Dermatología estética y láser

From the Mile High City: avances, tendencias y perlas prácticas en láser dermatológico y estética

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NO TENGO CONFLICTOS DE INTERÉS

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AAD ANNUAL MEETING 2026 highlights

#AEDVenAAD2026

highlights
Denver, Colorado

AAD ANNUAL MEETING 2026

27 — 31
Marzo

Tratamiento y prevención del cáncer cutáneo

Cambiando el paradigma

Una iniciativa de:

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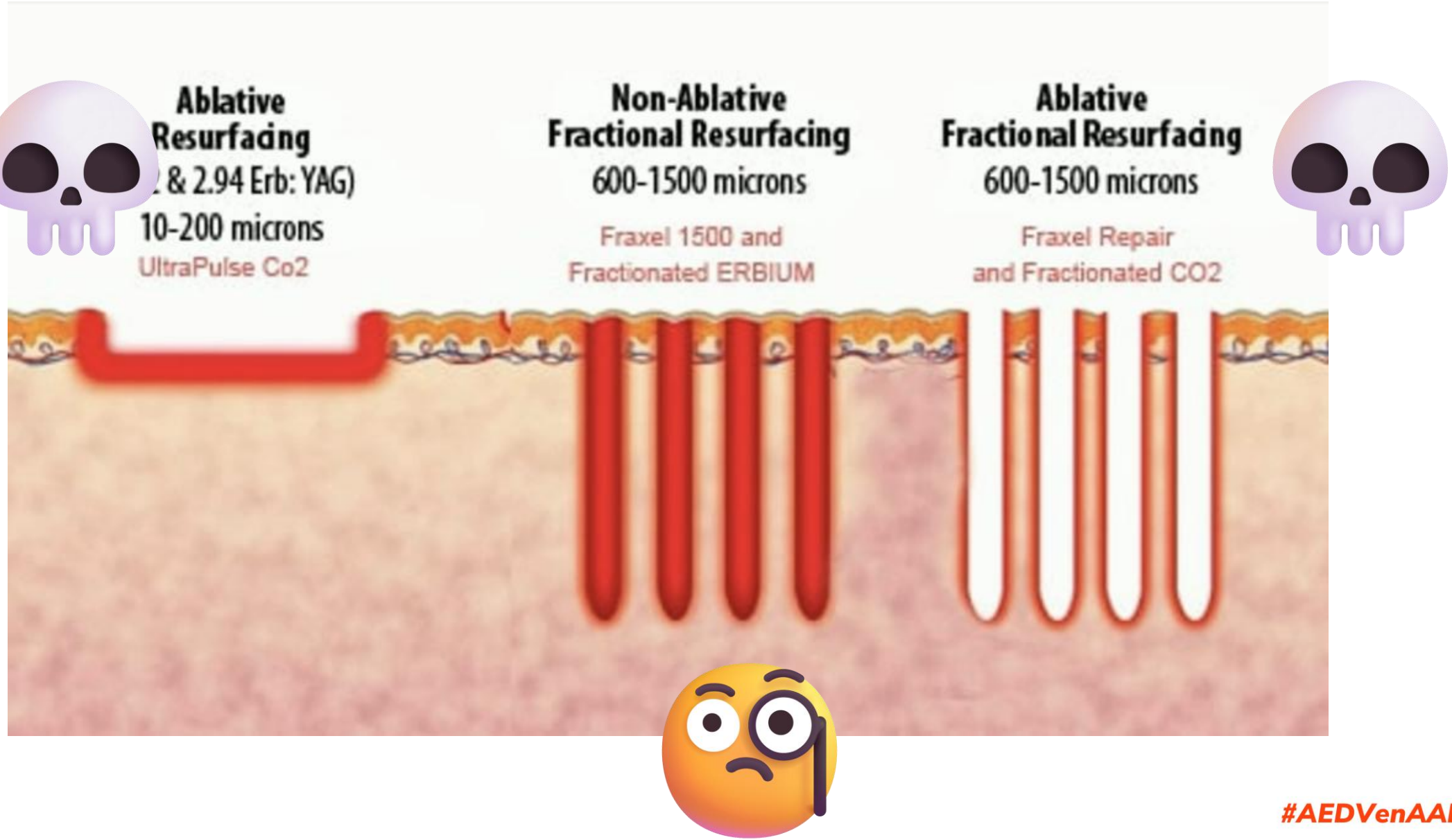
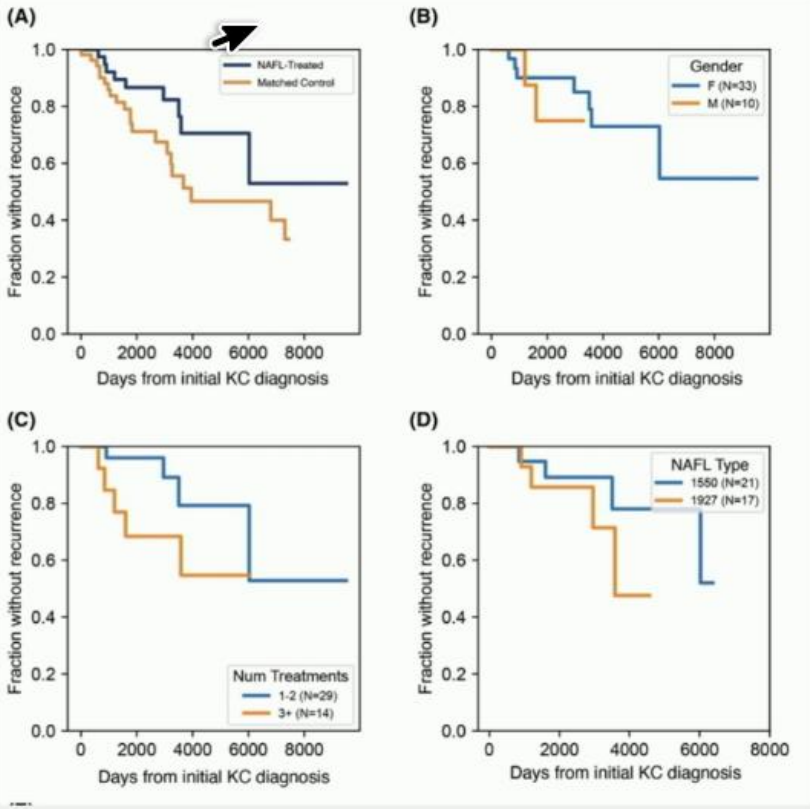

Ablative
Resurfacing
& 2.94 Erb: YAG)
10-200 microns
UltraPulse Co2
Non-Ablative
Fractional Resurfacing
600-1500 microns
Fraxel 1500 and
Fractionated ERBIUM
Ablative
Fractional Resurfacing
600-1500 microns
Fraxel Repair
and Fractionated CO2

NAFL SKIN CANCER PREVENTION?



