2017 RESEARCH AWARD RECIPIENTS

MOVING SCIENCE FORWARD AND IMPROVING PATIENT CARE
Thanks to the generosity of its members and industry supporters, the Dermatology Foundation bestowed $2.6 million in funding to 52 promising individuals for projects spanning all areas of dermatology.

The DF Mission

The Dermatology Foundation is the leading private funding source for skin disease research and career development of physicians and scientists.

The DF provides research support that helps develop and retain tomorrow’s teacher and researchers in dermatology, enabling advancements in patient care.
The Foundation's Board of Trustees is pleased to present the 2017 research award recipients. The Trustees take pride in supporting these individuals and look forward to watching each advance and contribute to the field of dermatology.

**CHARLES & DANEEN STIEFEL SCHOLAR AWARD in Autoimmune &/or Connective Tissue Diseases**

This award provides $100,000 in annual support for up to three years for salary and/or project expenses. It was designed to support investigators committed to elucidating the basis, pathophysiology, clinical manifestations, and/or treatment of autoimmune and/or connective tissue diseases affecting adults and/or children. The Stiefel Scholar Award supports an outstanding early to mid-career investigator with an established trajectory of excellence in basic, translational and/or clinical science.

To receive a second and third year of funding, a Stiefel Scholar Award recipient must demonstrate substantial progress in his/her funded project. The following individuals have met the high standards for renewed support of their valuable research.

**Aimee S. Payne, M.D., Ph.D. / Year 3**
University of Pennsylvania
*Defining Peripheral B-Cell Tolerance Checkpoints in Pemphigus to Improve Therapy*

Pemphigus is a life-threatening autoimmune blistering disease that has no FDA-approved therapies. Anti-CD20 B-cell depletion is one of the most effective treatments for pemphigus, although approximately 80% of patients relapse and require retreatment. This risks side effects including fatal infection. Because newly developed therapies deplete different B-cell subsets, it is essential to identify which subsets harbor the pathologic autoimmune B-cells in pemphigus, as these are the subsets that therapy should target. The proposed studies will allow us to understand how best to use B-cell depletion therapies in pemphigus, with the goal of disease cure rather than just disease control.

**Michael D. Rosenblum, M.D., Ph.D. / Year 3**
University of California, San Francisco
*The Role of Regulatory T Cells in Hair Follicle Homeostasis and Alopecia Areata*

Therapies that enhance the body’s ability to control the immune system have the potential to resolve inflammation with minimal side effects. The overall goal of this grant application is to understand how the immune system controls inflammation around hair follicles and to determine whether this inflammation can be controlled using a novel therapeutic protein. Results from this research may have a profound impact on patients suffering from alopecia areata and other forms of inflammatory hair loss.
Career Development Awards

The most competitive of the Foundation’s early career awards, career development awards (CDAs) provide $55,000 in annual salary support for up to three years. The DF provides a variety of CDAs intended for individuals who exhibit exceptional potential to contribute to the advancement of dermatology. These awards provide recipients with the opportunity to focus on developing the data and experience necessary to successfully compete for future funding.

Clinical Career Development Award in
Health Care Policy/Public Health

Arianne Shadi Kourosh, M.D., M.P.H.
Harvard Medical School

**Avatoras: A Telehealth Innovation to Address Access and Compliance Barriers for Chronic Skin Disease**

Avatoras is a teledermatology application for follow-up visits for skin disease through video-conferencing. This project will explore if it can provide equal quality of care and satisfaction for patients compared with in-person doctor visits, and thus determine if this healthcare model can serve as a practical and cost-effective option for dermatology visits for patients who face barriers in obtaining dermatologic care.

Megan Noe, M.D., M.P.H.
University of Pennsylvania

**Risk of Hospitalization for Pneumonia in Adults with Chronic Skin Diseases**

Infections, including pneumonia, are common causes of hospitalization in adults with chronic skin diseases. The purpose of this study is to determine the risk of pneumonia hospitalization and identify predictors of influenza and pneumonia vaccination, as they represent modifiable risk factors. These results will improve patient care by identifying patients most at risk for hospitalization from pneumonia and identifying opportunities to improve vaccination practices.

Clinical Career Development Award in
Dermatologic Surgery

Jeremy R. Etzkorn, M.D.
University of Pennsylvania

**Coherent Anti-Stokes Raman Spectroscopy for Basal Cell Carcinoma Diagnosis and Surgical Management**

Many patients present for diagnosis and treatment of basal cell carcinoma. The goal is to develop a noninvasive diagnostic tool (avoiding biopsy) producing a rapid, objective evaluation of the skin. The project will use an amplified version of Raman spectroscopy that requires minimal operator training, and evaluate the utility of this tool for basal cell carcinoma diagnosis and for streamlining Mohs surgery.

