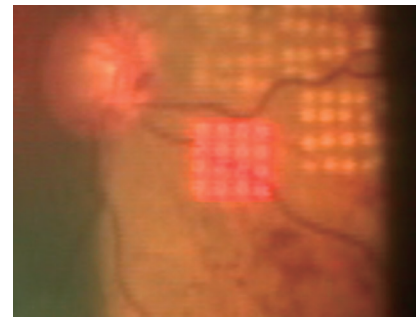
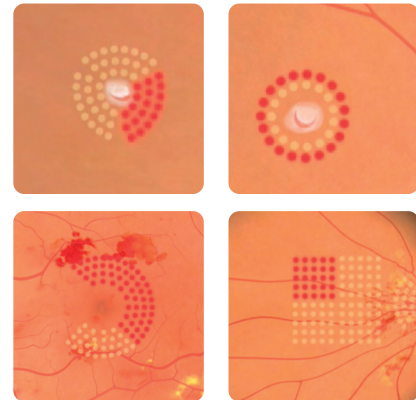
# The Versatility of Pascal Maximizes Your Workflow

## More Patterns. More Treatment Options.

Pascal offers a vast selection of patterns. The extensive pattern palette provides many variations to suit nearly every clinical need.

## Uninterrupted Aiming Beam

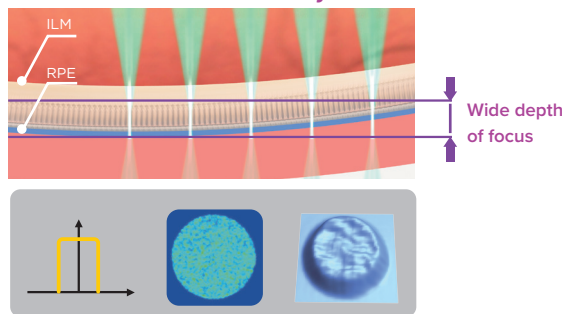
Bright and clear continuous aiming beam can help the operator to precisely aim at the target position.



## Multi-Fiber Beam Delivery System

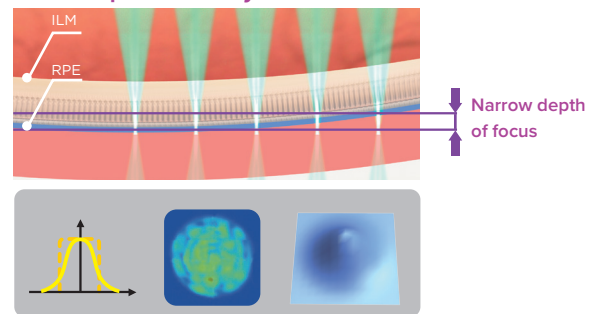
Multi-fiber beam delivery of the Pascal Synthesis provides one dedicated fiber optic for each spot size. This increases depth of field compared to zoom optic laser systems.

### Multi-Fiber Beam Delivery



Profile image of beam delivery:  
PASCAL has uniform energy distribution

### Zoom optic laser systems



Profile image of beam delivery:  
Other lasers have "hot spots" in the beam profile

# Family of Premier Retina Lasers: Sophisticated Technology, Elegantly Designed

In order to help you and your patients, we never stop improving. When you understand the science behind our advancements, you'll understand why Pascal is really a synthesis of innovations, all working together to further the field of ophthalmology.

## Pascal Synthesis

- Available in 532 nm wavelengths (green)
- Available in 577 nm wavelengths (yellow)
- Integrates seamlessly with Topcon SL-PA04, SL-D7, Haag-Streit, BM900 and BQ900

## Pascal TwinStar

- Includes both 577 nm + 638 nm wavelengths (yellow+red) in a single system
- Integrates seamlessly with Topcon SL-PA04 slit lamp

## Pascal LIO\*

### (Laser Indirect Ophthalmoscope)

- Allows physicians to offer laser photocoagulation treatments to patients unable to sit at a slit lamp
- Small and lightweight headset battery offers up to 2 hours of use without recharging

