Dermatopathology and Immunohistochemistry, the Future of Targeted Therapy in Skin Disease

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Dermatopathology
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L. Miller School of Medicine, University of Miami
I do not have any relevant relationships with industry.
• 83 year old woman
• Location lower extremities
• Giant skin colored tumors
• Duration 9 years
Clinical course

- Lower extremities surgery approximately 12 years ago
- Non tender, gradually enlarging, skin colored nodules
- Punch biopsy 2006 read as “Scar tissue”
- Punch biopsy for bacterial, fungal and mycobacteria cultures: Heavy growth of Gram– bacteria, negative for fungi and atypical mycobacteria
Clinical course

- Patient treated with Clarythromycin 500 mg bid and Doxycyclin 100 mg qd for 6 months with no improvement
- Patient comes back for follow up appointment
- Re-biopsy
## Diagnosis

### Nodular Amyloid
- Solitary or multiple lesions
- AL amyloid
- Plasma cells +++
- Amyloid rings
- +/- AL systemic
- Amyloid deposits respect normal tissue
- - Foreign Body Giant cells
- +/- Calcification

### Soft Tissue Amyloidoma
- Solitary lesion
- AA or AL amyloid
- Plasma cells +/-
- No amyloid rings
- No systemic amyloid
- Tumoral amyloid replacing normal tissue
- + Foreign Body Giant cells
- + Calcification
Primary localized cutaneous nodular amyloidosis associated with CREST (calcinosis, Raynaud's phenomenon, esophageal motility disorders, sclerodactyly, and telangiectasia) syndrome.

Shiman M, Ricotti C, Miteva M, Kerdel F, Romanelli P.
This is in contrast with the amyloid A (AA) type which is associated with secondary amyloidosis and is derived from an acute-phase reactant secondary to long-standing inflammation. As the lesions in PLCNA may contain numerous plasma cells, they are best considered as isolated plasmacytomas.

In conclusion, we believe that there is an association between PLCNA and the CREST variant of systemic sclerosis. First, PLCNA has been described in association with autoimmune connective tissue disorders. Second, association between CREST and solitary extramedullary plasmacytomas of the parotid gland has been reported. As PLCNA is considered to be a type of isolated plasmacytoma, such association seems to be relevant. We hypothesize that growth factors and cytokines involved in CREST and other autoimmune diseases may interfere with extramedullary plasma cell proliferation, i.e. in cutaneous amyloidosis. Appropriate reassurance should be given to patients, as the progression rate from PLCNA to systemic amyloidosis, once believed to be 30%, is now believed to be closer to 7%. Despite this, follow-up for the development of systemic symptoms of an associated disorder or a plasma cell dyscrasia is recommended.

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Carlos Ricotta, MD
Maria Mitera, MD
Francisco Kendel, MD
Paolo Romanelli, MD
Miami, FL

References
• 85 year old woman
• Location: Right Scalp
• **Giant** ulcerated tumor
• Duration: 7 years
• Clinical diagnosis: BCC, SCC, AFX ?
Histopathology

- Biphasic tumor composed of two closely intermingled components.
- The epithelial element consisted of islands of basaloid cells with brisk mitotic grade and dyskeratotic cells representing Basal Cell Carcinoma.
- The stromal component showed cells arranged in fascicular pattern with occasional mitoses, pleomorphism and anaplastic features mainly consistent with fibrosarcoma/osteosarcoma.
Diagnosis

- Primary Carcinosarcoma (Metaplastic Carcinoma) of the skin
Immunohistochemistry

• Basaloid component:
  - positive for Keratin, p63, Ki-67 and p53
  - negative for S-100 and HCD

(High Molecular Caldesmon)

Stromal component:
- Positive (strongly) for p53, keratin (slightly)
- Negative for p63, S-100, and HCD
• P63 is a helpful tool in the diagnosis of a primary cutaneous carcinosarcoma.
• Romanelli P, Miteva M, Schwartzfarb E, Ricotti C, Sullivan T, Abenoza P, Nadji M.
Letter to the Editor

