



DermWorld

directions in residency

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Summer 2021



Raj Chovatiya, MD, PhD, is currently assistant professor of dermatology at Northwestern University.



Yuanshen Huang, MD, PhD, is currently a Mohs fellow at the University of Toronto, Canada.



Philippe Lefrançois, MD, PhD, is currently an assistant professor of dermatology at McGill University.

Secrets of effective research

By Dean Monti, MFA

Research is the cornerstone of dermatology and evidence-based medicine. At some point in your career you may be considering research and will have questions about the process. *Directions* recently talked to three researchers, Philippe Lefrançois, MD, PhD, Yuanshen Huang, MD, PhD, and Raj Chovatiya, MD, PhD, who were all finalists for the prestigious Everett C. Fox Award for their research in 2019.

DW: What factors contribute to good research?

Dr. Chovatiya: Anyone can do research! No matter your scientific or clinical background, all you need is a good question and persistence. You can always figure out the rest as you go along — that’s the fun part!

Dr. Lefrançois: Curiosity is vital — finding the unexplored angle, thinking deeper, challenging the current knowledge. Persistence is definitely a factor — do not give up after project failure, paper rejection, negative comments. And I think you need to be a good communicator — have the ability to summarize findings clearly, write logically, and discuss effectively with other researchers and clinicians.

Dr. Huang: Good research has at least three key elements: a great clinical question (or ultimately

may lead to solving a clinical question in need), originality, and robust methodology. A great question is perhaps the most important, and it should be one that you are passionate about. There are so many clinical questions that can potentially make a great impact on patients’ life! Skin malignancies, inflammatory dermatoses, hair disorders, and pigmentary conditions, to name a few.

DW: How does a research problem evolve? What is the process from choosing a topic to finished research?

Dr. Chovatiya: Finding the right question to ask is the hardest part. Luckily, there is still so much we don’t understand about dermatology. For instance, think about how often you find yourself asking “why” when making diagnostic and treatment decisions in clinic. If your answer to that question is “that’s how my attending did it, and that’s how their attending did it” (we’ve all been there), you already have a good question. The next step is to review the current data (e.g., literature review, talk to experts), so you can understand what is and isn’t known in regard to your question. Finally, you want to partner with a mentor who can help you to form a hypothesis and develop the necessary skills to gather data to test that hypothesis.

see **RESEARCH** on p. 3



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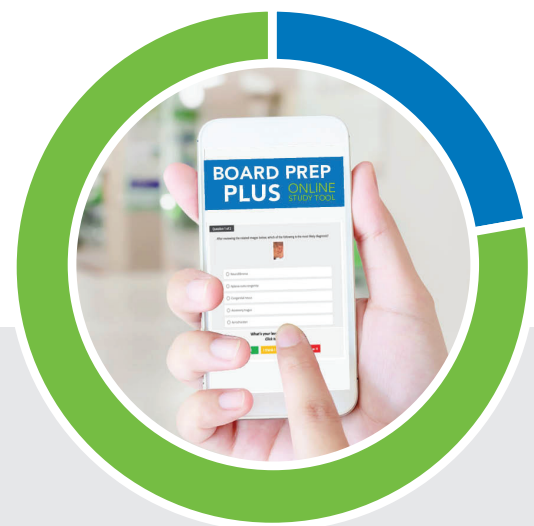
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RESEARCH from p. 1

Dr. Lefrançois: I would advise to choose a field familiar to you, that you are passionate about, and research that uses your existing skills or strengths

DW: Who reviews your research ideas and completed projects before you formally present them?

Dr. Chovatiya: Your colleagues are an invaluable source of real-time feedback when it comes to research. Whether in a formal or informal setting, you should take every opportunity to talk about your findings and see what they have to say — you'd be surprised how often new projects come out of these meetings!

Dr. Huang: One of the key steps is to reach out to potential mentors who are aligned with your interests and can help you carry out the project. Ideally, someone with the expertise to guide and refine the project, and someone who can point you to the right resources for implementation.

Dr. Lefrançois: During our internal academic rounds for our division of dermatology we get feedback from staff dermatologists and residents, and I show it to research supervisors! You can try your partner, family, or friends — if they have some science background, they may have some insights.

DW: What makes a research project stand out?

Dr. Chovatiya: My project was broadly applicable to dermatologists, as it examined the association of common skeletal comorbidities with inflammatory skin diseases that we all see in the clinic and it offered suggestions to improve care for our patients. Patients are ultimately the reason why we do research, so I recommend finding a question that is highly clinically relevant, and then — no matter the type of research performed, or specific techniques utilized — finding a way to connect the findings back to the patient. Despite our varied research backgrounds, we all speak the same language of clinical dermatology.

