SLT : Improving the Standard of Care for Glaucoma Patients

Moderator :

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[MEACO, 2009]

ALTP Mechanism of action:

Collagen shrinkage +

subsequent scarring of the TM,

tightened the meshwork in txed areas and

reopened the intertrabecular spaces in

untxed areas.

ALTP Compxs.

- **IOP spiking:**
  - a- In 50%, transient and <10 mmHg.
  - b- More in youth, and in 100 burns.
  - c- More in hyperpigmented angles.
  - d- Associated with uveitis, PAS's
  - e- Pre tx with CAI's, or post tx Pilo

    Apraclonodine 1 hr pre and post tx

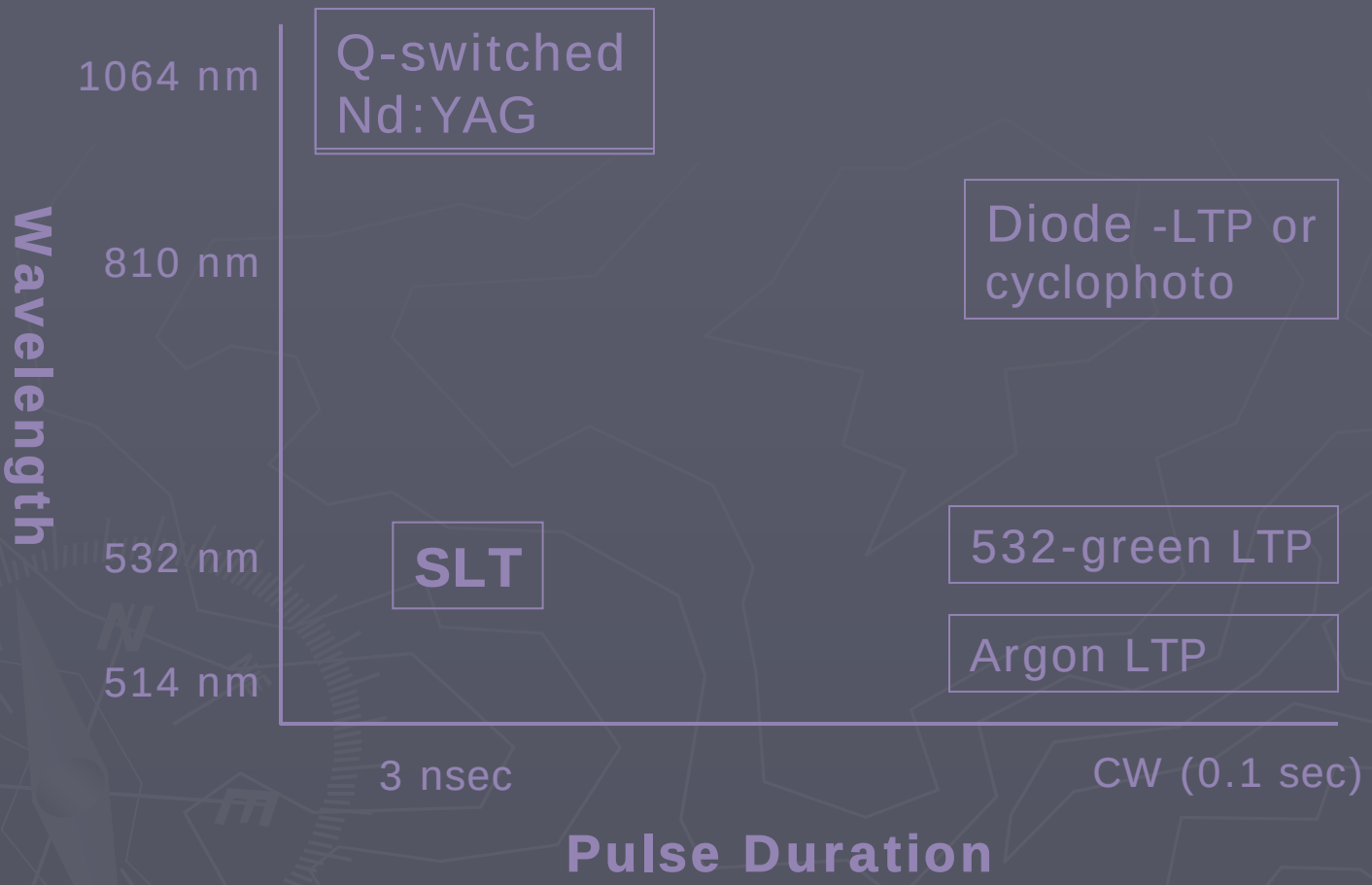
ALTP Compxs:

- Progressive VF loss, (mechanism?)
- PAS's in up to 43% (posterior TM)
- Iritis: Aq-bld barrier disruption
- Haemorrhage: Iris or circumciliary vessels.
- Corneal edema: IOP spiking, Chandler's,Fuch's endothelial dystrophy.
- Pain if ciliary body hit.