P63 is a helpful tool in the diagnosis of a primary cutaneous carcinosarcoma

To the Editor,

Primary cutaneous carcinosarcoma (PCC) is an infrequently reported biphasic tumor composed of intimately admixed epithelial and mesenchymal components both of which must be malignant. It is exceedingly rare to arise primarily in the skin with less than 45 cases cited in the literature to date. The dual pattern of differentiation of closely intermingled epithelial and mesenchymal elements is highly suggestive for PCC. However, it may not be readily apparent on histologic examination because of poor differentiation of either part or unequal proportion of the two cell populations. Hence, difficult cases, immunohistochemical studies can be helpful in elucidating that two distinct patterns of neoplastic differentiation exist. Herein, we contribute to the limited literature on cutaneous carcinosarcoma with a further case and accentuate on the diagnostic relevance of the staining methods, p53 and p53 particularly.

An 85-year-old man with a history of squamous cell carcinoma presented with a tender erythematous papule, centrally ulcerated mass $2 \times 1 \text{ cm}$ on the anterior scalp of several months duration. No history of trauma or radiation therapy in the area could be elicited. After histologic diagnosis, a wider excision was performed with no residual neoplasm reported on the microscopic evaluation of the entire resection. No recurrence of disease was detected on follow up.

On histology, the primary tumor was appreciated (Fig. 1A – masses of pleomorphic basaloid cells with peripheral palisading and intratumoral intercellular bridges between epithelial nests and surrounding mucin-rich stroma [characteristic pattern found in basal cell carcinoma (BCC)] were blended imperceptibly within a heterogeneous sarcomatous stroma. The latter consisted of dysplastic epithelial spindle cell proliferation, multinucleated giant cells and myxoid stromal (fibrofusocellular pattern) (Fig. 1B). In addition, focally calcified osteoid, rimmed by malignant osteoblasts was appreciated (osteocarcinosarcoma pattern). Immunohistochemical analysis showed the carcinomatous part to be positive for keratin, Ki-67, p53 and p63 and negative for S-100 and high-molecular weight caldesmon (HCD). Sarcomatous cells were strongly p53 positive, as well as slightly positive for keratin and Ki-67, but negative for S-100 and HCD. On the basis of a typical histomorphology and immunohistochemical revealing dual differentiation, the tumor was referred to as a PCC: nodular type BCC and fibrosarcoma/osseous metaplasia.

Four main theories exist on the histogenesis of carcinosarcoma. The most widely accepted one is the conversion theory which claims that the sarcomatous component is a metaplastic transformation of the carcinomatous component, i.e. it favors a monoclonal origin with subsequent divergent differentiation. Of note, Carlson et al. showed the development of anaplastic sarcomatous tumors from cutaneous BCC xenografted into the subcutis of immunosuppressed mice. At intermediate stages of development, both epithelial and sarcomatous elements are present. Furthermore, PCCs have shown diffuse uptake of p53 in both the epithelial and the mesenchymal components, which further supports monoclonality and suggests the pathogenic role of the UV radiation. The staining pattern of our case is in accordance to these data too. However, p53 was noted to label more intensely the sarcomatous part that may have implications for the prognosis, indicating that this is the more aggressive element of the tumor.

It has been shown previously that sarcomatoid metaplasia, a progressive loss of cytokeratin expression, is a hallmark of primary cutaneous and more specifically of the squamous cell carcinoma. Furthermore, p53 is a protein homologue of p53, which in the skin is expressed in epithelial cells with proliferative potential. It is thought to be involved in the prevention of terminal squamous stem cell differentiation and is therefore found to label less differentiated cells but not highly differentiated ones. Hence, testing for p53 in poorly differentiated carcinomas is helpful to confirm the epithelial derivation of the malignant population. p53 has been reported recently to be expressed in sarcomatoid/metastatic carcinoma of the breast, in addition to its role as a myogenic marker. However, pure sarcomas and carcinomas were all negative for p53, thus rendering p53 staining highly specific for diagnosing metastatic carcinomas. Nabh et al. showed recently that particularly in PCCs in which the carcinoma is poorly differentiated, staining with p53 can be a key in establishing the presence of an epithelial component. Of interest, transitional areas revealed positivity for p53, whereas no labeling for routine cytokeratin markers was found. To our knowledge, our case is the second one documenting the employment of p53 in the immunohistochemical diagnosis of PCC. We found the basaloid cells to be strongly positive for p53, whereas there were distinct aggregations of cells that did not stain with p53 at all (Fig. 2) and showed only a slight labeling for keratin, thus leading us to conclude that these cells are mesenchymal cells. The focal epithelial differentiation is consistent with the sarcomatoid metaplasia of the tumor.