- Controlling for age, gender, and skin type, controls more likely to develop new facial KC than NAFL-treated patients (HR 2.65, p = .0169)
- *NAFL = about half the risk of developing a subsequent facial KC compared with those who did not receive NAFL.*
  - Enhanced effect seen with 1550 vs 1927.
  - Increased thermal damage and wound response, deeper penetration?
- NAFL may serve an important role in KC prophylaxis in individuals with a history of KC
  - Standardized, prospective studies needed to replicate results
  - Longer follow-up for durability of response

Dermatol Surg. 2023 Feb 1;49(2):149-154

IGF-1 ACTIVATES DNA REPAIR IN KERATINOCYTES VIA IGF-1R

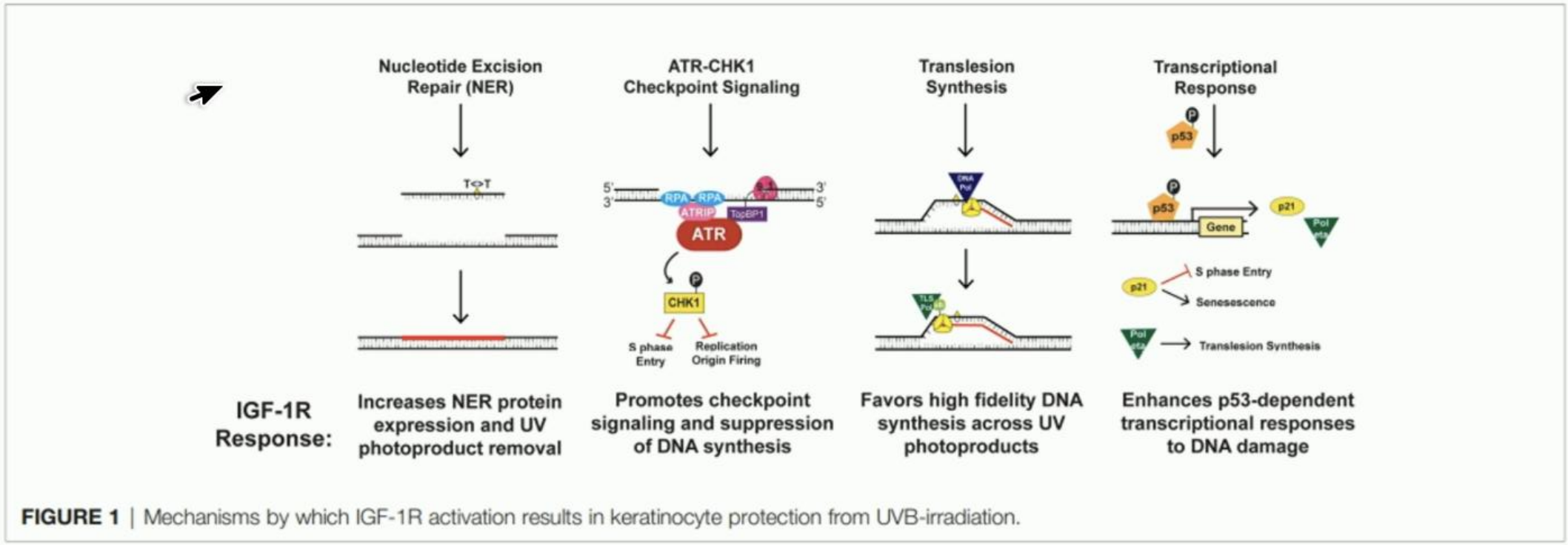
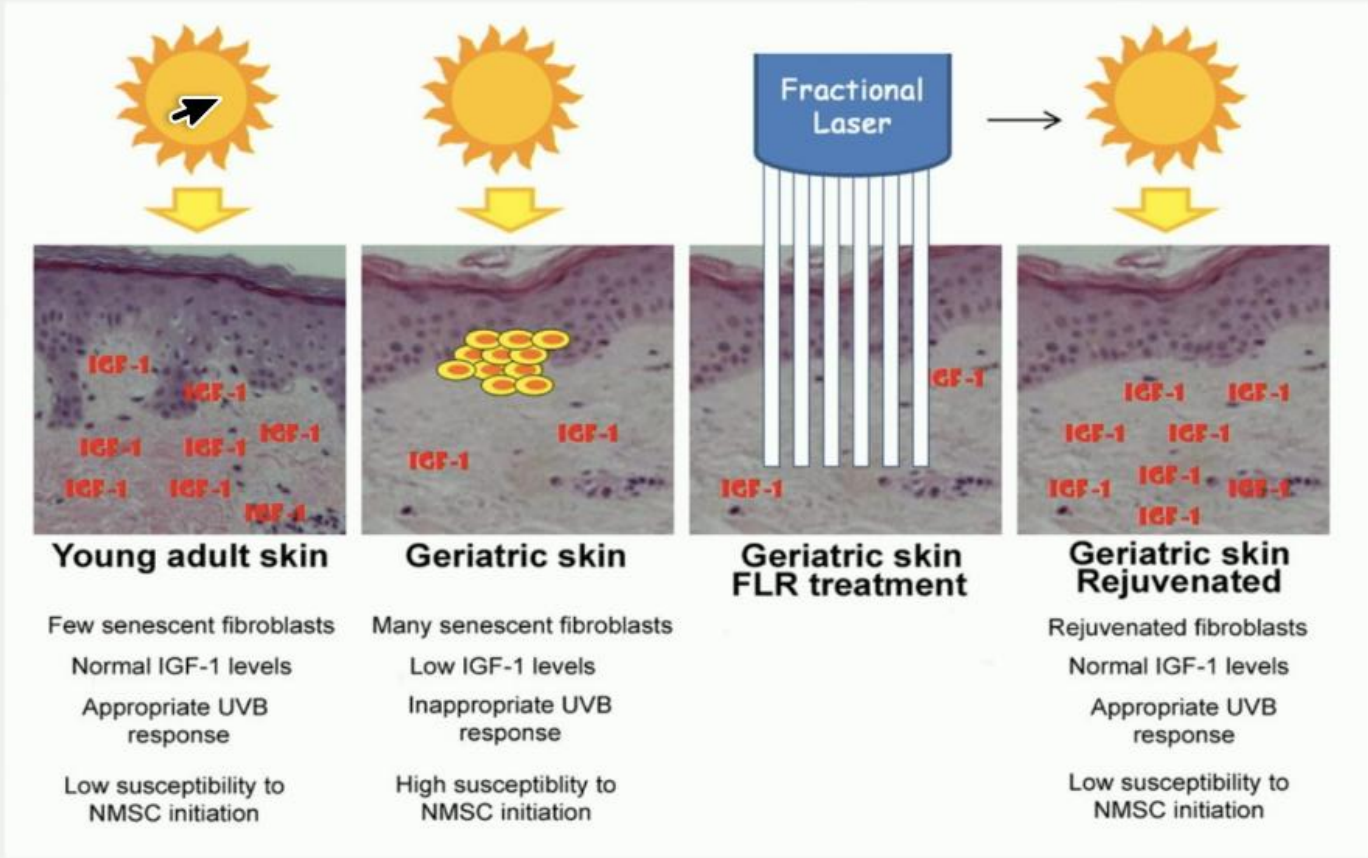


FIGURE 1 | Mechanisms by which IGF-1R activation results in keratinocyte protection from UVB-irradiation.

