How the Hair Cycle Works

Robert M. Lavker, PhD

Calling the hair follicle the likely “epicenter of cutaneous biology,” Dr. Lavker pointed to the bulge as one of its most important structures. It is the site of hair follicle stem cells (SC), the insertion site of the arrector pili muscle, and very heavily invested in blood vessels and nerves. Another is the matrix—a proliferative powerhouse—because it houses the progeny of hair follicle SCs. With the appropriate signals, these pluripotent cells proliferate and then elaborate the various portions of the hair shaft—the central medulla, cortex (inner root sheath), and cuticle (outer root sheath). Those cells proliferating during the hair follicle’s anagen phase “are probably the single most actively proliferating cells in the body, aside from those in the small intestine,” Dr. Lavker noted. The dermal papilla (aka the follicular papilla)—made of specialized mesenchymal cells instead of standard fibroblasts, with a significant mast cell concentration and a prominent vascular network—is integral to the hair’s proper organization, and it allows the hair cycle to work. The infundibulum is an extension of the epidermis and houses those progeny of hair follicle SCs that are activated when the epidermis urgently needs new cells, eg, during development and wound healing.

Dr. Lavker recapitulated the anagen, catagen, and telogen phases of the hair cycle, adding exogen, ie, the distinct protease-induced period when a hair is shed. The bulge SCs are true SCs, ie, slowly cycling, undifferentiated cells with an unlimited capacity for self-renewal. They give rise to rapidly cycling progeny called transit-amplifying cells with proliferative capacity of their own that ultimately elaborate the various components of the hair shaft.

Functional dermal papillae—a real switchbox of signals—going in and out—are also essential for a normal hair cycle and growth. Their specialized fibroblasts elaborate a variety of signaling factors determined by the hair cycle phase. Especially important are the sonic hedgehog and Wnt pathways. The regulatory factors targeting the dermal papilla include the androgens, 5α-reductase, estrogens, and glucocorticoids.
The bulge activation hypothesis captures how it all works, ie, the dynamics and interplay between the dermal papilla, SC kinetics, and the hair cycle. Dr. Lavker also characterized the variety of molecular signals inducing the transition from one phase to the next, and speculated on the possible role of transit-amplifying cells on initiating catagen.

He closed with research in his lab and others showing that transit-amplifying cells in the infundibulum migrate into the epidermis to help maintain it during times of need. The fact that bulge SC progeny elaborate several unrelated elements—hair shaft, epidermis, and apparently the sebaceous gland—tells us that bulge SCs are multi-potent.
Meeting Patient Expectations:
A Proposed Algorithm for Pattern Hair Loss

Jerry Shapiro, MD, FRCPC

“Hair pattern loss is the most common cause of alopecia we see in our office,” Dr. Shapiro noted. He discussed meeting patients’ expectations, the value of combining medical and surgical therapy, and his “practical algorithmic approach to pattern hair loss.” He used many patient examples and clinical photographs, and provided a summary handout of his talk.

To meet patient expectations, realistic patient education—guided by thorough discussion of patient goals and compassionate counseling—is crucial, and management strategies must be customized. “Promise little, deliver more,” is a rule of thumb.

Strategies are based on: (1) patient age, (2) extent of hair loss, (3) desirability of topical vs systemic agent, (4) hair transplant candidate or not, and (5) patient goal. If the goal is regrowth, medical therapy is usually adequate for the patient with low expectations, but typically combined with surgical therapy when expectations are high. If intermediate expectations, begin with medical therapy with the option of adding surgical therapy after 1 year. If prevention is primary, medical therapy is sufficient. Dr. Shapiro explained separately for men and women—how the interaction between degree of hair loss and degree of treatment expectation influence patient satisfaction, and when/how satisfaction can be improved.

Since surgical therapy adds hair and medical therapy attempts to prevent further loss, “it seems logical to combine them,” and more than 70% of hair transplant surgeons do. Surgery without medical therapy eventually becomes inadequate as deterioration continues. Medical therapy not only optimizes surgical results, often significantly, but usually rapidly enough to require only 1 to 2 transplant sessions.

Dr. Shapiro’s algorithms divide his patients into two groups based on extreme vs. less extreme degree of hair loss. These algorithms are summarized in the accompanying charts, and can be reviewed in full detail in: EK Ross & J Shapiro. Management of hair loss. Dermatol Clin. 2005;23:227-43.

Dr. Shapiro also provided his selection criteria for transplant surgery candidates and briefly reviewed current techniques, which have changed radically over the past 15 years.
The NIH budget for biomedical research has been cut by the largest percentage in over 30 years, setting the stage for more intense competition for funds. Bruce U. Wintroub, MD, DF President, sums up the situation: “The worsening NIH budget cuts will inevitably put more pressure on academic dermatology departments whose faculty depend on federal funding to support a high quality scientific program. This makes it even more difficult to embark on a scientific career—a pathway that has never been easy or secure.”

**The Dermatology Foundation’s role in supporting tomorrow’s leaders in the specialty is more important than ever given this year’s cutbacks in funding from the National Institutes of Health.** To vie for NIH grants, applicants must be of the highest caliber possible and propose the most relevant and top quality projects. The DF provides support to talented investigators early in their careers when they need to gain the substantive research experience and initial data that will make them successful competitors for NIH career development awards. Given the increased challenges brought on by reduced federal funding, additional support is needed to ensure that the specialty’s best and brightest can continue to compete effectively for NIH funds.

**Addressing This Challenge**

The Dermatology Foundation must increase its capacity to make the early years of career development possible for tomorrow’s teachers and researchers. The DF’s Research Awards Program is positioned to help the specialty through its offering of multi-year career development awards.

Dermatology has been furthered by the DF’s career development awards because “they have allowed gifted young, academically focused dermatologists to do the quality research enabling them to become truly competitive for NIH funds,” says Stuart R. Lessin, MD, Director of Dermatology at Fox Chase Cancer Center. The result has been an ever-increasing pool of dermatologists applying each year for NIH career development awards, typically the necessary step for competing successfully at the next level of independent NIH funding—the RO1 grant.

**Individual Giving Is Key**

The Dermatology Foundation can provide this much needed additional support for the specialty’s future leaders if dermatologists increase their annual giving.

“As long as individual dermatologists continue to raise their support... dermatologists will remain competitive for NIH funds regardless of the ups and downs in NIH budgets.”

—Stuart R. Lessin, MD
Director of Dermatology at Fox Chase Cancer Center

The DF website, at www.dermatologyfoundation.org, provides a helpful overview of the different membership levels and benefits. Any questions can be directed to the Dermatology Foundation at 847-328-2256.
New Leaders Society Members Recognized

Twenty-seven new Leaders Society members have made commitments to shape the future of dermatology. All are making leadership gifts to strengthen their specialty through the investment in the young researchers funded by the Dermatology Foundation each year. Each knows that their dues contribution matters in retaining dermatologists as THE experts in the care of dermatologic diseases. To join them, contact the Dermatology Foundation at 847-328-2256 or via email at dfgen@dermatologyfoundation.org

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WISCONSIN
Manish J. Gharia, MD
∞ Deceased (Memorial)

The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), the NIH arm that funds dermatologists, identifies the range of competing research applications it can fund each year. These planned funding levels are defined in terms of “percentile paylines.” Applications are ranked, and the payline pinpoints the cutoff for the grant proposals that can be funded.