The present case shows and confirms that a PCC is a neoplasia with a biphasic/divergent phenotype. Staining for p53 and p53 particularly may be used as an adjunct tool in the diagnosis of metaplastic carcinomas of the skin. Nevertheless, this potential implication for the overall prognosis is to be studied further.

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References

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Medical University Graz Austria
80-year-old man
Biopsy site: leg
Clinical diagnosis: skin metastasis
pan-CK -
AE1/AE3 -
Vimentin +
S100 -
HMB-45 -
Melan-A -
CD45 (LCA) -

?
Anaplastic large - cell lymphoma
Lymphomatoid Papulosis

Type C
Lymphomatoid Papulosis

- Histologic types \((A, B, C)\)
- Rare histologic variants \((\text{follicular, syringotrophic, etc.})\)
- Clinical variants \((\text{regional, ALCL-like, etc.})\)
- Represents part of a spectrum of cutaneous CD30+ lymphoproliferative disorders \((\text{ALCL – LyP})\)
Tumor necrosis factor receptor-associated factors

DD: Ly P vs LCAL

Ch. Assaf, JID 2007
85-year-old woman
CAMEL

CARCINOMA + MELANOMA

Melanomatous Carcinoma
Squamo-Melanocytic Tumor
Pigmented SCC
Parasitism of SCC by MM
Collision Tumor
A Rare Case of a Cutaneous Squamomelanocytic tumor:
Revisiting the Histogenesis of Combined Neoplasms

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2 – Cosmetic Dermatology Practice, Tamarac, FL, USA
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Key Words: SMT, collision, squamous cell carcinoma, SCC, malignant melanoma, MM,
cytokeratin, MART-1, S-100, HMB-45, biphasic tumor, intermingled tumor, skin

A rare case of a cutaneous squamomelanocytic tumor: revisiting the histogenesis of combined neoplasms.

Miteva M, Herschthal D, Ricotti C, Kerl H, Romanelli P
NECROLYTIC MIGRATORY ERYTHEMA ASSOCIATED WITH NONFUNCTIONAL ISLET CELL TUMOR

Janelle Vega, MD; a Navid Bouzari, MD; b Paolo Romanelli, MD; b Emma L. Lanuti, BS; b Pasquale Benedetto, MD; a Andy Green, MD; b Franco Rongioletti, MD; d
Francisco Kerdell, MD b

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b. Department of Dermatology and Cutaneous Surgery, University of Miami, Miller School of Medicine, Miami, Florida
c. Department of Internal Medicine, University of Miami, Miller School of Medicine, Miami, Florida
d. Section of Dermatology, DISEM, University of Genoa, Italy

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(e-mail: promanelli@med.miami.edu)
D2-40 highlights lymphatic vessel proliferation of angiolymphoid hyperplasia with eosinophilia.

Miteva M, Galimberti ML, Ricotti C, Breza T, Kirsner R, Romanelli P.

Department of Dermatology and Cutaneous Surgery, University of Miami School of Medicine, Miami, FL 33136, USA.

J Cutan Pathol. 2009 Dec;36(12):1316-22
UM Rapid Wound Pathology Service
venous ulcers (31)
vasculitis (12)
vasculopathy (10)
mixed (9)
diabetic (9)
carcinomas (7)
pressure (7)
hypertensive (6)
infectious (5)
calciphylaxis (CUA) (4)
radiation ulcers (5)
granulomatous ulcers (3)
factitial (3)
-others (37) (Amyloidosis, B.Pemphigoid etc.)