Dr. Lefrançois: Having a complete story was essential to the research. Also, highlighting the clinical implications from a basic science project. I think it's good to avoid or simplify highly technical details for the target audience. I started my project early to mid-residency, and it required large-scale genomics and computational biology analyses, and molecular biology experiments. I waited until I had fulfilled all of these before submitting my research.

DW: Did your research project have an impact on your future as a dermatologist?

Dr. Chovatiya: My presentation in the Residents and Fellows Research Symposium undoubtedly helped to propel my career forward. I have always been interested in better understanding the health burden of chronic inflammatory skin diseases, and the Fox award was both an incredible honor and validation that I should keep pursuing a career in dermatologic research.

Dr. Lefrançois: The Fox award is one of the important factors that helped me in securing a physician-scientist position starting this summer (50% research, 50% clinical dermatology). But it also boosted my confidence in my chosen career path.

Dr. Huang: It was definitely a great confidence boost and propelled my career forward, as I am interested in pursuing a fellowship and an academic position.

See p. 7 for more tips from Cory Dunnick, MD, who was director of the 2019 Resident and Fellows Research symposium. **DR**



Zeinah AlHalees, MD, is a PGY-5 dermatology resident at McGill University, Montreal.

AlReem Al-Nabti, MD, is a PGY-5 dermatology resident at McGill University, Montreal.



Race for the Case

By Zeinah Z. AlHalees, MD, and Al-Reem A. AlNabti, MD



An otherwise healthy 40-year-old male presented to the dermatology clinic with skin lesions on the right upper arm and right lateral lower leg. He reported the appearance of the lesions a few weeks after his return from a trip to Algeria. His review of systems was negative. On physical exam, two erythematous verrucous plaques were noted on the right upper arm and four ulcerated plaques in a sporotrichoid distribution were evident on the right lateral lower leg. There was no mucous membrane involvement, and no associated regional adenopathy. Parasitized macrophages in the dermis were identified on histopathology with the organisms highlighted by Giemsa stain and CD1a immunostaining. The specimen was also sent for PCR.

1. What is the diagnosis and causative agent?
2. What is the vector responsible for disease transmission?
3. This disease can be classified based on two different classification systems, mention each system with its components.
4. Mention two limitations in culturing the organism.
5. What test is considered to be the most specific and sensitive in diagnosing the disease?
6. What are the indications for systemic treatment of the disease?



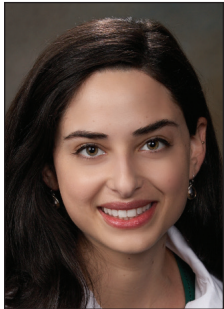
Respond with the correct answers at www.aad.org/RaceForTheCase for the opportunity to win a \$25 Starbucks gift card!

Race for the Case winner (Spring 2021)

Congrats go out to **Naomi So, MD** a PGY-2 resident at Stanford University. She correctly identified juvenile xanthogranuloma in our latest photo feature and provided the most comprehensive answers to the accompanying questions. She has been sent a Starbucks gift card with our compliments!

Dermatopathologic external agents and artifacts

By Lisa Fronek, DO, Taylor Gray, DO, and Thomas Davis, MD



Lisa Fronek, DO, is a PGY-4 dermatology resident at Largo Medical Center in Florida.



Taylor Gray, DO, is a PGY-4 dermatology resident at Largo Medical Center in Florida.



Thomas Davis, MD, is a dermatopathologist with Sagis Diagnostics in Dallas and serves as vice-president of education for the organization.