SLT

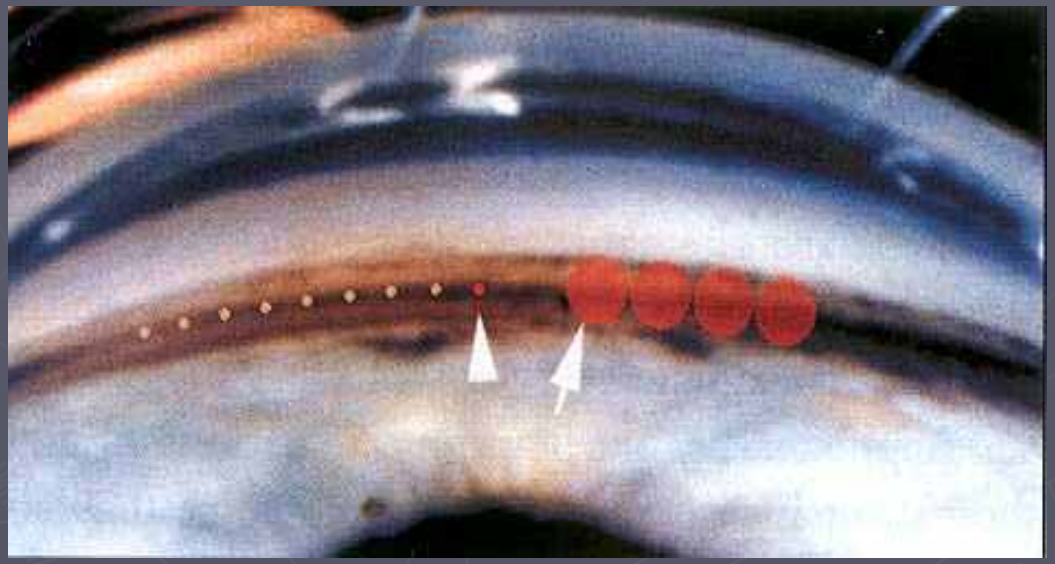
- FDA approval in 2001
- Developed by Mark Latina, MD in collaboration with Mass Gen Hospital
- Tx of OAG

Laser Differences



- **SLT requires a short pulse laser for cellular activation**
- **Only SLT offers both the desired wavelength and pulse duration**