25 US wound healing centers >300 cases
- 65 year old woman from Ohio
- otherwise healthy
- 3 m. h/o a left thigh ulcer, that started
- as a “pimple which eventually began to drain” unspecific cough and fatigue

- 3 consequent antibiotics:
  - Ciprofloxacin
  - Cephalexin
  - Amoxicillin

- referred to a Wound Center
- standard wound care treatment
- Bx: c/w chronic wound
- culture results: no growth
- wound painful, enlarging

- 4th antibiotic was initiated
1st Biopsy Report

Received Date: 07/08/2008 1:49:00 PM
Collected Date: 07/08/2008
Verified Date: 07/09/2008 9:34:31 AM
Accession Number:

Clinical Information
Pre-op Diagnosis: Nonhealing ulcer of unknown origin.
Post-op Diagnosis: Same
Specimen collected by Dr. Sue Webster.

Specimen
Tissue punch biopsy from left thigh ulcer

Gross Description
The specimen is submitted as "tissue punch biopsy from left thigh ulcer" and consists of a punch biopsy measuring less than 0.1 cm. Inked and submitted uncut. MAT/wh 7/08/2008

Microscopic Description
Sections show a minute fragment of tissue composed of neutrophils, fibrin and anucleated squamous epithelial cells. These sections are otherwise histologically unremarkable. GLT/rm

Diagnosis
Left thigh ulcer, biopsy: Acute inflammatory change, NOS.
H&E, low power
PAS (+)
DIAGNOSIS:
Thigh, Left Anterior
NORTH AMERICAN BLASTOMYCOSIS
Note: The PAS special stain highlights multiple thick-walled spores, some with a broad-based bud. AFB, Fite and B&B are negative.

CLINICAL DATA: MRSA vs. ENVENOMATION DOUBT CA, VASCULITIS, CHECK MARGINS

GROSS DESCRIPTION:
Received in formalin is an irregularly shaped fragment of skin measuring 1.7 x 0.5 x 0.4 cm. The specimen is divided into four pieces.

MICROSCOPIC DESCRIPTION:
There is marked pseudoepitheliomatous hyperplasia with multiple intraepidermal neutrophilic microabscesses. Within the neutrophilic abscesses there are thick-walled spores, some with broad-base bud. Within the surrounding dermis there is a diffuse mixed infiltrate of neutrophils, lymphocytes, histiocytes, plasmacells and multinucleated giant cells with no caseation.

Final Diagnosis performed by
Paolo Romanelli, M.D.
Electronically signed 8/7/2008
• Rapid Wound Pathology Service: North American Blastomycosis

• Patient started on Itraconazole: a systemic regimen for 6-12 months

• CXR and Chest CT ordered (prior to and one month after start of therapy)
Follow-up Images

wound closed up in 3 weeks
Chest X-ray and CT: R lower lobe process
Initial CT Aug. 13/08

Follow-up Sept. 12/08

constitutional symptoms resolved completely
• 52-year-old man
• Location: Left clavicular region
• Large ulcerated nodule
• Duration: 7 years
• Clinical diagnosis: Sarcoma?; Lymphoma?
Clinical course

Preceeding total excision:

- Skin incisional biopsy
- Sonography
- Computer Tomography (CT)

Plastic Surgery
Imaging

- **Sonography:**
  - ulcerated mass with copious calcification
  - hypervascularization at the periphery

- **Computer Tomography (CT):**
  - large, well-defined tumor (5x5,5x6 cm) with skin ulceration, abundant calcification
  - no bone involvement
  - abnormal left laterocervical lymphnode enlargement (1,4x1,3 cm)
- proliferation of cells resembling basal (matrical) cells of the epidermis and a rather predominant component of ghost (shadow) cells with calcification and metaplastic ossification. No focus to suggest a malignant nature.
Diagnosis

Giant Pilomatricoma

(Giant calcifying epithelioma of Malherbe)
Results after Plastic Surgery
Giant Pilomatricoma
67-year-old man
Acneiform eruption induced by Everolimus (Certican®)
70 year old man
Metastatic carcinoma
(micropapillary variant)
of the
urinary bladder to skin
Calcinosis Cutis