The percentile paylines have narrowed over the past five years. In 2001, NIAMS elected to fund competing research grant applications from the 1st to the 24th percentile. This year, diminished funds have sliced nearly ten points off this range—with the percentile cutoff now at 14.5. Additional cuts in NIH funding will continue to narrow the range of qualified grant applicants receiving federal support.

To position successfully for NIH research grants amidst this heightened competition, the specialty’s future leaders and researchers will need to be fully prepared. Preparation means the kind of substantial research experience and preliminary data that are enabled by the Dermatology Foundation’s Research Awards Program.

Competition for NIH Research Project Grants Intensifies

The latest annual NIH budget cuts in biomedical research will undoubtedly make it more difficult for dermatologic investigators to obtain federal funding. This compounds the progressively stronger competition for research support already facing the specialty in recent years.

Source: www.niams.nih.gov
The Many Faces of Cicatricial Alopecia
Elise A. Olsen, MD

Dr. Olsen uses the term cicatricial alopecia to indicate permanent hair loss, which can result from developmental processes, infiltrative processes, or inflammation. Her focus here was on inflammatory causes.

The infundibulum—running from the follicle opening on the skin to the opening of the sebaceous gland duct—is often involved, as it is exposed to environmental pathogens and colonized with bacteria and often fungus and Demodex. The isthmus—from the opening of the sebaceous duct down to the insertion of the arrector pili muscle—is always involved in cicatricial alopecia, probably secondary to the involvement of the bulge or hair follicle stem cells.

Dr. Olsen provided the diagnostic hallmarks she uses for early and late disease, emphasizing the critical importance of early diagnosis throughout her presentation. For early disease, focal inflammation, especially perifollicular inflammation, focal atrichia (pencil eraser-sized areas of hair loss) and/or pustules are clinical clues. Well-established areas of cicatricial alopecia are characterized by the absence of follicular openings.

Dr. Olsen emphasized the critical importance of doing a scalp biopsy early in these patients, especially in African-American patients, to document that a scarring process is developing. Early disease generally requires two biopsies, one from an area of marked or absolute hair loss to corroborate follicular loss, the other from an area with hair and follicular inflammation to try to clarify the process. In late disease, a single biopsy from the periphery of hair loss, especially in an area with inflammation, helps to establish a diagnosis.

The recently developed NAHRS (North American Hair Research Society) classification system for primary cicatricial alopecia uses histopathology to classify neutrophilic and leukocytic disorders. Dr. Olsen provided the tell-tale characteristics and treatment options for the neutrophilic disorders (folliculitis decalvans—including tufted folliculitis, and dissecting cellulitis/folliculitis) and then the lymphocytic disorders (lupus, pseudopelade of Brocq, lichen planopilaris). Histological findings similar to lichen planopilaris are seen in the recently described conditions of frontal fibrosing alopecia and fibrosing alopecia in a pattern distribution (FAPD).

Cicatricial pattern hair loss—which, like FAPD, presents as marked hair thinning in a pattern distribution—has on biopsy the findings of pattern hair loss but with greater inflammation and fibrosis and markedly decreased follicular number. A biopsy demonstrating a diminished number of follicles allows for more realistic expectations of therapeutic outcome.

Dr. Olsen also discussed central centrifugal cicatricial alopecia, a primary cicatricial alopecia common in African-American women, that is typically recognized only when hair loss is extensive and irreversible. Early recognition would permit attempts at altering the progression of hair loss. Treatment recommendations usually include avoidance of certain hair grooming practices and treating any infections that may be present.

Diagnosis of Cicatricial Alopecia

<table>
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<td>• Lack of follicular ostia</td>
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<tr>
<td>• Epidermal atrophy</td>
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<tr>
<td>• Usually only one biopsy necessary (in area of hair with signs of clinical inflammation) since scarring is already obvious</td>
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KEYNOTE ADDRESS: DAY 3

When Bad Things Happen to Good Surgeons
Neil A. Swanson, MD

Dr. Swanson discussed the terrible tetrad, ie, the four basic types of potential complications.

Hematologic complications: The causes are failure to achieve hemostasis, drugs (aspirin and other platelet inhibitors), coagulopathies, patient activity, significant alcohol consumption, and epinephrine (once its vasoconstrictive effect wears off). Prevention begins with administration of epinephrine along with anesthesia, allowing 7–10 minutes to reach the maximum vasoconstrictive effect. During the procedure get good hemostasis. Applying pressure can help. If bleeding is a bit more than expected, take a thorough second look. Consider inserting a small drain. Early postoperative treatment involves a pressure dressing, elevation, and ice. A package of frozen peas is easily available for patients and the package conforms well to the surface shape as it thaws. If necessary, reopen the wound for assessment. Do nothing for a hematoma that does not compromise the wound. For ones that do, if aspirating the wound (using the largest possible needle) fails, open the wound to evacuate it and begin a course of antibiotics.

Infection: Dr. Swanson listed the technique-related physical factors and the various patient factors. Initiate short-term prophylactic antibiotics (maximum 24–36 hours) for the patient with an artificial joint, or with anything artificial implanted within the previous 2 years, or normally requiring antibiotics during dental care. Begin antibiotics the morning of the procedure, with the second dose following the procedure and the third that evening. Wound infections appear between 4 and 8 days postoperatively. Any patient complaining of pain during this period should be evaluated immediately. If an infection exists, remove the sutures for culture and Gram staining, which has become far more important in this time of MRSA and other resistant microbes. Cleanse the wound, pack it, and begin empiric antibiotics. Septra® (trimethoprim-sulfamethoxazole) is appropriate if MRSA is a concern.
**Dehiscence:** Dehiscence can be uncomplicated (from tension on the wound, early suture removal, trauma, or inappropriate activity) or complicated (from hematoma or infection, medication, or a genetic condition). Prevention involves meticulous technique and postoperative care, including careful removal of sutures because of poor wound tensile strength. Dr. Swanson emphasized the preventive value of Steri-Strips, and provides them to his patients. With uncomplicated dehiscence, the wound is simply resutured. With complicated dehiscence, treat the cause, allow the wound to granulate, and do scar revision later.

**Necrosis:** Etiology can involve closure design, hematoma, infection, or smoking (nicotine is a vasoconstrictor). Treat only the cause. Do not debride the eschar, which serves as a biologic dressing. Much hand-holding is necessary.