The Differences between ALT & SLT Treatments

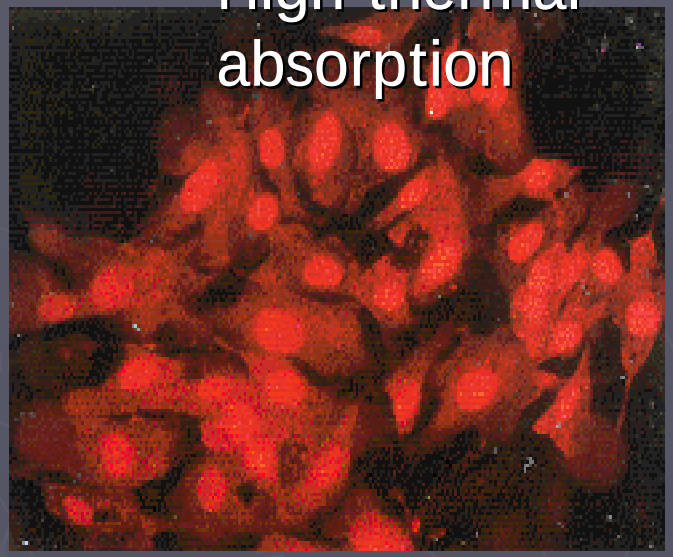


C. Park, M.D.

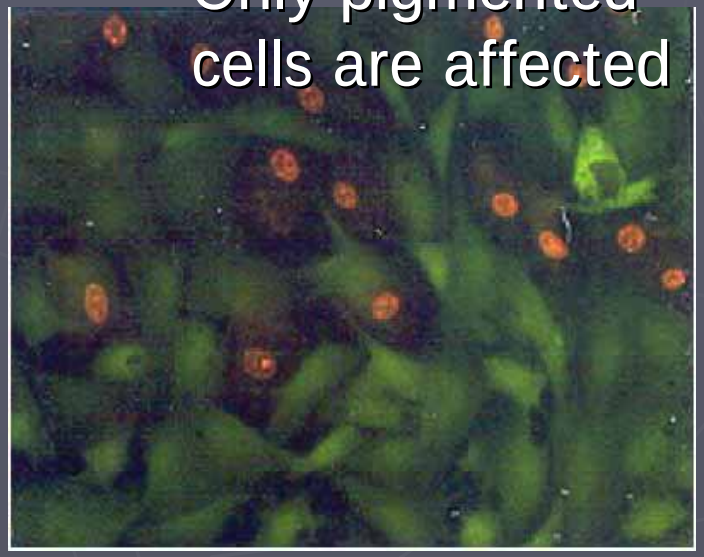
- **Larger beam diameter with SLT**
  - reduces need for focus
  - evenly distributes laser energy

Differences in Cellular Response

- ALT
  - High thermal absorption



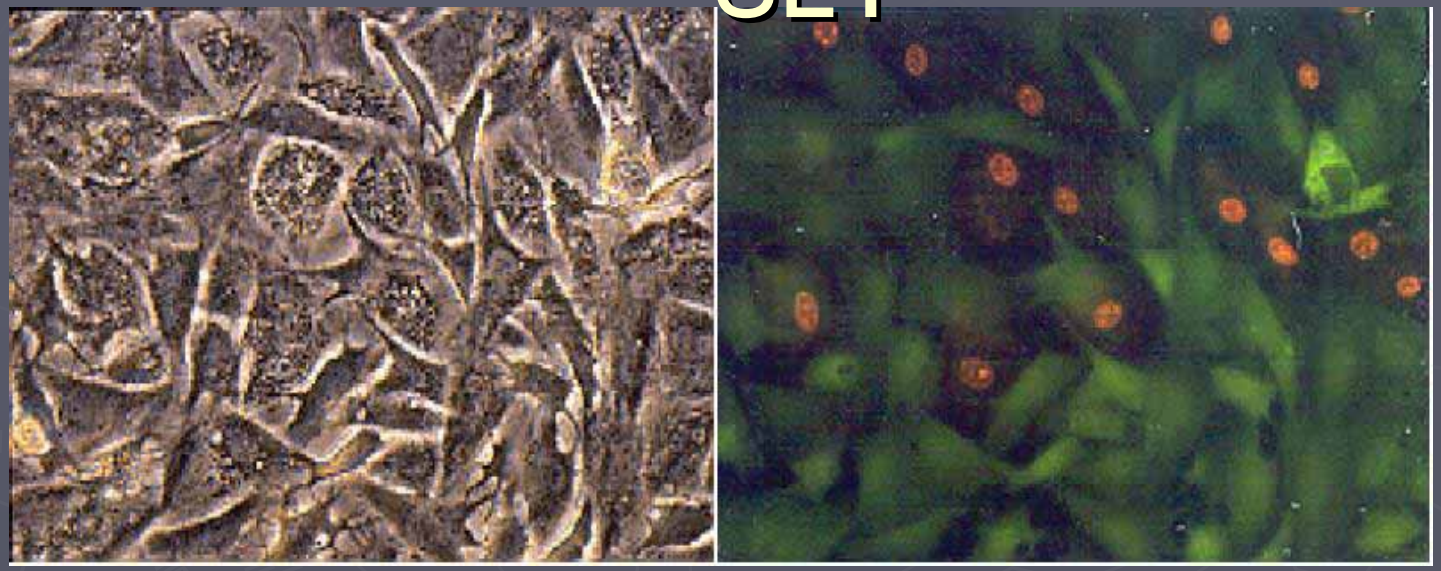
- SLT
  - Only pigmented cells are affected