Frommeyer TC, Rohan CA, Spandau DF, Kemp MG, Wanner MA, Tanzi E and Travers JB. Wounding Therapies for Prevention of Photocarcinogenesis. Frontiers in Oncology. 2022; Jan.

LASERS AND SKIN CANCER PREVENTION AND SKIN HEALTH



Derm Surg 25 Feb 2013, 39(7):967-973
J Invest Dermatol. 2012 Jun;132(6):1591-6.

Objective

To determine whether **PDL treatment** may offer prophylaxis against the development of subsequent facial KC in patients presenting to the Massachusetts General Hospital (MGH) Dermatology Laser and Cosmetic Center (DLCC).

J Hu, T Benson, D Ozog, MM Avram. Pulsed dye laser treatment is associated with decreased development of subsequent keratinocyte carcinoma. Dermatol Surg 2026; 52(2): 108-112.

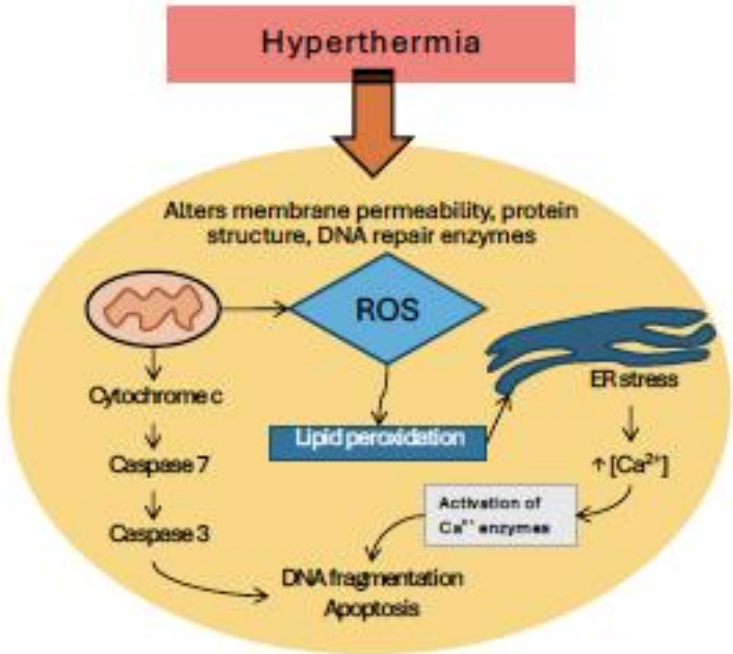
Conclusions

- In our retrospective cohort study, PDL-treated patients experienced a **50% reduction** in subsequent facial KC development.
- Patients who have previously had a KC are **10x** more likely to develop a secondary KC (Wehner *et al. JAMA Derm* 2015) (patients with rosacea have 1.5 RR of developing a BCC Li *et al. Br J Cancer* 2015)
- Potential preventative mechanisms include treatment of incipient BCC vasculature, reduction in carcinogenic inflammatory milieu/increase in IGF-1, increased immune surveillance
- While further randomized, prospective trials are required, this study introduces the role of the **PDL** as a safe, well-tolerated, and efficacious option in the prevention of KC.
- Next Query: Is this PDL also promoting skin longevity?

CHAMP™
Controlled Hyperthermia and Monitored Protocol for BCC

Background

- **1064nm**
- **Hyperthermia** can induce cell death in cancer
  - The response is time and temperature dependent
  - Main issue is achieving consistent temperature throughout



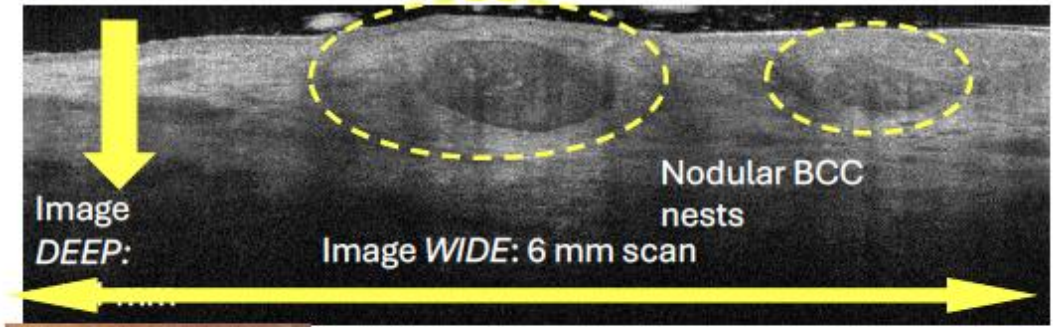
David A Norris et al; JID (2008) 128, 949–956; doi:10.1038/sj.jid.5701114;
Ahmed K, Zaidi SF. Journal of Pakistan Medical Association. 2013;63(4):504.

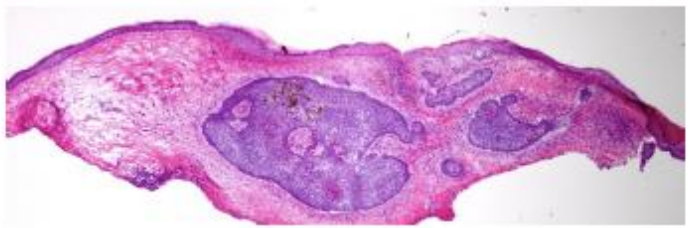
CHAMP™
Controlled Hyperthermia and ***Mapping*** Protocol for BCC