### Wound Necrosis

**Etiology**
- Closure design/technique
- Hematoma
- Infection
- Smoking

**Treatment**
- Treat etiology
- Do *not* debride eschar
- Time, hand-holding

### Hematologic Complications

**Intraoperative Prevention**
- Use epinephrine
- Ensure hemostasis
- Use pressure
- Take second look; insert drain if necessary

**Immediate Postoperative Treatment**
- Pressure
- Elevation
- Ice
- Reopen wound for assessment if needed

### Wound Infection

**Etiology**
- Physical Factors:
  - Technique
  - Hematoma
  - Time
- Patient Factors:
  - Wound care
  - Immunosuppressive drugs

**Prevention**
- Aseptic technique
- Operative technique
- Prophylactic antibiotics

**Treatment**
- Remove sutures/open wound
- Culture, Gram stain
- Irrigate/cleanse wound
- Packing
- Empiric antibiotics

### Dehiscence

**Uncomplicated**
- Tension
- Early suture removal
- Trauma/activity

**Complicated**
- Hematoma/infection
- Medication
- Genetic syndrome

**Prevention**
- Intraoperative techniques
- Postoperative care
- Steri-Strips
- Careful suture removal*

**Treatment**
- Early, uncomplicated: resuture
- Late, complicated: Rx cause; granulate
- Scar revision at later date

*Wound tensile strength is 3.5% at 1 wk, 20.0% at 1 mo, 80% at 6–12 mo

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**Laser and Light Update 2006**

**Jeffrey S. Dover, MD, FRCP**

**Treating acne:** Lasers and light sources work with acne, Dr. Dover said, explaining that both *Propionibacterium acne* and the sebaceous gland are excellent targets. *P. acne* elaborates coproporphyrins and porphyrins that absorb light. The highly heat-sensitive sebaceous gland shrinks with heat exposure.

Lasers (eg, KTP or pulsed-dye laser) and light sources (eg, blue light) are not, however, the treatment of choice for acne. All are very costly to the patient. In addition, although the appropriate wavelengths of light (in the 400- to 700-nm range) are effective for inflammatory acne, *P. acne* regenerates quite rapidly and thus the benefit is short-lived. Targeting the sebaceous gland with an infrared device (SmoothBeam), clinical data from treating the back show 100% clearing, but the treatment is exceedingly painful. With both the SmoothBeam 1450 nm and the Aramis 1540 nm, Dr. Dover found 70% improvement that was maintained for months. The best results—a 100% response rate—come from combining 5-aminolevulinic acid (5-ALA) (Levulan®) with the pulsed-dye laser (simultaneously targeting both *P. acne* and the sebaceous gland), and allowing subjects to continue topical and/or systemic therapy (M. Alexiades-Armenakas, 2006; *J Dermatol Therapy*).

Recapitulating the various advantages of these monthly treatments (which include eliminating a daily care routine, adverse side effects from topical and oral medications, antibiotic resistance, and Accutane issues) and their various disadvantages, topical and oral medications remain Dr. Dover’s treatment of choice. He chooses lasers/light sources only when other treatments fail or there are concerns with oral retinoids, prior Accutane failures, acne scarring. “We now have handfuls of young patients who had failed traditional therapy and are clear for at least 6 months to 1 year after Smoothbeam treatment.”

**5-ALA:** This drug is finally finding its place in dermatology more than 30 years after the development of photodynamic therapy. The one FDA indication to date is for actinic keratoses (AK). It is also very effective for large superficial basal cell carcinomas (BCC), for actinic cheilitis, “and we use it for photorejuvenation with light to get significantly better results than with light alone.”

The discovery that far less conversion to protoporphyrin IX is needed than had been thought has greatly simplified the procedure and revolutionized patient comfort and down-time. A 30- to 60-minute post-application—followed by blue light, pulsed-dye laser or Intense Pulsed Light (IPL)—is becoming increasingly frequent for achieving good results with AK, actinic cheilitis, superficial BCC, and photaging. Dr. Dover and colleagues’ recently published study found that 5-ALA + IPL produced “dramatically better global scores for treating photoaging” compared to IPL alone, in

(Continued on page 10)
**Microdermabrasion Induces Molecular Changes: Career Development Award in Dermatologic Surgery**

Darius J. Karimipour, MD, a current recipient of the DF’s Clinical Career Award in Dermatologic Surgery, is a Mohs surgeon also interested in cosmetic dermatology. He is frustrated with procedures that are costly for the patient with benefits that are difficult to define. Existing assessments of underlying effects of many cosmetic procedures are inadequate, and their molecular substrate is a mystery.

Dr. Karimipour, an Assistant Professor in the Department of Dermatology at the University of Michigan, was particularly perplexed by his observations with microdermabrasion. He typically uses this procedure for patients with shallow acne scars and photoaging. It works well on 20% of his patients, 20% have minimal results, and the rest fall somewhere between these extremes. Microdermabrasion is said to replace collagen and elastin in the dermis, but this conclusion was based on “crude” histologic assessments characterizing the collagen as plumper in treated skin and providing little understanding of the underlying process behind collagen neogenesis.

“I wanted to look at this molecularly,” he recalls, “to see if the genes involved in collagen remodeling are turned on or not.” The initial phase of this study involved a single microdermabrasion treatment to buttock skin.¹ Serial skin biopsies demonstrated activity in the same wound healing components that are up-regulated from a CO₂ laser procedure, just to a lesser degree: expression of proinflammatory cytokines IL-1β and TNF-α, transcription factors, and then the matrix metalloproteinases that digest and dispose of the dermal matrix. The stage was set for replacement with new collagen, which—as in the clinic—appeared in the treated skin of about 20% of these volunteers.

In his clinical study, Dr. Karimipour is treating photo-damaged facial skin with 6 microdermabrasion treatments given every one to two weeks. In addition to his molecular evaluation, careful photographs are evaluating wrinkles, skin pigmentation, and skin tone. “If these molecular changes are not making a clinical difference in appearance, either this procedure may not be worthwhile,” Dr. Karimipour says, “or we may be able to optimize it to achieve consistently good results.” He has already discovered that maximal molecular change requires both crystal abrasion and negative pressure.² His molecular assessment will also provide an effective assessment standard for comparing different procedures and evaluating new ones.

“In the end, all of this benefits the patient,” Dr. Karimipour emphasizes. “We will be able to counsel patients effectively as to what they can expect clinically and biochemically, and reassure them that there is a clear and tested basis for what we are trying to do.”

Dr. Karimipour is deeply grateful to the Dermatology Foundation for helping to free him from clinical responsibilities and enabling him to undertake this pioneering series of studies.

He knows from colleagues in other medical specialties just how rare this kind of support is. “The DF is fantastic,” he says, “and I believe it is going to help push dermatology higher and higher in the 21st century.”

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March 14–18, 2007 in Amelia Island, Florida

2007 DF Clinical Symposia—Advances in Dermatology

Plan now to attend this cutting-edge, practice-enhancing program.

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This mini-symposium format clarifies and integrates cutting-edge developments within three clinical areas of key importance to today’s practicing dermatologist—the pharmaceutical and biotechnology arenas; procedural and technology advances; and late-phase clinical research.

An A+ From Past Attendees...

- “Well-balanced content with great overview, terrific practical information, and relaxed atmosphere.”
- “Excellent speakers!”
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- “Q & A sessions very helpful!”