M. Latina, M.D.

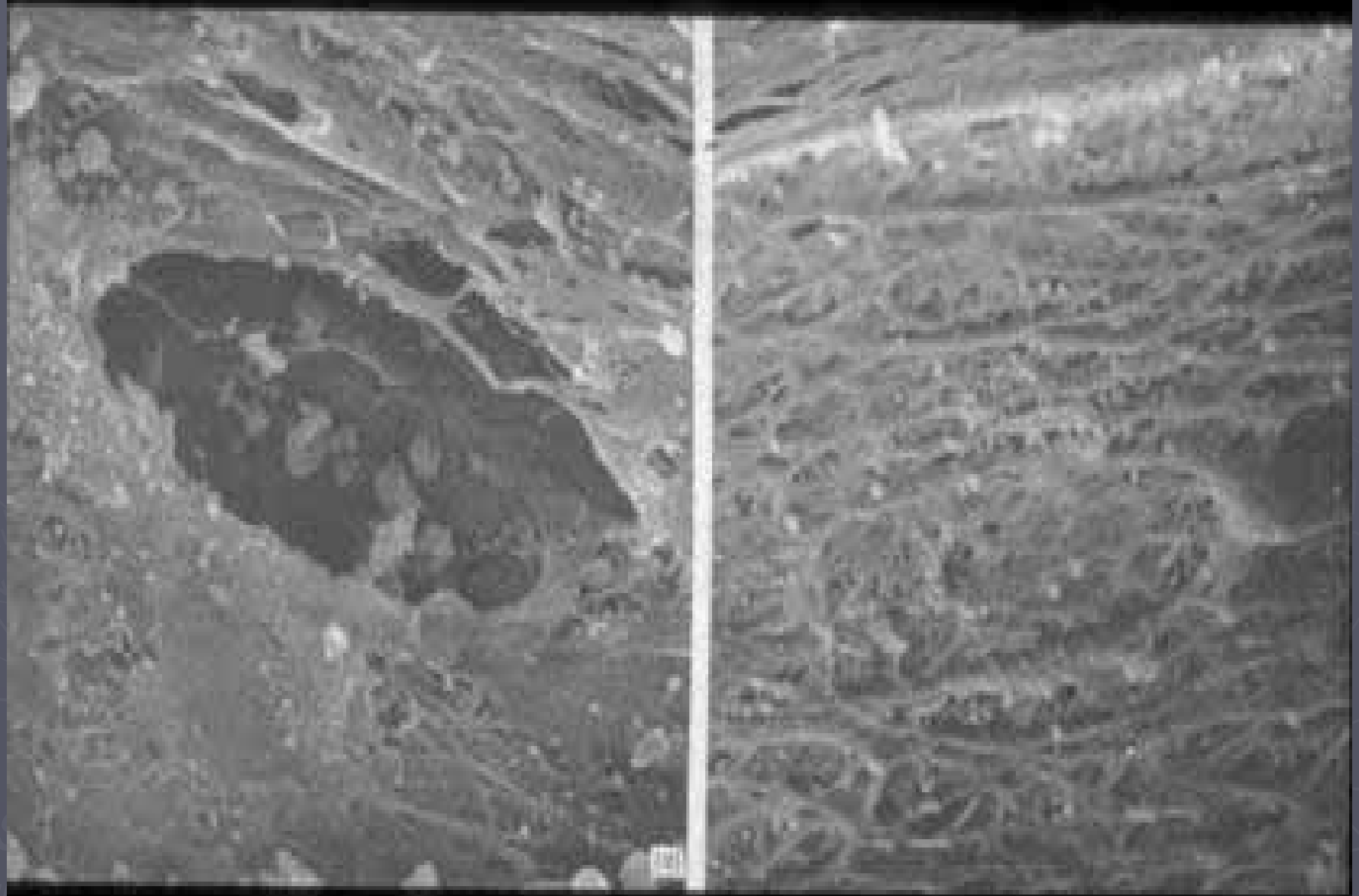
- Thermal transfer indicated in red
- SLT shows **only** melanin containing cells with thermal absorption