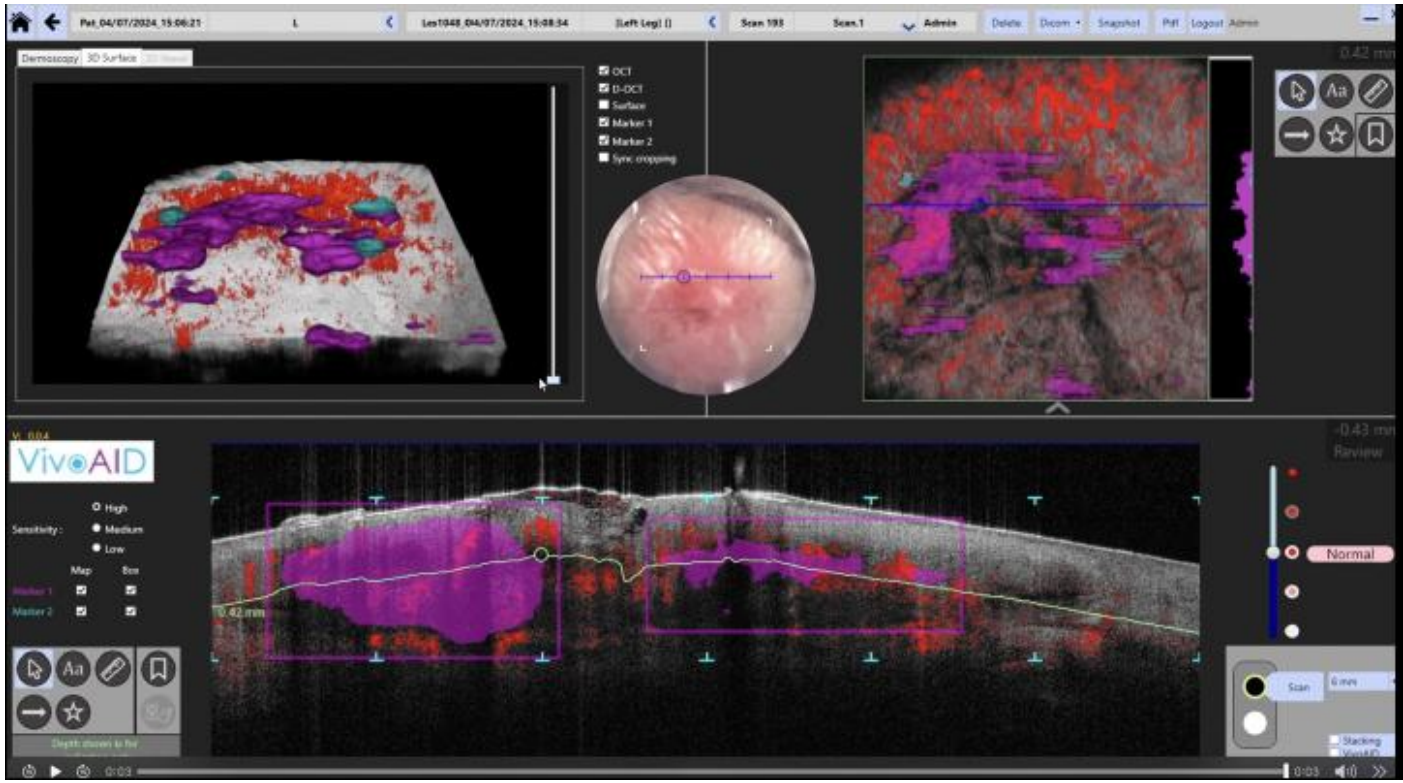
- In the CHAMP protocol, OCT imaging used to:
  - Check lateral borders to ensure the **whole tumor** is treated
- AI assisted algorithm significant improvement

VivoSight Dx
OCT scanner

OCT imaging of BCC:
Images deeper & wider than confocal

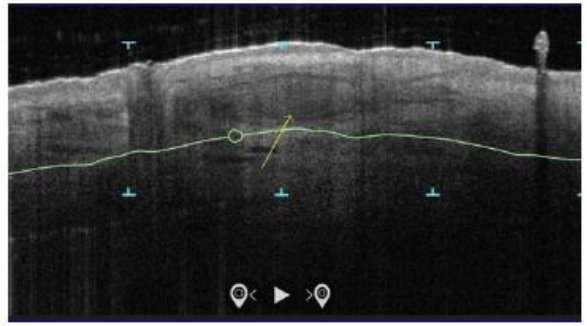






CHAMP™
Controlled Hyperthermia and Monitored Protocol for BCC

- Ascertain margins by OCT
- Heat tissue to 55^0 for 60 sec by FLIR camera



Normal skin, 53^0C, Arrhenius 1.0

Day 1-12 | Day 15-20 | Day 200

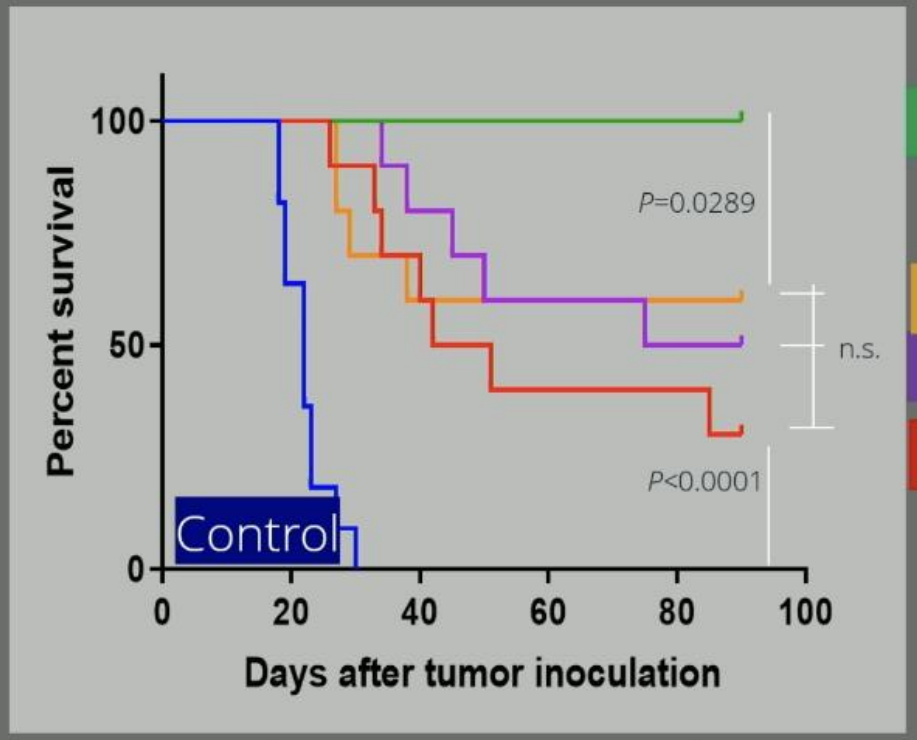
Summary

- Basal cell cancer can be effectively treated by CHAMP
- Heat treatment of skin cancer complicated ...
- Conventional LP 1064nm treatment of BCC not well standardized
- Robotic Arrhenius Dosage Sensing device allows uniform heating
- Arrhenius dosage 10^{0} achieves cell death

FP as Adjuvant Therapy in Oncology

Two Tumor Colon Cancer Model

n= 10/ group

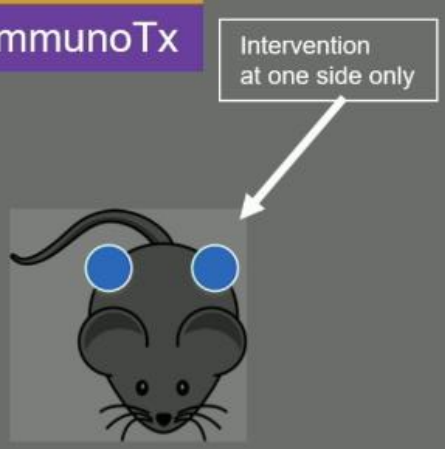


Fractional Tx + Immuno Tx

Surgical Tx + Immuno Tx

Bulk Heating + ImmunoTx

Immuno Tx



Dr. Masayoshi Kawakubo

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Ciactrices

Aquí y ahora

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Lasers Used for Scar Treatment

Erythema

- Pulsed dye laser
- Long pulse 532 nm
- Intense pulsed light

Texture and Tightness/Contracture

- Non-ablative fractional
- Ablative fractional
- Fully ablative
- Fractional Picosecond

Pigment/Implanted Material

- Q-switched lasers (nanosecond or picosecond)

Non-laser Devices

- Microneedling
- Radiofrequency microneedling

Additional/Potential Combination Treatment Options

- Medications
  - Laser assisted drug delivery
    - Triamcinolone
    - 5-Fluorouracil
    - Bimatoprost
  - Dupilumab
  - Pentoxifylline
- Silicone Sheeting
- Compression
- Physical and Occupational Therapy
- Z-plasty

How Early Can Laser Treatment Begin After Injury? (cont.)