H&E Findings Related to Trauma, Treatment, and Metabolic Disorders			
Agent	Histopathologic Findings	May Mimic	Additional Notes
Aluminum chloride	-Light blue to gray histiocytes with a granular cytoplasm +/- calcification -Overlying epidermis may be effaced with horizontal fibrosis, vertical vessels, and collagen alteration indicative of scar -Collagen bundles may appear degenerated	Infectious etiology with parasitized histiocytes (histoplasmosis, leishmaniasis)	-PAS, GMS, Giemsa, and/or CD1a stains may be used to exclude an infectious process if needed -The presence of aluminum chloride can be helpful in identifying the previous biopsy site in the case of subtle or superficial scars
Monsel's solution (ferric subsulfate)	-Brown to black granules of iron-laden pigment within macrophages in the dermis -Overlying epidermis may be effaced with horizontal fibrosis and collagen alteration indicative of scar	Tattoo depending on pigment	Stains positively with iron stains such as Perls/Prussian blue (identifies hemosiderin)
Formalin pigment (acid formaldehyde hematin)	Brown precipitate that occurs due to hemoglobin in formalin with a pH < 6		Commonly seen in areas with numerous red blood cells
Keratin granuloma	-Small fragments of keratin surrounded by granulomatous response +/- cholesterol clefts -May see fragments of an epidermal inclusion cyst or pieces of hair follicle deeper to the granuloma	Poly-L-lactic acid (polarizable spiky translucent islands surrounded by granulomatous inflammation)	Non-polarizable; helps distinguish from foreign body and PLLA
Tattoo	Variably sized particles of pigmented material within the dermis. Pigment may be extracellular or within macrophages, +/- granulomatous response	Blue nevus, Nevus of Ota/Ito (melanin pigment is present within melanocytes and macrophages but not extracellular in location)	Black is most common tattoo color (carbon); less commonly red (mercuric sulfide/cinnabar) or yellow (cadmium)
Splinter	-Square or rectangular brown fragment of plant material with many linear striations throughout -Prominent cell walls	Suture	Consider microbial colonization → look for organisms and perform PAS, GMS stains as needed
Suture	-Birefringent braided suture material -Granulomatous response	Splinter	Polarizable
Amalgam tattoo	-Pigmented lesion in the oral cavity -May see black to brown pigment within the BMZ and deposited on collagen and elastic fibers.	Cosmetic tattoo	No significant inflammatory response
Argyria	Small black pigment granules located in basement membrane of eccrine coils		No significant inflammatory response
Ochronosis	Yellow-light brown " banana-shaped " figures within the dermis	Alkaptonuria (identical histological findings)	
Triamcinolone	Blue amorphous or slightly bubbly and granular material occasionally surrounded by histiocytes or deposited in a scar or keloid	Focal mucinosis (stains positively with mucin stains and may be more superficial in the dermis)	Stains negative for mucin stains (Alcian blue pH 2.5, colloidal iron, etc.)
Gel foam	Amorphous, kite-shaped basophilic material with prominent granulomatous reaction surrounding	HA filler response	Stains negative for mucin stains

Dermatopathologic external agents and artifacts

By Lisa Fronek, DO, Taylor Gray, DO, and Thomas Davis, MD

Artifacts Related to Cosmetic Treatments			
Agent	Histological Findings	May Mimic	Additional Notes
Calcium hydroxylapatite (Radiesse)	-Dark brown/green spherical calcific deposits -Generally uniform in size and shape -Variable granulomatous response	Polymethylmethacrylate	Non-birefringent
Hyaluronic acid (Juvederm, Restylane, Revanesse, RHA)	-Pale blue/purple amorphous non-encapsulated material within the dermis -Less granulomatous response	-Focal mucinosis (more superficial in the dermis) -TAC (bubbly and granular)	HA stains (Alcian blue pH 2.5, colloidal iron) positive
Poly-L-lactic acid (Sculptra)	-Multiple well-distributed triangular clear spaces, likened to " spiky translucent islands " within the dermis -Granulomatous response	Keratin granuloma	Polarizable
Polymethylmethacrylate (Artefill, Bellafill)	-Monomorphic clear spheres with surrounding histiocytes	Calcium hydroxylapatite will have more purple, basophilic appearing spheres	Non-birefringent
Silicone	-Empty vacuoles of varying sizes (pseudocystic spaces) surrounded by foreign body giant cells and fibrotic change	-Paraffin -Liposarcoma	
Paraffinoma	-"Swiss cheese"- like holes (pseudocystic spaces) within dermis and fat -Varying amount of fibrosis and granulomatous response	-Silicone	-Secondary to injection of exogenous oils, vitamin E, paraffin injection -Lipid stains (oil red O) will be positive on frozen section material -Also referred to as sclerosing lipogranuloma

Artifacts Related to Mohs Micrographic Surgery	
Agent	Histological Findings
Freeze artifact	Epidermal homogenization with vacuolated keratinocytes; if extensive may produce subepidermal blister
Electrocautery	Keratinocytes appear vertical and parallel to one another; homogenized collagen underneath
Air bubble	Clear spaces due to separation between slide and cover slip
Nicks	Vertical marks made by Mohs surgeon to convey specimen orientation
Venetian blind pattern	Significant tissue folding, wrinkling and bands of light and dark staining within the tissue -Indicative of a particularly dense tissue specimen, loose blade within microtome, or dull surgical blade

Abbreviations:

H&E: hematoxylin and eosin
 BMZ: basement membrane zone
 PAS: Periodic acid-Schiff
 GMS: Grocott's methenamine silver
 TAC: triamcinolone
 HA: hyaluronic acid
 RHA: resilient hyaluronic acid
 PLLA: Poly-L-lactic acid

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Boards archives



The AAD now has more than 100 Boards Fodder study charts!