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Day 3:
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Go to www.dermatologyfoundation.org to view the full program and registration information.
part because it affects fine lines in addition to skin texture and mottled pigmentation. Results are also faster, with no apparent increase in side effects.

Skin rejuvenation: Of the "very long list of different techniques—all developed by dermatologists and dermatologic surgeons during the past 10 to 15 years"—Dr. Dover focused on specific attempts to overcome difficulties with laser skin resurfacing (LSR). Although still the most effective technique for making highly wrinkled skin look young again, patients “look dreadful for 1 to 2 weeks” (unacceptable to many), and it requires a great deal of technique, skill, and wound healing knowledge. Plus, it is only slightly helpful for sagging skin.

Fractional resurfacing, FDA-approved for treating photoaging, acne scarring and melasma, uses a 1.5µ infrared laser (a Fraxel laser) to lay down 70 to 150µ columns of thermal damage across the skin that extend into the deep dermis. Each column is surrounded by intact skin that provides keratinocytes and fibroblasts, and blood vessels to bring in nutrients, while laser resurfacing denudes the skin and forces the wound to heal from below. The Fraxel laser treats modest wrinkles as well as dyspigmentation, unlike the CO2 laser; it works well off the face; and down-time is limited to redness and swelling for roughly 3 days. The device is costly, and the procedure more painful than originally anticipated.

Plasma skin resurfacing—just FDA approved—is intermediary between fractional laser resurfacing and LSR for aggressivity and down-time. This non-thermal event uses nitrogen gas to induce a plasma that leads to an excited energy state. The serous crust that forms acts as a biologic dressing while a totally new epidermis forms underneath, sloughing by day 7. Patients may be treated at low fluence 2 to 3 times or at high fluence for a single treatment. It works very well for moderately deep wrinkles, not quite up to LSR in efficacy but with down-time of approximately 1 week.

Skin tightening options now go beyond the gold standard face lift to include the ThreadLift, and the non-surgical radio frequency device (led by Thermage)—which warms collagen, thus shortening it. The turning point in improved technique, efficacy, and safety began with laboratory research demonstrating that three passes at low energy achieve far more than a single pass at high energy. Now we also know that monitoring patient experience of pain is critical (to avoid too high an energy level), and that visible tightening during the procedure monitors adequacy. Both physician and patient assessment of efficacy and comfort have increased remarkably.
Nonablative and Minimally Invasive Resurfacing
Ken K. Lee, MD

Dr. Lee recounted the history of nonablative attempts to provide efficacy without the down-time and potential problems of ablative resurfacing. These lasers and other devices do not damage the epidermis. They keep the surface cool and produce direct and indirect collagen damage, but require multiple treatments. They affect extracellular matrix proteins and stimulate new collagen synthesis, although their precise mechanism of action remains unknown. Early discouraging efficacy data came from poorly designed studies, and recent data are "more supportive of improvement with some of these devices." Dr. Lee followed an overview of positive studies assessing several of these lasers with his own approach to nonablative rejuvenation.

The most important element of successful treatment is careful patient evaluation to determine the predominant overall treatment target. Is it primarily pigment and vascular changes on the surface and superficial photoaged wrinkles, in which case nonablative lasers are of benefit? Or is it more dynamic wrinkles where Botox® is helpful, or deep biologic wrinkles and laxity for which ablative resurfacing or face lift is needed, or is there a volume deficit for which fillers are indicated? Patient education establishes realistic goals and expectations. Target initial treatment to "what bothers the patient the most," Dr. Lee emphasized, which will create patient confidence in the remaining treatments.

For vessel and pigment photodamage he chooses IPL (which treats lentigines even in patients of Asian descent), and he uses the vascular laser for a primarily vascular problem. He adds photodynamic therapy (PDT) when appropriate, noting its significant contribution to treating overall photodamage. Superficial wrinkles and scars require 5–6 treatment sessions, cautioning the patient to expect subtle to mild improvement. Dr. Lee discussed his experience of the pluses and minuses in using Thermage for skin laxity, noting the ideal candidate as a woman in her 40s with moderate jowling. Improvement appears over 2–6 months and lasts for approximately 2 years.

In summary: he treats the surface with IPL or pulsed dye laser, often adding 5-ALA; for deeper treatment he uses an infrared or radio frequency device. Adding fillers rounds out the overall improvement.

Nonablative Lasers
- 532 nm KTP
- 585-95 nm Pulsed Dye
- 1064 nm Nd:YAG
- 1320 nm ND:YAG
- 1450 nm Diode
- 1540 nm Er Glass
- Intense Pulsed Light

5-ALA + IPL Photorejuvenation
- Adjunctive use of ALA with IPL provides significantly more improvement in:
  - Global photodamage
  - Mottled pigmentation
  - Fine lines
- No significant increase in side effects
- Combination treatment provides better results and in fewer treatments

www.dermatologyfoundation.org Summer 2006      11
Most soaps are not acidic enough for optimal enzyme function, and their harsh natural surfactants are drying. Syndet bars, like Dove, use milder synthetic surfactants that are proven less likely to damage the SC. Liquid cleansers are more amenable to the inclusion of emollients, but not all brands use them. In a 5-day leg wash study comparing the mild, low-surfactant cleanser Cetaphil with Dove’s emollient liquid cleanser, the Dove cleanser preserved more water content and possibly showed some reparative effect.

Regarding moisturizer basics, humectants provide the only way to retain moisture in the skin as long as there is an occlusive or emollient on top to prevent it from evaporating. Na-PCA (the sodium salt of pyrrolidone carboxylic acid) is the most effective humectant, and ceramides are a highly effective emollient that is increasingly found in commercial products. Dr. Tharp noted the study assessing TriCeram (applied twice daily for 12 weeks, then once daily for 8 weeks) for children with atopic dermatitis who continued on their regular regimen. SCORAD improved rapidly, and transepidermal water loss (TEWL) fell considerably. Electron microscopic assessment of the skin showed that TriCeram replaces the lost lamellar layer of the SC.

The Aging Face: Analysis and Treatment Options

Roberta D. Sengelmann, MD

Dr. Sengelmann summarized what happens with our faces as we age, and provided a distillate from her years of experience with an overview of the interventions she finds helpful and how she uses them.

She detailed the variety of alterations that take place in skin, volume, and bone, as well as extrinsic (especially sun exposure and smoking) and intrinsic (largely genetically determined) factors in aging. Her goal is to restore some of the attributes of the young face to provide a refreshed appearance by restoring the skin, contouring the soft tissues, and lifting/resuspending sagging tissues. Dr. Sengelmann cited her “five R’s”: Relax (with Botox®), Restore volume (with fillers, fat, implants), Resurface (with peels, lasers), Redrape (with lifts), and Redefine (with liposculpture).

Botox®: Dr. Sengelmann does not always follow the standard injection sites in the literature, but rather lets the patient’s anatomy guide her treatment. She illustrated the sites she uses for frown lines, brow shaping, crow’s feet, forehead lines, and lip enhancement. In treating crow’s feet, stay above the zygomatic notch to avoid facial droop and an asymmetric smile. With lips, the key is to be very superficial along the vermilion border, which softens radial lip lines and allows a pseudo-augmentation.