Results

- Overall: 63% improvement overall
  - Greatest change in color and texture
  - No major adverse effects or complications

Conclusion

- Early intervention can be safe and effective, challenging historical 1-year delay recommendation

Waibel et al. Randomized, Controlled Early Intervention of Dynamic Mode Fractional Ablative CO2 Laser on Acute Burn Injuries for Prevention of Pathological Scarring. *Lasers Surg Med* 2020

UC Irvine Health

SCARS ARE PREVENTABLE..

Intervene before a scar matures

2 same age 3 y.o. children with same hot water burn injury

Treated with laser x 1
3 months post injury

12 months later no treatment

When, what & how to treat……*its complicated and unique to each scar at each time pt*

TIMING	EARLY mins-days (inflammatory phase)	EARLY INTERMEDIATE days-weeks (proliferative phase)	LATE INTERMEDIATE weeks-months (remodeling phase)	LATE Months-years (late remodeling)
CELLULAR DYSREGULATION	Endothelial/Mast Cell Erythema Neuroimmune	Fibroblast Angiogenesis ECM deposition	Myofibroblast/Fibroblast Wound contraction Collagen overproduction Fibrosis	Fibroblast ECM reorganization
CLINICAL PROBLEMS	Vascular dysregulation Pruritus Pain (inc. hypertrophic scar)	Vascular dysregulation Development HTS	Hypertrophic scars Keloids Contracture scars	Worsening contractures, HTS, keloids, recurrences
KEY GENES & SIGNALING PATHWAYS INVOLVED SCARRING	IL 1B IL6 TNF PTGS2 *More Mast cell gene expression – worst scar*	TGFB1 – fibrotic switch CTGF PDGFb – fibroblast proliferation VEGFa - angiogenesis COL3A1- early scar matrix POINT OF NO RETURN	ACTA2- myofibroblast COL1A1 – dense matrix COL1A2 LOX – collagen cross linking SMAD/TGFB – more keloids, loss of brake	MMPs- collagen breakdown TIMP ELN – elasticity DCN WNT5A
TREATMENTS	PDL – IL6, IL1B, TNF, VEGF Photobiomodulation – IL1B, MMP, Mast cell – Cromolyn, H1, H2 blockade, TKI, CST Regenerative medicine	Anti PDF, VEGF, COL therapy	CO2/Erbium- MMP1/3/9, DCN, TGF, COL1A1 RFMN – ACTA, TGFB1, MMP2 ELN Z plasty, M plasty Corticosteroids/5FU Compression	CO2/Erbium 5FU Corticosteroids CROSS Punch excision

IS SCARRING GENETIC? GENE THERAPIES HELP? MAYBE.....

The inflammatory response in papules of patients with acne prone to scarring can last more than three weeks and is characterized by a marked infiltration of B cells, whereas the immune response in papules of patients with acne not prone to scarring resolves much more rapidly.

Gene expression and immunohistochemistry -down-modulation of sebaceous gland markers related to lipid metabolism was observed in 48 hours-old papules in non-scar prone patients, but this had normalized after three weeks.

This study demonstrated that the inflammatory response is still present in 21-days lesions in acne patients prone to scarring compared to those who do not develop scars

Holland DB, Jeremy AHT, Roberts SG, et al. Clinical and Laboratory Investigations Inflammation in acne scarring: A comparison of the responses in lesions from patients prone and not prone to scar. Br J Dermatol 2004; 150:72–81.

Identical twins NOT identical scarring

Epigenetics – identified 6 genes consistently present in all patients that develop keloids. Expression differences.

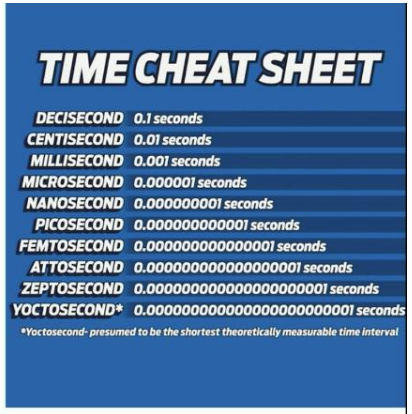
What other imaging/wearables is innovative in scars...alert us when to laser patients

Smart Scar Monitoring Wearables: Wearable patches embedded with **sensors** to monitor scar tension, temperature (inflammation), and mechanical forces in real-time. Real-time scar data allows **dynamic treatment adjustments** — compression levels, timing for steroid injections, or laser interventions.

AI-Guided Scar Imaging and Predictive Modeling AI tools can now **predict which acute wounds will develop into hypertrophic or keloid scars** with up to **90% accuracy** based on: Initial injury characteristics,Genetic and ethnic data,3D scar imaging over time.Clinicians can start **prophylactic treatments earlier**, personalizing the scar prevention plan. Moves scar care into **true precision medicine.**

Femto could have a role in scars

- Femtosecond lasers emit pulses in the **10^{-15} second range**, producing extremely high peak power and precise tissue interaction
- Their ultrashort pulses allow **micron/nanometer-scale precision with minimal collateral damage**
- Tissue effects are largely **photodisruptive rather than thermal** (via plasma formation and cavitation)
- Compared to fractional lasers: less heat (less pain?), more mechanical disruption,potentially faster healing



Vogel et al., *Exp Eye Res*; SciDirect Review (2025–2026)

Low-Level Laser Therapy (LLLT) Red Light

- Has longer wavelength and lower energy making it better for skin healing. Red light typically 630-670 nanometers and near-infrared light between 810-850 which act on mitochondria, energizing cells and allowing them to function more efficiently
- Stimulates collagen production, reduces inflammation, improves skin elasticity, help with wound healing
- EARLY but growing role in perioperative scar control

The surprising science behind red-light therapy – and how it really works
Nature.com DAVID OZOG

Innovation:
Regenerative
medicine

Longest Studied
Lab Animal:
the Axolotl

Scar Pipeline

Energy devices evolving from remodeling scars to reprogramming wound healing to prevent scarring

Advanced imaging – 3D, OCT/RCM, US combined with AI to target chromophores

Robotics to assist with treatments

Gene analysis and therapies – predict who scars, block specific targets – may be LAD, biologic

Personalized scar algorithms combining many modalities with lasers as backbone

Future of of scars is treat smarter, targeted, earlier with regeneration. Combining energy based devices, biologics, AI-driven customization and preventative strategies.