Check out the archives at www.aad.org/boardsfodder.

Got Boards?



Directions in Residency is looking for new Boards Fodder charts for 2021. We would particularly like to see new charts with **graphic elements!** Contact Dean Monti, dmonti@aad.org with your chart ideas.



Bethanee Schlosser, MD, PhD, is an associate professor in the department of dermatology at Northwestern University in Chicago.

Clinical Pearls

Clinical Pearls help prepare residents for the future by providing them with top tips from experts about what they should know about specific, key subject areas by the time they complete their residency.

Optimizing the genital exam for yourself and your female patients

Bethanee Schlosser, MD, PhD

Genital examination causes angst for patient and physician alike. We tend to avoid things that make us uncomfortable, but action is the antidote to anxiety. With a little bit of time, an organized approach, and a willingness to thoughtfully consider the optimal experience, you can become proficient and confident in performing genital exams. Here are some tips to get you started.

1. Set yourself up for success

Adequate directional lighting is essential. The patient's positioning should allow visual inspection of the entire genital area; for females, the ideal is either the frog-leg position or for adults, the dorsal lithotomy position using stirrups. The prone knee-to-chest position is not recommended as it limits the patient's visibility and may increase feelings of vulnerability.

2. Choose your words (and facial expressions) wisely

We must be mindful of the verbal and nonverbal messages we send. Your patients likely won't use, and may not understand, anatomically appropriate terms for genitalia. Listen to your patient. Adjust the words you use for genital anatomy by coopting her words. Be mindful of your facial expressions as you talk with and examine your patient. Your nonjudgmental, yet compassionate, facial expression can go a long way in inspiring confidence, engendering trust, and providing comfort to your patient.

3. Develop a systematic approach

Having an organized approach helps ensure that nothing gets missed and allows you to focus on your patient's exam findings. I recommend working from the outside toward the midline from anterior to posterior — start with the medial thighs, progressing to inguinal creases, labia majora, interlabial creases, labia minora, and vaginal vestibule; examine the mons pubis, then vulva, perineum, and finally perianal skin. Starting in “less sensitive” areas reduces anxiety and builds confidence for both you and your patient.

4. Look for the normal, the abnormal, and the absent

You'll need to discern whether exam findings are normal or abnormal, physiologic or pathologic, incidental or relevant. Female anatomy varies significantly over the lifespan, so you need to school yourself in normal, and the total body skin exam is a great way to accom-

plish this. You'll need to recognize abnormal findings (erythema, dyspigmentation, erosion, fissure, etc.), and equally importantly, you'll need to recognize the absence of structures (clitoral hood, clitoris, labia minora) due to agglutination (scarring).

5. Mirror, mirror...in my hand

Genital examination inherently makes patients vulnerable. Empower your patient by providing her with a hand mirror to follow along during the exam and point out areas of symptoms and concern helping to ensure you're “on the same page.” This low-tech tool can also help educate your patient about the signs and severity of disease and how to utilize any prescribed therapies.

6. You don't need to (and probably shouldn't) go it alone

Irrespective of sex/gender identification concordance of patient and physician, it is generally recommended that a chaperone be present during any sensitive physical examination (i.e., genital, breast). The chaperone should be discrete, and her positioning should afford the patient as much privacy as possible. You should know and abide by your institutional, practice, and legal requirements and norms regarding the use of chaperones during exams.

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NEW! Clinical Pearls online

The AAD has recently compiled its Clinical Pearls archives from the pages of *Directions in Residency*. The popular feature provides residents with useful tips from experts in dermatology.

Learn more by visiting the archives at www.aad.org/member/publications/more/dir/clinical-pearls.



The AAD has a variety of abstract programs available for the 2022 Annual Meeting,

allowing you to showcase pivotal trial results, new data, and important research that hasn't been previously presented elsewhere.

This is the perfect opportunity to debut your work and gain notable recognition and exposure during your residency.

Go to www.aad.org/am22 for details.