Fillers: Fillers can be used to augment an area or to fill in a groove. For filling a superficial line, stay with something fine, eg, CosmoDerm®. CosmoDerm® I is very user friendly for beginners. For more coarse rhytides, she likes CosmoPlast® or Restylane® injected into the mid-dermis with a threading technique. In the deeper dermis and subcutaneous area she uses Radiesse® (calcium hydroxyapatite), and for the volume deficits she injects Sculptr® (poly-lactic acid) along the dermal/subcutaneous junction or autologous fat in the subcutaneous layer. Dr. Sengelmann discussed her approach to facial lipatrophy in HIV patients and their frequent lack of fat for retrieval.

The 5 “R”s of Facial Aesthetics

RELAX: Botox®
REDEFINE: Liposculpture
RESTORE: Fillers, Fat, Implants
RESURFACE: Peels, Lasers
REDAPE: Lifts

Dermal Fillers: Replace What’s Missing!

- Superficial dermis: fine lines
  - Very fine particles: eg, Zyderm®, CosmoDerm®, Restylane®, fine, Hylaform®
- Mid-dermis: coarse rhytids
  - Medium-sized particles: eg, Zyplast®, Restylane®, CosmoPlast®, Hylaform®
- Deep dermis/subcutis: prominent folds and grooves
  - Large particles: eg, Zyplast®, Perlane®, Restylane®, Hylaform® Plus, Radiesse®

Mid-Level Dermal Peels

- My peel of choice: Jessner’s/35% TCA
  - Pretreatment valium
  - Regional nerve blocks
- 5–7 days for complete peeling
- Treat face and neck to blend
- Very effective for improving skin quality

(Continued on page 15)
"I have less itching and flaking!" 

"Who says you can’t have elegant hair using a prescription shampoo?"

Please see full prescribing information on reverse side.

**Safety Information:**
LOPROX® Shampoo is indicated for the topical treatment of seborrheic dermatitis of the scalp in adults. If no clinical improvement is shown after 4 weeks of treatment, the diagnosis should be reviewed. LOPROX Shampoo is contraindicated in individuals who have shown hypersensitivity to any of its components. The most common adverse reactions are pruritus, burning, erythema, seborrhea, and rash. If a reaction suggesting sensitivity or irritation should occur, treatment should be discontinued and appropriate therapy instituted. Avoid contact with eyes; if contact occurs, rinse thoroughly with water. Seborrheic dermatitis may appear at puberty, however, no clinical studies have been done in patients younger than 16 years. There is no relevant clinical experience in patients who have a history of immunosuppression, who are immunocompromised, or who have diabetic neuropathy.

**References:**
LOPROX® SHAMPOO (ciclopirox) 1%

Rx Only
FOR TOPICAL USE ONLY
NOT FOR OPHTHALMIC, ORAL OR INTRAVAGINAL USE
KEEP OUT OF REACH OF CHILDREN

DESCRIPTION
LOPROX® (ciclopirox) Shampoo 1% contains the synthetic antifungal agent, ciclopirox.
Each gram contains 0.016 mL of Loprox Shampoo contains 10 mg ciclopirox. In a shampoo base consisting of Purified Water, USP; Sodium Laureth Sulfate, Disodium Laureth Sulfosuccinate, Sodium Chloride USP, and Lauret-2.

Ciclopirox Shampoo is a colorless, translucent solution. The chemical name for ciclopirox is 6-cyclohexyl-1-hydroxy-2-naphthyl-1H-pyridone, with the empirical formula C₂₉H₂₃NO₂ and a molecular weight of 427.27. The CAS Registry Number is [29945-63-0]. The chemical structure is:

CLINICAL PHARMACOLOGY
Mechanism of Action
Ciclopirox is a hydroxyimine antifungal agent although the relevance of this property for the indication of seborrheic dermatitis is not known. Ciclopirox acts by chelation of polyvalent cations (Fe³⁺ or Al³⁺), resulting in the inhibition of the metal-dependent enzymes that are responsible for the degradation of peroxides within the fungal cell.

Pharmacokinetics and Pharmacodynamics
In a study in patients with seborrheic dermatitis of the scalp, application of 5 mL of ciclopirox shampoo 1% twice weekly for 4 weeks, with an exposure time of 3 minutes per application resulted in detectable serum concentrations of ciclopirox in 6 out of 18 patients. The serum concentrations measured throughout the dosing interval on Days 1 and 29 ranged from 10.1 ng/mL to 13.2 ng/mL. Total urinary excretion of ciclopirox was less than 0.5% of the administered dose.

CLINICAL STUDIES
In two randomized, double-blind trials of patients 16 years and older with seborrheic dermatitis of the scalp applied Loprox Shampoo to their vehicle twice per week for 4 weeks. Patients who were immunocompromised, those with psoriasis or atopic dermatitis, women of childbearing potential without adequate contraception, and pregnant or lactating women were excluded from the clinical studies. An evaluation of the overall status of the seborrheic dermatitis, and the presence and severity of erythema or inflammation, and scaling, was made at week 4, using a scale of 0 = none, 1 = slight; 2 = mild, 3 = moderate, 4 = pronounced, and 5 = severe. Effective treatment was defined as achieving a score of 0 (or a score of 1 if the baseline score was 2.3) simultaneously for status of the seborrheic dermatitis, erythema or inflammation, and scaling at week 4. Ciclopirox shampoo was shown to be statistically significantly more effective than vehicle in both studies. Efficacy results for the two studies are presented in the following table.

Effective Treatment Rates at Week 4 in Studies 1 and 2

<table>
<thead>
<tr>
<th>Study</th>
<th>Ciclopirox Shampoo</th>
<th>Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>220/380 (58%)</td>
<td>60/192 (31%)</td>
</tr>
<tr>
<td>Study 2</td>
<td>65/250 (26%)</td>
<td>32/249 (13%)</td>
</tr>
</tbody>
</table>

Efficacy for black patients was not demonstrated, although only 53 black patients were enrolled in the two pivotal studies.

Microbiology
Ciclopirox is fungicidal in vitro against Malassezia furfur (Pityrosporum spp.), P. ovale, and P. orbiculare. Ciclopirox acts by chelation of polyvalent cations (Fe³⁺ or Al³⁺), resulting in the inhibition of the metal-dependent enzymes that are responsible for the degradation of peroxides within the fungal cell. The clinical significance of antifungal activity in the treatment of seborrheic dermatitis is not known.

INDICATIONS AND USAGE
LOPROX Shampoo is indicated for the topical treatment of seborrheic dermatitis of the scalp in adults.

CONTRAINDICATIONS
LOPROX Shampoo is contraindicated in individuals who have shown hypersensitivity to any of its components.

WARNINGS
LOPROX Shampoo is not for opthalmic, oral, or intravaginal use.

Keep out of reach of children.

PRECAUTIONS
General
A reaction suggesting sensitivity or irritation should occur with the use of Loprox Shampoo, treatment should be discontinued and appropriate therapy instituted.