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Dispositivos en acné

1726nm

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Seboselective Laser Treatment: Key Features

1726 nm

Selectively targets sebum with ~ twice the energy absorption of water to destroy sebocytes and suppress sebum production[12,13]

100W power

Enables the perfect convergence of spot size and pulse duration at the proper wavelength to specifically target the sebaceous glands[14]

Sapphire cooling technology

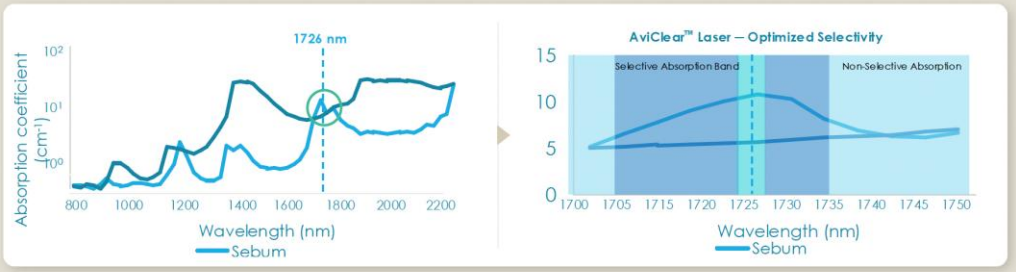
Helps maintain the temperature of the skin during treatment to increase comfort while sparing the epidermis[13]

All skin types and acne severities

Effectively treats all skin types and all acne severities (mild, moderate, severe) with a high safety margin[15]

Selective Absorption of 1726 nm

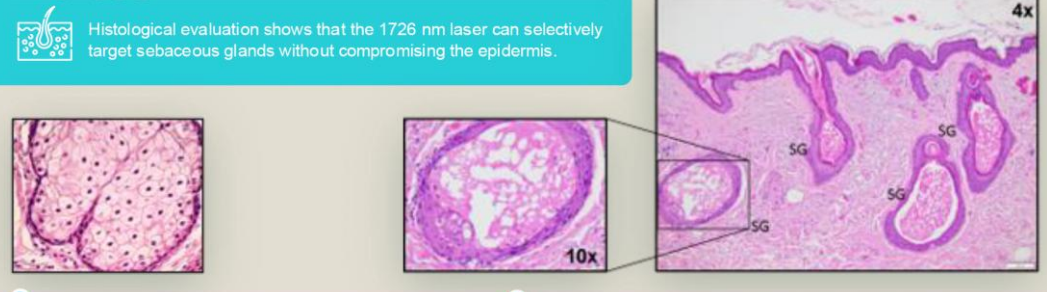
- 1726 nm is clinically proven to absorb ~2x more energy in sebum compared to H_2O[12,13]
- The 1726 nm wavelength selectively targets and damages sebocytes suppressing sebum production[13]



Source: Ezerskaia et al. 2018

Histological Evidence "Treat to Fluence" Protocol[13,16]

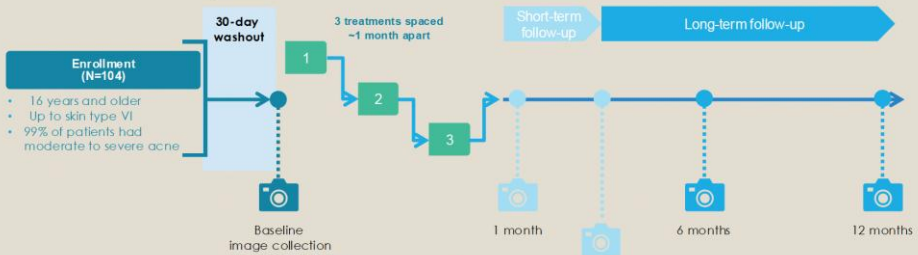
Histological evaluation shows that the 1726 nm laser can selectively target sebaceous glands without compromising the epidermis.



Pre-treatment:
Healthy sebaceous gland with nucleated sebocytes

5 days post-treatment
- Sebaceous glands with total necrosis
- Epidermis remains intact

Pivotal Study Overview



Efficacy	Safety
Primary endpoint	Adverse events
Responder rate (% with ≥50% ILC reduction)	
Secondary endpoints	
IGA improvement (% clear/almost clear) ILC reduction Non-inflammatory lesion count reduction Patient satisfaction	

Treatment Details:
- Laser spot size: 3.1 mm, over 7 adjacent locations in a hexagonal pattern
- Precooling 1-second delay, 1726 nm energy delivered as single or double pulse (maximum pulse duration 50 ms, maximum fluence 30 J/cm)
- Postcooling 2-second delay with full contact, then move to the next area (no overlap)
- Average treatment time: 30-40 minutes

Patient Photos

Baseline | 6 Months After Final Treatment Session | 12 Months After Final Treatment Session

Patient Photos

Baseline, Moderate | 6 Months After Final Treatment Session | 12 Months After Final Treatment Session

Treatment Results

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Resurfacing

Focal point technology

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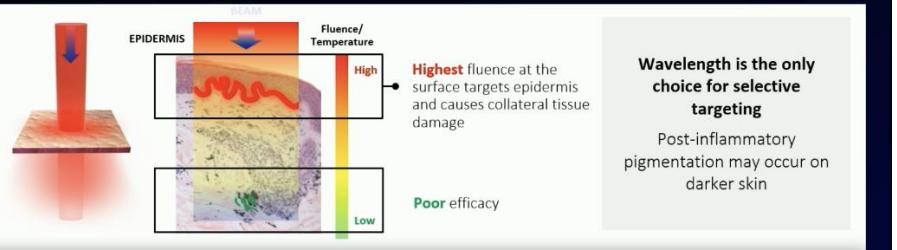
A New Class of Intradermally Focused Lasers enabling 3D Precision Targeting

CONVENTIONAL LASERS/CURRENT SOLUTIONS

Collimated beam affects all tissue in the beam path



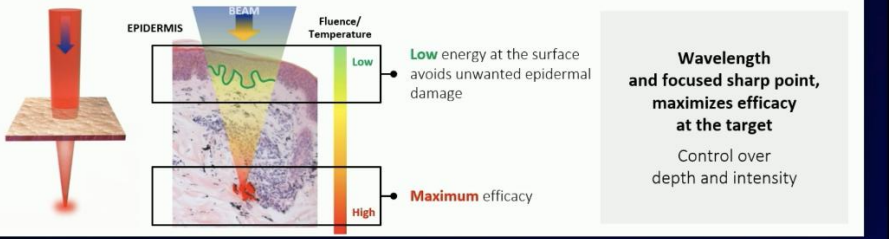
Highest fluence at the surface targets epidermis and causes collateral tissue damage