\* Optional accessory to Synthesis, not available with TwinStar



Topcon SL-PA04  
G4 and Y4



Topcon SL-D7  
G7 and Y7



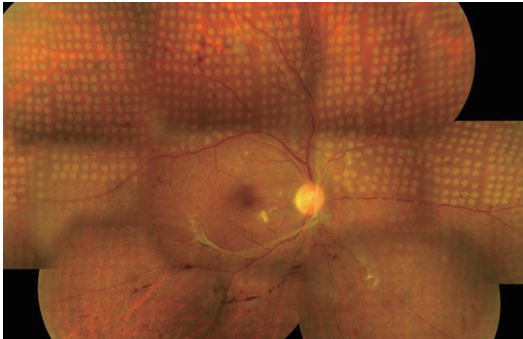
Topcon SL-PA04 (TwinStar)



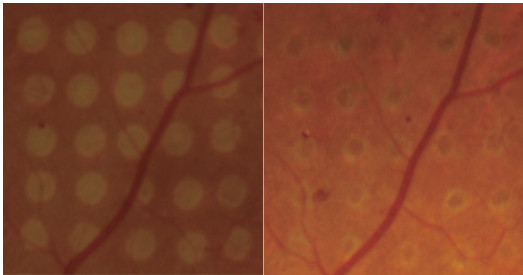
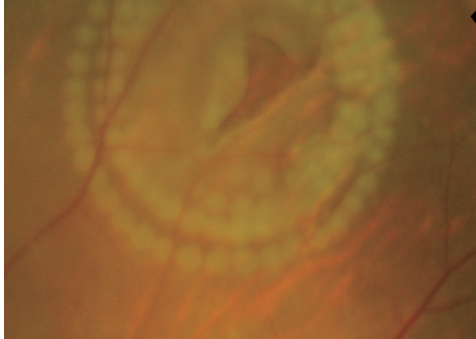
Pascal LIO

# Case Images

Proliferative Diabetic Retinopathy



Retinal Hole



Post laser photocoagulation

Post laser photocoagulation (2 months)

LEARN MORE



[iridexretina.com](http://iridexretina.com)

\*Courtesy: Hiroyuki Nomoto, MD, Nomoto Eye Clinic



Result is greater patient comfort with decreased pain. Much safer, much more effective.



Pravin U. Dugel, MD  
Retinal Consultants of Arizona



# Specifications

	Synthesis (Y7 / G7 / Y4 / G4)	Synthesis TwinStar
Laser	Available in 577nm or 532nm Optically Pumped Semiconductor (OPSL)	577nm , 638nm <sup>1</sup>
Patterns	Single Spot, Array, Triple Arc*2, Triple Ring, Arc, Line, Octants, Enhanced Octants (EpM*3), Wedge, Hexagon	
Power	0 - 2000mW	577nm: 0 - 2000mW 638nm: 0 - 600mW
Power Control	3-D Controller <sup>4</sup> and Touch Screen User Interface	
Treatment	Pulse Durations 5 to 1000ms <sup>5</sup>	
Aim Beam	635nm diode	670nm diode
Aim Beam Power	Adjustable to < 1mW	
Delivered Spot Size	50, 100, 200, 400µm	577nm: 50, 100, 200, 400µm 638nm: 60, 200µm
User Interface	3D Controller <sup>4</sup> and Touch Screen Control Panel Display (26.5 cm; 10.4 in)	
Slit Lamp Compatibility	Haag-Streit BM900 and BQ900, Topcon SL-PA04 and SL-D7	Topcon SL-PA04
Laser Console Dimensions	Height: 23 cm (9 in) Length: 31 cm (12 in) Width: 38 cm (15 in) Weight: 15 kg (35 lbs)	
Input Power Requirement	100 - 240 VAC; 50/60Hz 200VA	
Cooling	TEC / Air Cooled	

\*1: 577nm is for Single, Pattern scan, PSLT and Endpoint Management. 638nm is only for single spot.  
 \*2: Triple arc is only for Angle treatment by PSLT  
 \*3: EpM is optional software  
 \*4: Optional accessory  
 \*5: Pulse Durations 5ms is only for Triple arc



**IMPORTANT** In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation. Not available for sale in all countries. Please check with your local distributor for availability in your country.

Contact Iridex today to learn more  
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