Contact of Loprox Shampoo with the eyes should be avoided. If contact occurs, rinse thoroughly with water.

Seborrheic dermatitis may appear at puberty; however, no clinical studies have been done in patients younger than 16 years.

There is no relevant clinical experience with patients who have a history of immunsuppression, extensive, persistent, or unusual distribution of dermatomycoses, recurrent or herperes zoster, or persistent herpes simplex, who are immunocompromised (e.g., HIV-infected patients and transplant patients), or who have a diabetic neuropathy.

Information for Patients
The patient should be instructed to:
1. Use Loprox Shampoo as directed by the physician. Avoid contact with the eyes and mucous membranes. If contact occurs, rinse thoroughly with water. Loprox Shampoo is for external use on the scalp only. Do not swallow.
2. Use the medication for seborrheic dermatitis for the full treatment time even though symptoms may have improved. Notify the physician if there is no improvement after 4 weeks.
3. Inform the physician if use of the area shows signs of increased irritation (redness, itching, burning, stinging, swelling, or oozing) indicative of possible allergic reaction.
4. Not use the medication for any disorder other than that for which it is prescribed.

Carcinogenesis, Mutagenesis, and Impairment of Fertility
Long-term animal studies have not been performed to evaluate the carcinogenic potential of Loprox Shampoo or ciclopirox.
Avoid in vitro genotoxicity tests have been conducted with ciclopirox; evaluation of gene mutation in Ames Salmonella and E. coli cell assays (negative), chromosome aberration assays in V79 Chinese Hamster lung fibroblast cells, with and without metabolic activation (positive), chromosome aberration assays in V79 Chinese Hamster lung fibroblast cells, in the presence of supplemental Fe³⁺ with and without metabolic activation (negative), gene mutation assays in the HGPRT test with V79 Chinese Hamster lung fibroblast cells (negative), and primary DNA damage assay (i.e., unscheduled DNA synthesis assay in A549 human cells) (negative). An in vitro cell transformation assay in BALB/c 313 cells was negative for cellular transformation. In an in vivo Chinese hamster bone marrow cytogenetic assay, ciclopirox was negative for chromosome aberrations at a dosage of 5000 mg/kg body weight. A combined oral fertility and embryofetal developmental study was conducted in rats with ciclopirox olamine. No effect on fertility or reproductive performance was noted at the highest dose tested of 3.65 mg/kg/day ciclopirox (approximately 1.3 times the maximum recommended human dose based on body surface area comparisons).

Pregnancy
Teratogenic effects: Pregnancy Category B
Oral embryofetal developmental studies were conducted in mice, rats, rabbits and monkeys. Ciclopirox or ciclopirox olamine was orally administered during the period of organogenesis. No maternal toxicity, embryotoxicity or teratogenicity were noted at the highest doses of 87, 125, 80, and 17 mg/kg/day ciclopirox in mice, rats, rabbits and monkeys, respectively (approximately 13, 42, 54 and 26 times the maximum recommended human dose based on body surface area comparisons, respectively).

Developmental toxicity studies conducted in rats and rabbits with ciclopirox olamine dissolved in PEG 400. Ciclopirox olamine was topically administered during the period of organogenesis. No maternal toxicity, embryotoxicity or teratogenicity were noted at the highest doses of 92 mg/kg/day and 27 mg/kg/day ciclopirox in rats and rabbits, respectively (approximately 31 and 54 times the maximum recommended human dose based on body surface area comparisons, respectively).

There are no adequate or well-controlled studies of topically applied ciclopirox in pregnant women. Because animal reproduction studies are not always predictive of human response, Loprox Shampoo should be used during pregnancy only if clearly needed.

Nursing Mothers
It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Loprox Shampoo is administered to a nursing woman.

Pediatric Use
Seborrheic dermatitis may appear at puberty; however, no clinical studies have been done in patients younger than 16 years.

Geriatric Use
In clinical studies, the safety and tolerability of Loprox Shampoo in the population 65 years and older was comparable to that of younger subjects. Results of the efficacy analysis in those patients 65 years and older showed effectiveness in 25 of 83 (29%) patients treated with Loprox Shampoo, and in 15 of 61 (25%) patients treated with the vehicle. Due to the small sample size, a statistically significant difference was not demonstrated. Other reported clinical experience has not identified differences in responses to the elderly and younger subjects, but greater sensitivity to adverse events in some older individuals cannot be ruled out.

ADVERSE REACTIONS
In 624 patients treated with Loprox Shampoo twice weekly in the two pivotal clinical studies, the most frequent adverse events were itching in 1% of patients, and application site reactions, such as burning, erythema, and itching, also in 1% of patients. Other adverse events occurred in individual patients only.

Adverse events that led to early study medication termination in clinical trials occurred in 1.5% (26/1738) of patients treated with Loprox Shampoo and 2.0% (12/661) of patients treated with vehicle. The most common adverse events leading to termination of study medication in either group was seborrheic. In the Loprox Shampoo group, other adverse events included rash, pruritus, headache, vesicular tachycardia, and skin disorder. In the shampoo vehicle group, other adverse events included skin disorder and rash.

DOSAGE AND ADMINISTRATION
Wash hair and apply approximately 1 teaspoon (5 mL) of Loprox Shampoo to the scalp. Up to 2 teaspoons [10 mL] may be used for long hair. Lather and leave on hair and scalp for 3 minutes. A timer may be used. Avoid contact with eyes. Rinse off. Treatment should be repeated twice per week for 4 weeks, with a minimum of 3 days between applications.

If a patient with seborrheic dermatitis shows no clinical improvement after 4 weeks of treatment with Loprox Shampoo, the diagnosis should be reviewed.

HOW SUPPLIED
LOPROX® (ciclopirox) Shampoo 1% is supplied in 120 mL plastic bottles (NDC 99207/010-10). Discontinue product after initial treatment duration. Store between 15°C and 30°C (59°F and 86°F).

Manufactured for:
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by: Pathene, Inc.
Mississauga, Ontario L5N 7K9
CANADA

PRESCRIBING INFORMATION AS OF FEBRUARY 2003
Resurfacing and lifting: Textural changes and skin redundancy require resurfacing and lifting. Dr. Sengelmann resurfaces either by laser or by chemical peel. She describes these techniques as a “controlled injury” with results and risk profile based on the depth of penetration. These techniques can also be used to improve pigmented disturbances of the skin. Superficial peels—which address skin quality and color—are often performed by trained nursing staff. Patients are started with Jessner’s solution followed by 20% glycolic acid. If well tolerated, she scales up appropriately at the next session. For medium peels—which also stimulate collagen production for reducing wrinkles—her favorite is Jessner’s/35% TCA. Dr. Sengelmann recommends that only a physician perform these due to increased depth and higher risks.

She ended with a brief review of ambulatory aesthetic surgery procedures such as tumescent liposculpture, blepharoplasty, facelifting, and neck lifting.