Essential elements of good research

Contributed by Cory A. Dunnick, MD

Cory Dunnick, MD, was director of the 2019 Resident and Fellows Research symposium that included our featured researchers in this issue. She also recently led a resident research session at AAD's VMX 2021. We asked Dr. Dunnick what qualities she looks for when reviewing research projects at AAD meetings. Here are her essentials:



Cory A. Dunnick, MD, is a director of clinical trials in the department of dermatology at University of Colorado.

Resident Life

Florida residents "serve" the public at charity tennis tournament

By Angelia Stepien, DO

For Skin Cancer Awareness Month, the Orange Park Medical Center Division of Dermatology in Florida got into the community and raised awareness on the dangers of cutaneous malignancies and encouraged sun-safe practices. The local outdoor charity tennis tournament Tennis4Cancer drew hundreds to the courts the first weekend of May. It was the perfect place to "Ad in" and make our mark.

The hot, clear blue-sky days provided the opportune backdrop to speak with attendees on the necessity of sunscreen and UPF clothing. We also touched on the dangers of unprotected UV exposure, importance of early skin cancer detection and prevention, as well as how to take an active role in their personal skin health.

As Florida holds a high prevalence of skin cancer, we were met with much enthusiasm and gratitude with many sharing their own stories and experiences with basal cell carcinoma, squamous cell carcinoma, and melanoma. The community was eager to ask questions regarding everything from sunscreen ingredients to skin cancer warning signs. Over the weekend, our residents were able to educate in a fun interactive way while raising funds to fight cancer.

The event allowed our residents to take a break from Bologna and hit the refresh button in a fulfilling way. Connecting with our community outside of the clinic and witnessing firsthand the substantial impact of advocacy and education motivated us to work and study harder to better care for our patients. **DR**



Orange Park Medical Center dermatology residents from left to right: Angelia Stepien, DO; Alexander Howell, DO; Stefanie Altmann, DO; Thomas Brown, DO; Jacquelyn Medina, DO; Blake Robbins; DO; and their residency program coordinator, Leah Todd.



Preetha Kamath, MD, and Anne Harwood, DO, were among the Orange Park Medical Center residents who educated the public on how to take an active role in their personal skin health.



Angelia Stepien, DO, is a PGY-4 dermatology resident at Orange Park Medical Center in Orange Park, Florida.

What's happening in your residency program?



Send a photo and short story to Dean Monti at **dmonti@aad.org**.

Inside this Issue



Taylor Gray, DO, is an incoming PGY-4 dermatology resident at Largo Medical Center in Largo, Florida.

We welcome our new Directions resident advisor, Taylor Gray, DO, an incoming PGY-4 dermatology resident at Largo Medical Center in Largo, Florida. She completed medical school at Ohio University Heritage College of Osteopathic Medicine. Prior to medical school she attended East Carolina University where she earned a bachelor of science in public health while competing for the varsity women's swimming and diving team. Dr. Gray is also a member of the AAD Resident and Fellows Committee, and contributed to this issue's Boards Fodder.

After a year that has been largely dominated by COVID-19, it is so refreshing to hear from talented researchers who were finalists for the Fox Award at one of the AAD's recent Resident and Fellows Research symposiums. These physician scientists have dedicated much of their careers to research, and by doing so have undoubtedly benefitted the lives of many patients.

As a resident, the research process can be daunting. Furthermore, it can be hard to believe you have anything to add to the conversation when surrounded by brilliant and more experienced minds. However, through engagement with experienced mentors, persistence, and hard work, residents are able to participate in, and even spearhead, very meaningful projects! Aside from advancing the field of dermatology and bettering patient care, research endeavors serve other beneficial roles for residents and practicing dermatologists alike.

Many of my mentors have expressed the sentiment that remaining involved with research not only keeps them up to date on the ever-changing field of dermatology but also gives their career a diversity that helps protect against burnout. Research also serves as an avenue for self-improvement, deeper understanding of complex topics, and my personal favorite, a way to engage medical students interested in the field. At my dermatology program, like many all over the country, we have an opportunity to meet students who have the goal of matching into a dermatology residency program.

I have found that working on research projects, or even interesting case reports, is a very organic way to foster relationships with these students while allowing them to develop a skill set that will be invaluable in their future careers. After reading about the interesting research topics highlighted in this issue, I hope many of you share my renewed sense of motivation to pursue projects of interest and I wish you all the best as we begin a new academic year! **DR**

Attention residents!

The Resident Quality Improvement Project Award is for residents engaged in quality improvement projects that help meet requirements for ACGME accreditation. Recipients are invited to reveal their projects at the 2022 AAD Annual Meeting and receive a stipend for data collection, materials and supplies, and travel to the Annual Meeting. Apply today!

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