Infusion and extravasation of calcium gluconate
UM Rapid Wound Pathology Service
venous ulcers (31)
vasculitis (12)
vasculopathy (10)
mixed (9)
diabetic (9)
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25 US wound healing centers >300 cases
65 year old woman from Ohio
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3 consequent antibiotics:
Ciprofloxacin ✓
Cephalexin ✓
Amoxicillin ✓

referred to a Wound Center
standard wound care treatment
Bx: c/w chronic wound
culture results: no growth
wound painful, enlarging

4th antibiotic was initiated

Biopsy is a consult with a pathologist
The consultant matters (or the Algorithm matters)
Surgical Pathology Final Report

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Follow-up Images

wound closed up in 3 weeks
Chest X-ray and CT: R lower lobe process
constitutional symptoms resolved completely
Calculcic Uremic Arteriolopathy (CUA), also known as Calciphylaxis, is a syndrome of cutaneous microvascular calcification of unknown etiology causing painful violaceous skin lesions.

- These then progress to non-healing ulcers and gangrene.
Cutaneous calcification in patients with end-stage renal disease: a regulated process associated with in situ osteopontin expression. Rivet J et al

Arch Dermatol. 2006 Jul;142(7):900-6
Osteopontin is a bone matrix protein produced by osteoblasts.

Although initially isolated from bone, it is localized in many tissues and appears that have increased expression in tissues at risk or known to calcify.

Novel Histopathologic Markers as Diagnostic and Prognostic Tools in Dermatology and Wound Healing

- TNF-alpha
- D2-40
- Mast Cells Tryptase
- Osteopontin
- Collagen IV
Pyoderma Gangrenosum

- Extremely painful
- Cutaneous and mucosal involvement
- Heal with cribriform scarring
- One or many ulcers, may coalesce
Pyoderma Gangrenosum and TNF-alpha


Chronic Wounds and TNF-alpha


TNFα positive in the macrophages (in red)
A Natural Process… Goes Awry

• An elevated level of TNF relative to the body’s own unattached TNF receptors can lead to increased levels of TNF in the skin, which causes inflammation.

• Researchers have found that people with psoriasis often have increased levels of TNF in their affected skin areas.
Study Evaluating IL-17 Immunohistochemistry in Psoriasis

Greg Barron, M.D.
Andrea Maderal M.D.
Alex Villasante
Maria Miteva, M.D.
Paolo Romanelli, M.D.

IRB Protocol # 20100737
Methods

• Institutional Review Board Approval: Protocol # 20100737
• 10 cases of biopsy proven plaque psoriasis randomly selected from psoriasis data bank
• 5 site matched “normal skin” controls from excision specimens
• Standard immunohistochemistry performed on formalin fixed paraffin embedded tissue sections
Psoriasis-Epidermis
Psoriasis Epidermis (High Magnification)
Psoriasis Targeted Therapy: Characterization of Interleukin 17A Expression in Subtypes of Psoriasis

Eric Lee MD, Mina Zarei MD, Charlotte LaSenna BS, Gabriel Villada MD, and Paolo Romanelli MD
Department of Dermatology and Cutaneous Surgery, University of Miami Miller School of Medicine, Miami, FL

Pustular Psoriasis

H&E

Anti-IL-17A antibody staining
Thank you
promanelli@med.miami.edu
FIRST INTERNATIONAL MIAMI-PISA

DERMATOLOGY TO THE STARS SYMPOSIUM

APRIL 15 - 17, 2019
Lois Pope LIFE Center
1095 NW 14th Terrace
Miami, Florida 33136

TARGET AUDIENCE
Dermatologists, Rheumatologists, Internists, Physician Assistants, Nurse Practitioners, Nurses, Fellows, Residents, Medical Students

Providing clinicians with the most recent developments in the diagnosis and management of Dermatologic disorders, including Psoriasis, Cosmetics, Dermatology Highlights

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University of Miami Miller School of Medicine
OVERVIEW
The intent of this activity is educating clinicians on the latest advancements in the fields of dermatology and dermatopathology to solve clinical problems, improve diagnostic accuracy and appropriate treatment options and improve the quality of patient care and improved patient outcomes. Additionally, the intended use is to foster an increased understanding of scientific, clinical or healthcare issues that are likely to contribute to the improvement of patient care.

