Dermatology and Light: Where we have been Where we are now and Where we are going

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Dermatology and Light:
Where we have been
Where we are now and
Where we are going

Course Overview

1:00-1:20  Kristen Kelly:  Dermatology and Light
1:20-1:35 Roy Geronemus:  The Next Generation of Vascular Targeting Devices
1:45-2:00 Suzanne Kilmer:  Resurfacing options in 2017
2:05-2:20 Arielle Kauvar – Light Based Acne Treatments
2:25-2:40 Arisa Ortiz – New advances in Skin tightening: what's true and what's not?
2:45-2:55 Keyvan Nouri-Light Based Therapy for Pre-Cancers and Skin Cancers – When and How?
3:00-3:15 Jill Waibel– New Insights into Scar Therapy and Laser Assisted Drug Delivery
3:20-3:30 Macrene Alexiades-Armenakis – Dermatologic Devices Adapted for Women’s Health
3:35-3:45 Mathew Avram – Safety and Avoiding Laser Complications
Panel Discussion

Treatment of Cutaneous Vascular Lesions

• Roy Geronemus: The Next Generation of Vascular Targeting Devices Treatment options
• Current Treatment Options
  – Lasers; Light Sources; Other energy devices
  – Adjunctive Treatment

Light as a powerful
Therapeutic and Diagnostic Tool in Dermatology

• Brief History
• Overview of Course
• Evolving Technologies using light for diagnosis and treatment in Dermatology
• Summary

If I had a magic wand….

Wish list of a dermatologist

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SPIE is the International Society for Optics and Photonics
The Moscone Center
San Francisco, California
Treatment of Acne

• Arielle Kauvar – Light Based Acne Treatments

Treatment of Skin Cancers

• Keyvan Nouri - Light Based Therapy for Pre-Cancers and Skin Cancers – When and How?

• Light based options for the future
  – Non-invasive in-vivo real-time diagnosis of skin cancer
  – Light Based Imaging Guided Mohs

Cure Melanoma!

– In the last several years there have been many exciting advances in treatment of advanced melanoma
– In 2016, the best way to cure melanoma remains to catch it early


Imaging of pigmented lesions

– Identify malignant pigmented lesions – Melanoma
– Multiple modalities available – each with limitations

Could we distinguish between normal melanocytes and those of a melanoma…
or are there differences between normal vessels and port wine stain vessels…
Can we target diseased tissue leaving normal tissue unharmed…

Image analysis

Melanoma Diagnosis by Confocal Microscopy: Promise and Pitfalls
Klaus J Busam, Ashfaq A Marghoob and Allan Halpern

Multiphoton Microscopy

Courtesy of M. Balu

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A digitally stained confocal mosaic of basal cell carcinoma. B, Corresponding hematoxylin-eosin–stained Mohs frozen section. The lateral field of view is 2.25 mm (original magnification ≈30 for both). The acridine orange fluorescent contrast and hematoxylin highlight nuclear material in confocal and frozen sections, respectively. The reflectance contrast and eosin denote the cytoplasmic material in confocal and frozen sections, respectively.

A. Improved safety

- Mat Avram – Safety and Avoiding Complications
- Light based options for the future
  - Smart Devices which monitor epidermal temperature and prevent injury

B. Adaptation of Ablative Lasers:

- Traditional and Fractional
  - Suzanne Kilmer: Resurfacing options in 2017
  - Jill Waibel: New Insights into Scar Therapy and Laser Assisted Drug Delivery
  - Macrene Alexiades-Armenakis – Dermatologic Devices Adapted for Women’s Health

C. Enhanced Energy Penetration

- Goals for decades
- Progress has been made but current modalities need further development and new options should be sought
  - “Smart devices” informed by noninvasive skin measurements
  - Rapid, in-vivo non invasive diagnostic skin measurements
  - Methods for enhanced light penetration
Optical Biopsy of Human Skin
“Smart” Guided Therapeutic Energy Devices
Enhanced Energy Penetration

- Collaboration is the best chance for success
  - Engineers
  - Dermatologists/Plastic Surgeons/Radiologists/Ob Gyns/ENT/Pathologists/Neurologists/Ophthalmologists
  - Chemists
  - Molecular biologists

Credit to R. Rox Anderson
I don’t have a magic wand
I do have my colleagues and collaborators
By working together, using our individuals skills and thinking “outside of the box” we can create real magic

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