TM Cell Culture Fluorescence Live/Cytotoxicity Microscopy - SLT

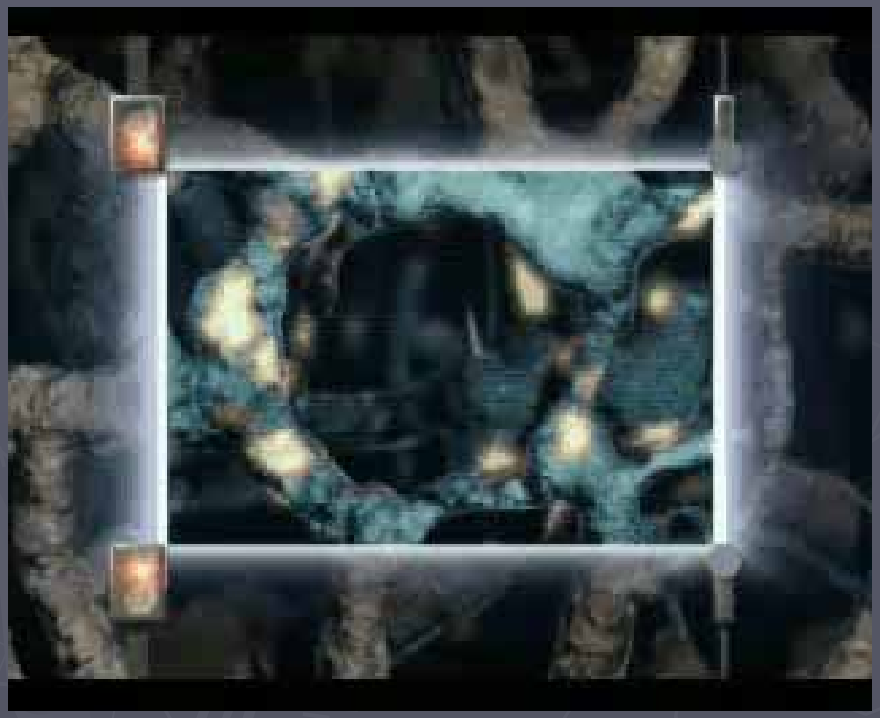


M. Latina, M.D.

- **The effect of selective photothermolysis can be seen**
- **This process successfully limits heat transfer to surrounding architecture**



Selective Photothermolysis

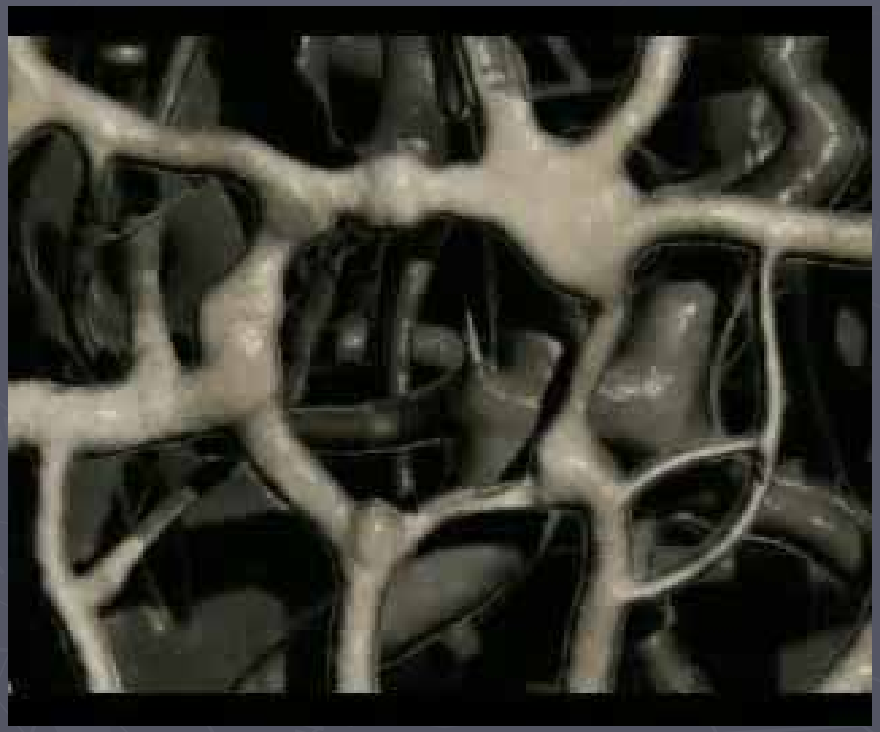


- Only pigmented cells absorb the laser light
- Laser energy evokes cellular cavitation
- Thermal transfer to surrounding tissue is minimized

Principles of SLT

- Mechanisms are still not fully understood
- Cell stimulation by biophotoactivation triggers cytokine response
- Cytokines recruit macrophages
- Macrophages help clear cellular debris

Biological Response to SLT



- Biological response improves outflow facility
- Fluid is allowed to flow freely through the TM

SLT : MEACO, 2009

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Summary: Why SLT.

- Safe
  - SLT is not associated with systemic side effects or the compliance and cost issues of medications
- Selective
  - SLT utilizes selective photothermolysis to target specific pigmented cells, leaving the trabecular meshwork intact
- Smart
  - SLT stimulates the body's natural mechanisms to enhance aqueous outflow
- Effective
  - SLT has been show successful in pressure reduction for many years, in many locations globally
- Clinical
  - SLT can be applied in the physician's office as a time and cost saving treatment

SLT Treatment Parameters

- Wavelength - 532 nm
- Pulse duration - 3 ns
- Spot size - 400 µm
- Energy / pulse - 0.4-1.4 mJ
- Fluence - 600 mJ / cm2
- Spots (mean) - 52 confluent over 180°
- Lens - Goldmann 3 mirror