Poor efficacy

Wavelength is the only choice for selective targeting

Post-inflammatory pigmentation may occur on darker skin

Sharp focus with three-dimensional spatial selectivity



Low energy at the surface avoids unwanted epidermal damage

Maximum efficacy

Wavelength and focused sharp point, maximizes efficacy at the target

Control over depth and intensity

FOCAL POINT TECHNOLOGY™

Unparalleled **precision** and **personalization**

Novel Geometry

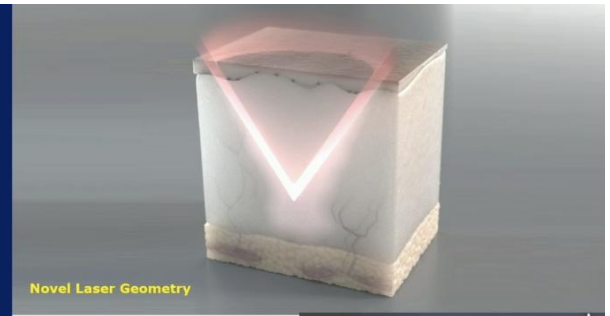
A breakthrough in laser design with conical geometry

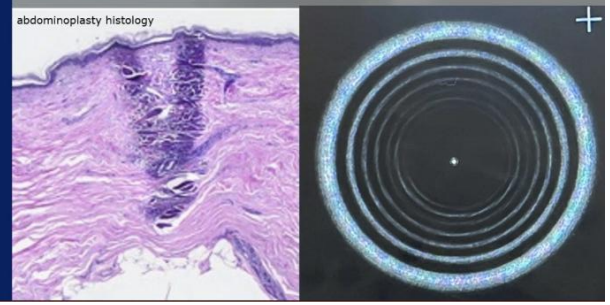
Depth Control

Deposit maximum energy to preferred depth from superficial to deep in dermis (or both)

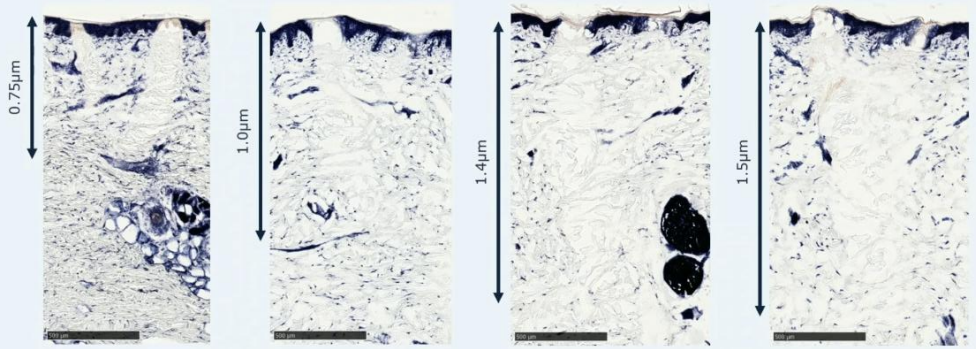
Epidermal Sparing

Deliver optimal therapeutic energy to desired depth with controlled epidermal injury





Unique Ring Geometry enables safe treatments above 70 mJ: In vivo histology at 125-200mJ*



*FDA-cleared up to 150 mJ

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Before & After

Treated up to 150 mJ

Standard Lighting VISIA-CR Canfield Scientific

Baseline

Post-treatment

Brow/Eyelid Lift

Before & After

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Lesiones vasculares

KTP on the way

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Getting the Red Out: Conclusion

Treating PWCM early appears to be safe and effective

PDL/595nm remains workhorse but **KTP/532nm is gaining traction**

New drugs for vascular indications are becoming available

While still in development, **optical imaging and genetic testing may help with treatment planning**

17

Pollner A, Fernandez Faith E, Blieden L, Kelly KM, Metry D. Port-wine Birthmarks: Update on Diagnosis, Risk Assessment for Sturge-Weber Syndrome, and Management. Pediatr Rev. 2022 Sep 1;43(9):507-516. doi: 10.1542/pir.2021-005437. PMID: 36045161.

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Melasma

Un viejo desconocido

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C’mon folks! Surely, we can figure out what melasma and PIH really are, then fix them.

Hey, the future is what we make it.

- El melasma es más que pigmento.
- La luz visible importa.
- El componente vascular puede cambiar la estrategia.
- Menos agresión, más constancia.
- El mantenimiento no es opcional.

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Inyectables y neuromoduladores

¿Herramientas formativas?

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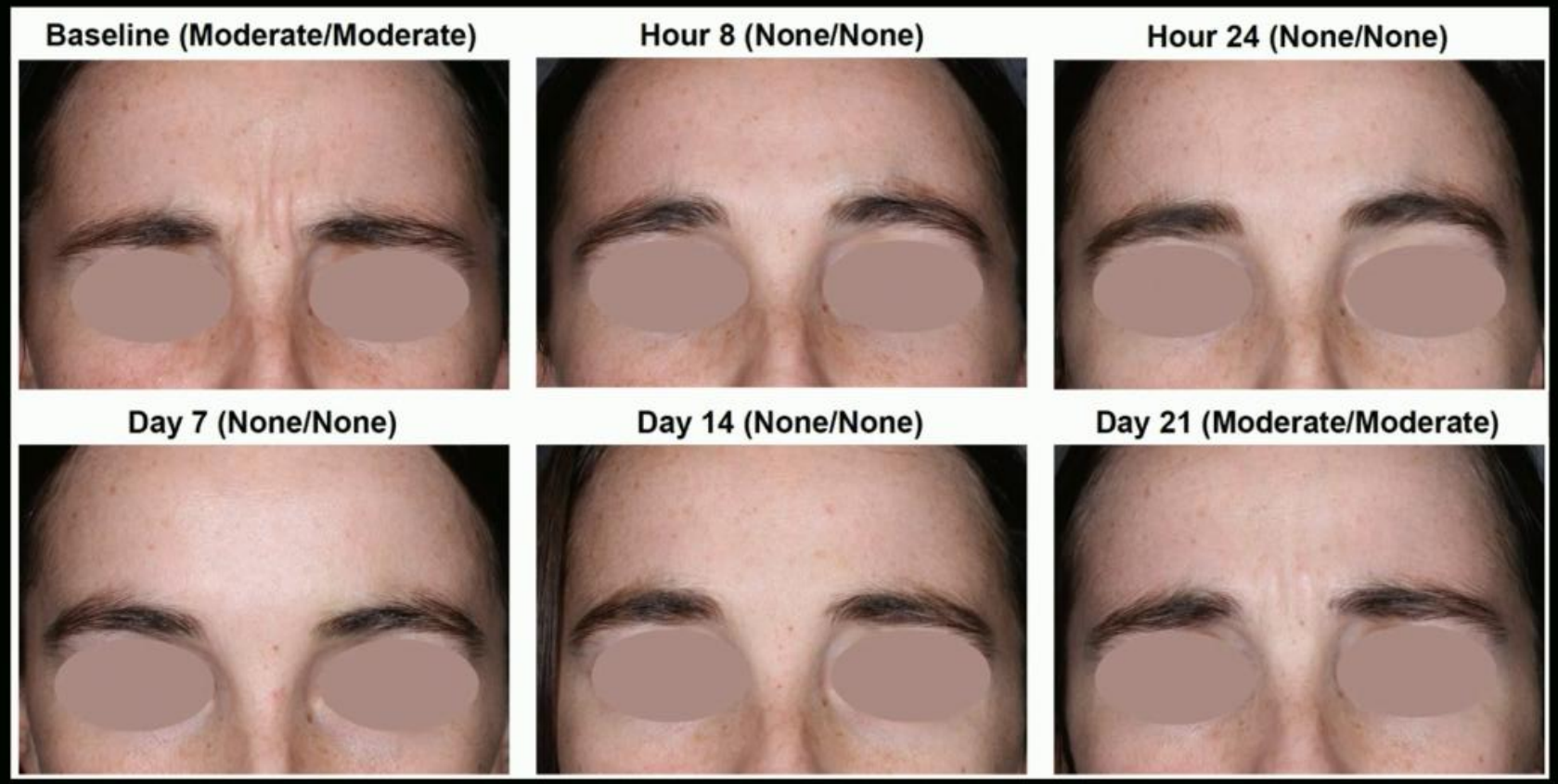
TrenibotulinumtoxinE