Resurfacing—What Works
Stephen H. Mandy, MD

The multiple indications for resurfacing include rejuvenation, acne scars, precancerous lesions, surgical and traumatic scars, certain benign tumors, tattoos, and dyspigmentation disorders. Dr. Mandy focused on rejuvenation. He precedes every form of rejuvenation strategy with topical retinoids or alpha-hydroxy acids, noting documentation at the molecular level of their ability to increase collagen synthesis.

Microdermabrasion: Dr. Mandy uses this as adjunctive therapy to enhance results with glycolic acid peels or IPL.

Peels: He uses a variety of superficial chemical peels, noting “a pearl for the day,” i.e., 70% glycolic acid gel (available from Crown Drugs: 215-624-4224). “It is marvelous for peeling the arms, legs, and chest, and does an excellent job on superficial lentigines and on keratoses.” He described how to apply it, then add 10%–15% TCA. There is no down-time. His favorite mid-depth peel is 35% glycolic acid with 35% TCA applied 2 minutes later.

Nonablative technology: Not to repeat ground covered by earlier speakers, Dr. Mandy mentioned only that he personally uses 5-ALA with an IPL device, finding it “incredibly effective on AKs, dyspigmentation, severe rosacea, and severe acne.”

Dermaabrasion and CO2 laser resurfacing: Although laser resurfacing gives excellent results, Dr. Mandy pointed out the various advantages to dermabrasion—which achieves the same depth—and noted a highly supportive comparison study presented in 1998. He pointed out that dermabrasion is far less costly, cold steel injury heals far better than thermal injury and thus there is less down-time, dyspigmentation problems are rare, and he finds the long-term results ultimately much more satisfactory. He called dermabrasion the definitive technique for acne scarring, especially ice-pick hypertrophic scars.

Combination procedures: Dr. Mandy regularly combines modalities. His example was the use of dermabrasion for perioral and periorbital rhytides, with a 35% TCA/glycolic peel for the rest of the face.

Superficial Chemical Peels
- aHA: 35–70% Glycolic acid
- HA: 20–30% Salicylic acid
- Jessner’s solution
- 20–25% Trichloroacetic acid

Peroral Resurfacing Results
1/2 Face Dermabrasion
1/2 Face CO2, Laser
- Dermabrasion healed in 1/2 the time
- Dermabrasion had significantly less morbidity
- Cosmetic results essentially the same


Dermabrasion Treats Rhinophyma

Fillers—Available and What Is on the Horizon
Ken K. Lee, MD

Dr. Lee’s four basic fillers are collagen or Radiesse® (calcium hydroxylapatite) for structure and support, and hyaluronic acid or Sculptraj® (poly-l-lactic acid) for volume. He concentrated on the two new additions—Radiesse® (FDA approved for vocal cord insufficiency and oral/maxillofacial defects) and Sculptraj® (FDA approved for HIV lipoatrophy)—which are used off-label for cosmetic purposes. “They allow contouring and volume effects that were previously available only with fat transfer,” he said.

Anesthesia is necessary, because of the large gauge needles (27-gauge for Radiesse®, 25- to 26-gauge for Sculptraj®) and the absence of added anesthetic. A local infiltration with lidocaine + epinephrine reduces both bruising and pain.

Radiesse®: This calcium hydroxylapatite forms a scaffolding that allows tissue ingrowth for volume and structure that can last for 1 year or a little longer. Injected into the deeper dermis and subcutaneous fat, it is especially helpful for prominent nasolabial folds and marionette lines, and for improving cheek structure. Dr. Lee injects it in two stages (2 months apart) to avoid overcorrecting, and to prolong the duration. He discussed the injection techniques of fanning, depot, and cross-hatching. The pliable nature of Radiesse enables it to be kneaded with the thumb and molded out. Dr. Lee cautions against use for the lips and in other thin areas.

Sculptraj®: This poly-l-lactic acid is a biodegradable polymer that also stimulates collagen synthesis. It can last for 2 years. Dr. Lee does not inject Sculptraj into the deep dermis despite the company’s instructions, as he finds it very difficult to place it there predictably. He stays in the fat–dermal junction, sometimes going a little beyond that, and discussed his injection techniques for

(Continued on page 18)
DF Accepting Applications for 2007 Research Funding

Applications Must Be Received by October 16, 2006

The deadline for submitting applications to the Dermatology Foundation for the 2007 Research Awards Program is October 16, 2006. Funding, which is designed to build the research and teaching careers of the next generation of leaders in medical and surgical dermatology, is available for four types of awards:

Career Development Awards (CDAs) to provide $55,000/year for up to three years and span the spectrum of dermatologic investigation: Physician Scientist CDA, Clinical CDA in Dermatologic Surgery, Medical Dermatology CDA, Clinical CDA in Health Care Policy, and Research CDA.

Fellowships provide $30,000 or $45,000 for one year and include the Dermatologist Investigator Research Fellowship and the Fellowship in Pediatric Dermatology.

Research Grants provide $20,000 for one year.

Program Development Grants provide $10,000 for one year for department infrastructure support.

Award funding will begin on July 1, 2007.

Please visit our website at www.dermatologyfoundation.org for complete information, including detailed application instructions and forms.

Call for Nominations—August 15 Deadline for Annual DF Honorary Awards

Nominations are being accepted until August 15, 2006, for

*The Clark W. Finnerud*

and

*The Practitioner of the Year Awards.*

These coveted awards were created in the 1970s to honor, respectively, a dermatologist whose contributions as a clinical educator are exemplary and a dermatologist who embodies the best in clinical service to individual patients. Guidelines for nominating candidates are available by calling the Dermatology Foundation at 847-328-2256 or e-mailing dfgen@dermatologyfoundation.org.
Proceedings—Part II
CLINICAL SYMPOSIA 2006 FACULTY

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New York University

Jeffrey S. Dover, MD, FRCP
Associate Clinical Professor
Department of Dermatology
Yale University

Adjunct Professor of Medicine
Department of Dermatology
Dartmouth Medical School

Robert M. Lavker, PhD
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Department of Dermatology
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Ken K. Lee, MD
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Lumenis
tunneling and depot effects. Dr. Lee uses a longer needle and fewer injections than the company suggests, finding it easier for fanning and with less risk of bruising or getting a superficial injection when tunneling. After injecting it, Dr. Lee massages it out thoroughly over a diffused area and instructs the patient to do that at home for 5-minute sessions 5 times a day for 5 days.

**Combination:** Because Sculptraj® is helpful for diffuse volume enhancement and Radiesse™ provides structure, he combines them regularly. Three sessions of Sculptraj® to create volume are followed by Radiesse™ in the nasolabial folds and possibly hyaluronic acid and collagen for the lips.