LEARNING OBJECTIVES
At the conclusion of this activity, participants will be able to:
- Describe the pathophysiology of psoriasis and the associated comorbidities of the disease.
- Diagnose patients with psoriasis appropriately, based on current clinical guidelines.
- Treat patients with psoriasis appropriately, based on current clinical guidelines.
- Summarize the efficacy and safety of fillers, toxins, devices, and techniques currently available in aesthetic and procedural dermatology.
- Identify the considerations in the selection of appropriate filler agents for treating different areas of the face.
- Compare and contrast the efficacy and safety of agents, devices, and techniques currently available in aesthetic and procedural dermatology.
- Determine the appropriate nonsurgical techniques for facial rejuvenation.
- Describe the appropriate use of neuromodulators in the treatment of the aging face.
- Recognize the role of molecular diagnostic testing in relation to its future clinical utility for the prediction of developing hair loss, identify the type of alopecia and predict disease severity.
- Employ novel therapeutic and preventative targeted treatments, and determine response to therapy.
- Describe the basic science of chronic wounds.
- Identify the general and local factors that should be considered in any patient with a chronic wound.
- Recognize the rationale of converting a chronic wound into an acute wound. Describe techniques used to prepare chronic wounds.
- Appraise the appropriate use of different dressings.
- Identify the pros and cons of the adjuncts to wound healing.

CREDIT DESIGNATION
University of Miami Leonard M. Miller School of Medicine designates this live activity for a maximum of 13.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

ACCREDITATION
This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the University of Miami Leonard M. Miller School of Medicine and University of Pisa, Italy. The University of Miami Leonard M. Miller School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

DISCLOSURE AND CONFLICT OF INTEREST RESOLUTION
All conflicts of interest of any individual(s) in a position to control the content of this CME activity will be identified and resolved prior to this educational activity being provided. Disclosure about provider and faculty relationships, or the lack thereof, will be provided to the learners.
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Neda Oliam, M.D. M.H.S.
Mina Zarei, M.D.
### Monday, April 15th, 2019 – Psoriasis

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30am - 09:00am</td>
<td>Breakfast</td>
</tr>
<tr>
<td>09:00am - 09:30am</td>
<td>Keynote Speaker – Preparing for chaos. Robert Kirsner, M.D., Ph.D. (non-CME)</td>
</tr>
<tr>
<td>09:30am - 09:55am</td>
<td>Psoriasis Comorbidities. Srdjan Prodanovich, M.D.</td>
</tr>
<tr>
<td>09:55am - 10:15am</td>
<td>Psoriasis in childhood and adolescence. Teresa Oranges, M.D.</td>
</tr>
<tr>
<td>10:15am - 10:30am</td>
<td>Advances in the understanding of the molecular and microbiology of psoriasis. Fabrizio Galiberti, MD, PhD</td>
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<tr>
<td>10:30am - 10:45am</td>
<td>A real-world experience at our unique Psoriasis Biologics Clinic for indigent patients. Management of comorbid complicated psoriasis with biologic therapies. Mina Zarei, M.D.</td>
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<tr>
<td>10:45am - 11:00am</td>
<td>Corronda Psoriasis Registry - Neda Gihan, MD, B.S.</td>
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<tr>
<td>11:00am - 11:15am</td>
<td>Technological milestones in Psoriasis. Michael Abrouk, M.D.</td>
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<tr>
<td>11:15am - 11:40am</td>
<td>Psoriasis and IL-17 monoclonal antibody. Jerry Bagel, M.D.</td>
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<tr>
<td>11:40am - 12:05am</td>
<td>Epidermal Adipose Tissue: a new target in Psoriasis. Gianluca Iacobelli, M.D.</td>
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<tr>
<td>12:05pm - 12:30pm</td>
<td>New Developments in Treating Psoriasis. Craig Leonard, M.D.</td>
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<tr>
<td>12:30pm - 12:55pm</td>
<td>Keynote Speaker - Vitamin D: Divine Goodness. Camillo Ricordi, M.D. (non-CME)</td>
</tr>
<tr>
<td>12:55pm - 02:00pm</td>
<td>Lunch</td>
</tr>
<tr>
<td>02:00pm - 03:30pm</td>
<td>Psoriasis Therapeutic Panel: Bring your most complicated Psoriasis patients to the experts. Jerry Bagel, M.D., Francisco Kerdel, M.D., Craig Leonard, M.D., Paolo Romanelli, M.D. (non-CME)</td>
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### Tuesday, April 16th, 2019 – Cosmetics