Rosalyn George, Jason K Rivers, Brenda LaTowsky, Deanne Robinson Mraz, Chung-Yi Charles Chiang, Grace West, Sandhya Shimoga, Amy S Weitzenfeld, Joan-En Chang-Lin, Edward Lain. Safety and Efficacy of TrenibotulinumtoxinE for Treating Glabellar Lines in Toxin Naïve Participants: Results from a Multicenter Phase 3 Study. ASDS Chicago 2025 Abstract Presentation.

Conclusions: Toxins Fillers Next 1 – 5 Years

- ***POTENTIAL***
- Ready to use BTX
- Fast onset, short duration BTX
- Recombinant BTX
- Next gen HA
- CaHA/HA Premixed
- PCL, PLLA
- True regenerative fillers

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El futuro es ahora

Tenemos nuevas herramientas y nos sobra imaginación

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FUNDACIÓN AEDV PIEL SANA ACADEMIA ESPAÑOLA DE DERMATOLOGÍA Y VENEREOLOGÍA

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COMBINED LASER AND TOPICAL RAPAMYCIN

REJUVENATION: ABLATIVE FRACTIONAL CO_2 + PLLA

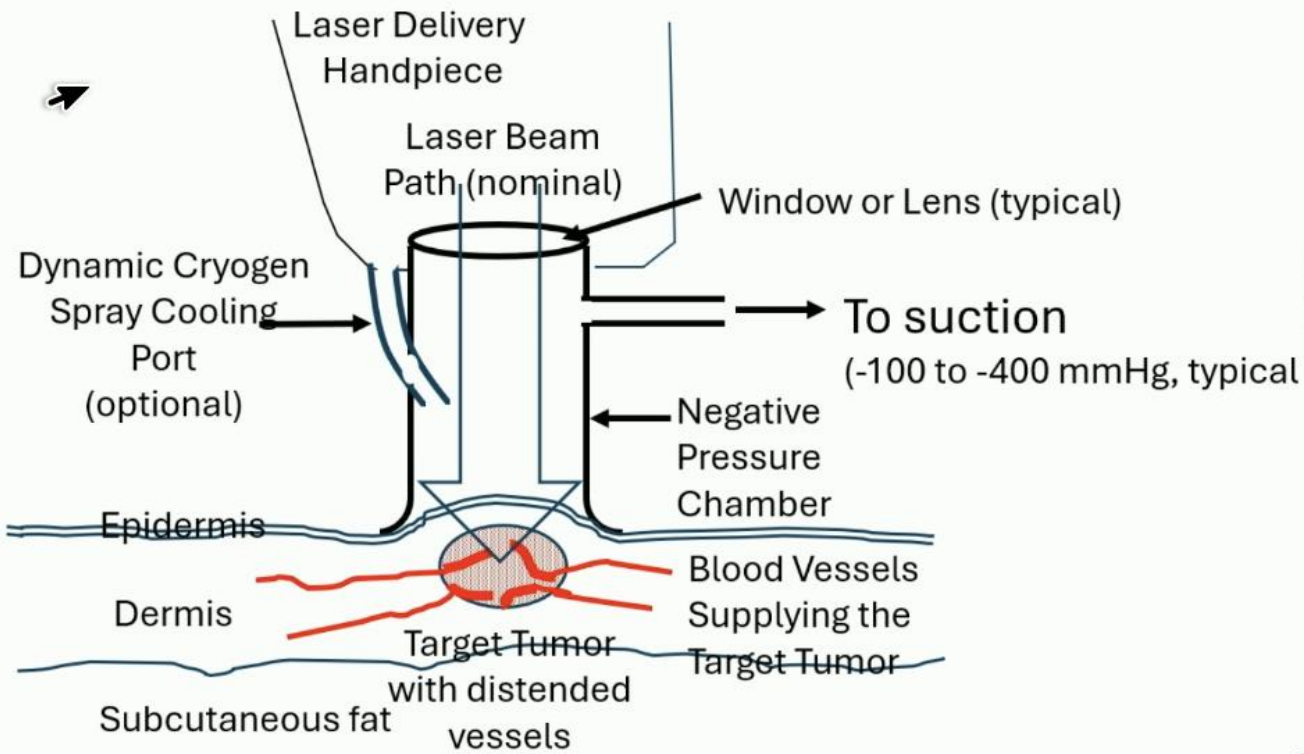
Roy Geronemus

32

A simple idea that worked well

– engorge blood vessels using gentle suction

-- deliver a laser pulse absorbed by blood → cNF infarction



Alexandrite 755nm laser

Smart microbeam lasers – for what?

Any skin target that can be imaged

- White hair
- Eccrine glands
- Sebaceous glands (“pores”)
- Syringoma
- Xanthelasma
- Vellus hair cysts
- Sebaceous hyperplasia
- Flat warts
- Re-texturing the skin surface
- Whatever….

LASERS – new tricks, new combinations, and much much smarter

- Suction for vascular target enhancement
- Focal-point Fractional + Vascular lasers
- Fast computation, imaging, AI, scanning → smart laser systems, robotics
- *Anything that can be "seen" can be "targeted": in ~5 years, smart microbeam lasers will be the rage.*

AAD ANNUAL MEETING
2026

- Los **dispositivos de luz** son cada vez más **inclusivos**: la verdadera innovación es poder **tratar mejor** y con **más seguridad todos** los **fototipos**.

- **Combinar técnicas** no es una opción avanzada; es la forma más inteligente de **conseguir mejores resultados** para el paciente.

- El verdadero **límite** de las **fuentes de luz** está en **nuestra imaginación** para **convertirlas** en una **mejora** real en la **vida** de los **pacientes**.

Denver, Colorado

27 — 31
Marzo

highlights

A un nuevo nivel de conocimiento científico

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