**Before Starting Fillers**
- Know what it’s good for
- Know the duration/touch up
- Know the pain level
- Know where to inject—location & depth
- Know whether to overcorrect
- Know the complications

**Radiesse™ Injection Tips**
- Use local anesthesia at the injection sites
- Use 1-1/4 in. 27-g needle for threading and fanning
- Use 1/2 in needle to inject near oral commissure and nasal ala crease and smaller areas
- Inject only small amount with each pass (0.05 cc)
- Stop injection before exiting skin
- Knead and mold any firm nodules after injection
- Do not overcorrect
- Avoid thin eyelid and lips
- Touch up at approximately 2 months

**Sculptraj® Injection Tips**
- 25- or 26-gauge needle
- Anesthetize the injection sites
- Pre-mix at least the day before
- Warm the product prior to injection
- Inject only on withdrawal
- Inject in the subcutaneous plane
- Massage thoroughly

**Botulinum Toxin—Conventional and Off-Label Application**

**Stephen H. Mandy, MD**

Discuss a patient’s expectations and correct any errors. “I always spend a few minutes having patients make a lot of facial expressions so that I can look at their musculature,” Dr. Mandy said, “because effects are all dose-related and it is essential to understand where I will be injecting and how much I will use.” Men require about twice the dose that women do, sometimes even more.

The dilution he prefers is 2.5 cc of saline, and a vial of 100 units provides 4 units per 0.1 cc. This dilution—more than some prefer—is the easiest way to control the number of units and get the right dispersion, which is about 1 cc in diameter from the injection point. He strongly prefers using 3-cc insulin syringes rather than the standard recommendation, and discussed the variety of advantages he finds. Duration is also dose-related, so 12 units and 20 units provide a similar effect but the latter will last perhaps 2 weeks longer. He tells his patients to expect the effects to last for 2-1/2 to 3 months.

Dr. Mandy does not always follow the FDA-approved facial muscles for the effects he targets. The corrugator is the major frown muscle. For periorbital lines, he injects subcutaneously rather than intramuscularly to avoid bruising and uses 4 to 6 units for each eye rather than the more common 12 to 15 units. It is essential to avoid risking contact with the edge of the zygomaticus muscle. A gummy smile is treated via the levator muscle, with 2 units on either side of the nose. The neck is treated with 8 to 12 units, grabbing the platysmal bands between the fingers and injecting at multiple sites with 1 to 2 units each. This often sharpens or resolves the jawline as well. For bunny lines, inject the nasalis muscle with 2 to 4 units on either side of the nose. Cobblestone chin is treated with 4 units in either side of the mentalis muscle.

Dr. Mandy described the therapeutic use of Botox® to resolve significant facial asymmetry in a young woman with cranial nerve paralysis from a childhood car accident. He also discussed its preoperative use to prevent muscle movement during surgical procedures on the forehead, and during lip dermabrasions and threadlifts.

**Injection Technique**
- Most injection is intramuscular
- Periorbital injection is best subepidermal (not intramuscular) to avoid bruising
- Do not inject below the upper lateral margin of the lower orbital rim or you affect the upper end of the zygomaticus
Tribute Contributions and Speaker Honoraria Can Further Research

The DF offers a few unique ways to fulfill membership contributions.

► **Tribute Contributions** – Consider memorializing a colleague or loved one through a donation to the DF. In addition, you may wish to honor a living mentor, friend, or family member and also provide for the future growth of your specialty. In either instance, the Foundation is pleased to send a letter to the family members of those remembered or those honored.

► **Speaker Honoraria** – You can arrange to have these paid directly to the Foundation, in your honor, or you can endorse honoraria checks to the DF.

For more information, contact the Dermatology Foundation at 847-328-2256.

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**2006 DF–Clinical Symposia Faculty Disclosures (Part II)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Disclosure</th>
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<tbody>
<tr>
<td>Dr. David Cohen</td>
<td>C/Amgen, Inc., Connetics Corporation, Collagenex Pharmaceuticals, Inc.,</td>
</tr>
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<td></td>
<td>Galderma Laboratories, LP, Giuliani Partners, LLC, Needsld, Wyeth Pharmaceuticals, Inc.;</td>
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<td></td>
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<td>Dr. Robert Lavker:</td>
<td>(Not available at time of printing)</td>
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<tr>
<td>Dr. Ken Lee:</td>
<td>G/Allergan Dermatology, Inamed Corporation</td>
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<tr>
<td>Dr. Stephen Mandy:</td>
<td>C/Stiefel Laboratories, Inc., O/Dermik, Sirius Laboratories</td>
</tr>
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<td>Dr. Elise Olsen:</td>
<td>C/Merck, Pfizer Consumer Healthcare, G/Genentech, Inc., Merck, Pfizer Consumer Healthcare, P&amp;G</td>
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<tr>
<td>Dr. Roberta Sengelmann:</td>
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<tr>
<td>Dr. Jerry Shapiro:</td>
<td>G/Merck, C/Merck, Pfizer Consumer Healthcare; O/Pfizer Consumer Healthcare</td>
</tr>
<tr>
<td>Dr. Neil Swanson:</td>
<td>C/Connetics Corporation, Coria Laboratories, Stiefel Laboratories, Inc., G/Inamed Corporation, Stiefel Laboratories, Inc.</td>
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</tbody>
</table>

**Legend:**

G: Grant Research Support; C: Consultant/Scientific Advisor; S: Speaker’s Bureau; E: Employee; M: Major Stockholder; O: Other Financial Support; N: No Financial Relationship; P: Physician Trainer

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L’Oréal Recherche

Mary Kay Inc.

Pfizer Consumer Healthcare

Valetant Pharmaceuticals International

* $1 million pledge
Young Dermatologic Surgeon Volunteers to Keep His Specialty Strong

“Every practicing dermatologist has an obligation to support the DF. It’s that critical to our specialty,” James B. Connors, MD, says.

“The Dermatology Foundation is important to me because, first of all, it focuses on funding research that will directly help my patients,” says this young Mohs surgeon in St. Petersburg, Florida. “Second of all, it provides needed opportunities for future leaders of our specialty.”

After learning about the DF from a colleague in 2002—less than two years after completing his residency, “I realized that it is well worth my time and money,” Dr. Connors says. He joined the DF without delay. Dr. Connors became a Leaders Society member in 2005. This year, he volunteers his time as a Leaders Society campaign volunteer, sharing with colleagues in Florida why it is critical for them to join him in supporting the DF’s mission.

Dr. Connors talks with concern of the worsening financial barriers facing today’s talented young dermatologists who want to remain in academic dermatology to teach and contribute to research progress. Through the Dermatology Foundation, Dr. Connors knows that he is personally helping to provide research career support for these younger investigators at a pivotal point in their development, and thus helping to prevent “the shortage that is otherwise going to become a significant problem for dermatology.”

Dr. Connors knows that the impact of early research career support from the DF is real. He speaks of meeting DF members—current leaders in the specialty—who have told him that their ability to contribute to dermatology rests on the early research funding they received from the Dermatology Foundation. “The DF has been around long enough for us to see that the benefits of what we do are real and tangible,” he says.

He points out that the Leaders Society dues of $1,500 annually “is roughly the equivalent of freezing off one to two actinic keratoses a week. That is minimal compared to what you get in return for helping to support what is truly the future of our specialty.”

Dr. Connors challenges other dermatologists to join him. “When I talk to them about the DF, I explain why I joined, and tell them that as the DF goes, so goes the specialty.”