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:30am - 09:00am</td>
<td>Breakfast</td>
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<tr>
<td>09:00am - 09:25am</td>
<td>Ramifications of bruxism. Shino Bay Aguilera, M.D.</td>
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<tr>
<td>09:25am - 09:50am</td>
<td>PRP: Application in Aesthetics. Shasa Hu, M.D</td>
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<tr>
<td>09:50am - 11:00am</td>
<td>Campus Tour</td>
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<tr>
<td>11:00am - 11:25am</td>
<td>Skin toxicities on target therapy: new emergencies and therapy pearls. Gabriella Fabbrocini, M.D.</td>
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<tr>
<td>11:25am - 11:50am</td>
<td>Aesthetic pipeline: what's coming next? Joely Kaufman, M.D.</td>
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<tr>
<td>11:50am - 12:15pm</td>
<td>How to drop that fat without diet. Martin Zaiac, M.D.</td>
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<tr>
<td>12:15pm - 01:30pm</td>
<td>Lunch</td>
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<tr>
<td>01:30pm - 01:55pm</td>
<td>Periocular Rejuvenation. Wendy Lee, M.D.</td>
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<tr>
<td>02:00pm - 03:30pm</td>
<td>Cosmetic Workshop – Joely Kaufman, M.D., Wendy Lee, MD., Martin Zaiac, M.D. (non-CME)</td>
</tr>
</tbody>
</table>

### Wednesday, April 17th, 2019 – Dermatology Highlights

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>07:30am - 08:00am</td>
<td>Breakfast</td>
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<tr>
<td>08:00am - 10:00am</td>
<td>UM Dermatology Management Conference (non-CME)</td>
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<tr>
<td>10:30am - 10:55am</td>
<td>Role of Vitamin D in autoimmune diseases. Marco Infante, M.D.</td>
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<tr>
<td>10:55am - 11:20am</td>
<td>Advances in wound assessment. Valentina Dini, M.D., PhD</td>
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<tr>
<td>11:20am - 11:45am</td>
<td>The new era of virtual biopsy in dermatology – and beyond. Francesca Farnamani, M.D.</td>
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<tr>
<td>11:45am - 12:10pm</td>
<td>Hair and biologics. Maria Miteva, M.D.</td>
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<tr>
<td>12:10pm - 12:35pm</td>
<td>Cutaneous Pediatric Mucinosis: new insights. Franco Bongiotti, M.D.</td>
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<tr>
<td>12:35pm - 12:50pm</td>
<td>Skin Pruritus and Central Nervous System. Gil Yossifovitch, M.D.</td>
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<tr>
<td>01:00pm - 02:00pm</td>
<td>Lunch</td>
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<tr>
<td>02:00pm - 02:25pm</td>
<td>The therapeutic approach to Atopic Dermatitis from topical treatments to biological agents. Marco Romanelli, M.D., PhD.</td>
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<tr>
<td>02:25pm - 02:50pm</td>
<td>The value of Vitamin D in skin diseases. Massimo Papi, M.D.</td>
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<tr>
<td>02:50pm - 03:15pm</td>
<td>What's new in the treatment of Hair and Nail disorders. Antonella Testi, M.D. (non-CME)</td>
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<tr>
<td>03:15pm - 03:45pm</td>
<td>Keynote Speaker. The Last Word or... Beauty is Only Skin Deep? or... The Secret to a Dermatologist’s Longevity and Wellness. Barth Green, M.D. (non-CME)</td>
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