Physician Scientist Career Development Award

Marlys S. Fassett, M.D., Ph.D.
University of California, San Francisco

**IL-31: Coupling Itch and Rash in Atopic Dermatitis**

Itch ranks foremost among frustrating symptoms of atopic dermatitis. We hypothesize that IL-31, an itch- and atopic dermatitis-associated cytokine, dynamically modulates both skin inflammation and itch sensation. We will use genetic mouse models to map IL-31’s pathways and presence, reveal its activities in allergic skin inflammation, and define molecular links between activated T cells in the immune response and neurosensory pathways in skin dependent upon IL-31.
Jennifer G. Gill, M.D., Ph.D.
University of Texas Southwestern

*Transcriptional and Metabolic Adaptations Determining Melanoma Sites of Metastasis*

Metastatic melanoma is a devastating disease with a poor prognosis. Compared to other metastatic cancers, melanoma has a remarkable propensity to spread to many different organ sites. The goal of my research is to gain better understanding of the mechanisms by which melanoma metastasizes and adapts to such heterogeneous environments, with the ultimate goal of designing new targeted therapies for use in patients.

Cory L. Simpson, M.D., Ph.D.
University of Pennsylvania

*Mechanisms of Selective Autophagy in Epidermal Differentiation and Homeostasis*

Autophagy is an intracellular degradation system that enables cells to “recycle” damaged organelles. This scavenging pathway is altered in dermatologic disorders like psoriasis, barrier dysfunction (the ichthyoses), and skin cancers, so studying autophagy may reveal new treatment strategies for these diseases. I utilize state-of-the-art microscopes to visualize autophagy proteins within a three-dimensional model to reveal how skin cells degrade organelles during their development or after environmental injury.

Hadar Lev-Tov, M.D., M.A.S.
University of Miami

*Understanding First Venous Leg Ulcers in People with Venous Insufficiency*

Venous ulcers are common, debilitating, costly, and difficult to treat, yet the mechanism for ulcer persistence is unknown. Leg vein dysfunction leads to ulceration, but not all people with such dysfunction ulcerate. We will examine large populations to identify the differences between people who don’t, ultimately helping doctors treat venous ulcers more effectively and educate patients more effectively.

Zelma C. Chiesa Fuxench, M.D.
University of Pennsylvania

*Atopic Dermatitis: Expanding Our Understanding of This Complex Disease in the Hispanic Population*

Atopic dermatitis (eczema), the most common inflammatory disease, affects children and adults. It is poorly understood, and symptoms significantly erode quality of life. Eczema involves environmental and genetic factors. The primary gene identified so far is most relevant to European ancestry. Hispanics are the largest minority group in the U.S. This project will study eczema in this population to improve understanding and treatment of this disease.

Alina Markova, M.D.
Cornell University

*Epidemiology and Mechanisms of Dermatologic Disease in Hospitalized Patients with Cancer*

Among hospitalized patients in a cancer center, we will: 1) quantify the incidence and delineate diagnoses prompting inpatient dermatologic consultation, and determine their attribution to cancer therapies; 2) identify those at risk for severe cutaneous adverse reactions (SCARs) and toxicities; 3) describe associated clinical, serological, and histopathological features of SCARs and high-grade skin toxicities. Results will form the basis for dermatologic involvement in hospitalized cancer care.

Ian D. Odell, M.D., Ph.D.
Yale University

*Functional Analysis of Dendritic Cells and Development of a Humanized Mouse Model of Scleroderma*

Scleroderma is an autoimmune disease that leads to fibrosis of skin, lungs, and other organs, and has one of the highest mortality rates among autoimmune diseases. By studying how this disease occurs in human patients and modeling the disease in mice, we plan to investigate how different parts of the immune system lead to excessive fibrosis and thereby help develop new targeted therapies.
Research Career Development Award

Gatien Moriceau, Ph.D.
University of California, Los Angeles

Exploiting Mechanisms of Drug Addiction to Suppress MAPKi Resistance in Melanoma

Therapies targeting a common melanoma mutation have delivered significant survival benefits. However, resistances to these therapies almost always develop with time. We discovered that these therapy-resistant melanomas paradoxically have developed an addiction to these drugs, such that drug withdrawal induces melanoma cell death. By understanding the underlying mechanisms, we will devise strategies to augment this addiction as a general way to deliver further patient survival benefits.

Bethany E. Perez-White, Ph.D.
Northwestern University

Breaking Down Barriers: Defining the Role of EphA2 in Building Epidermal Tight Junctions

Tight junctions between skin cells, vital to healthy skin function, are disrupted in atopic dermatitis. Because we inadequately understand the mechanisms contributing to normal function, therapies to enhance it are elusive. EphA2 is a protein involved in tight junction signaling. We will determine if saturating EphA2 with ephrin-A1, which activates it, can enhance tight junction performance and alleviate the barrier dysfunction of atopic dermatitis.

A. Hunter Shain, Ph.D.
University of California, San Francisco

Assessing the Genomic Landscape of Individual Melanocytes and Keratinocytes in Normal Skin

The genetic landscapes of the most common types of skin cancers (melanoma, squamous cell carcinoma, and basal cell carcinoma) have been extensively studied, yet essentially nothing is known regarding the genetics of their cells of origin. To better understand the mutagenic forces that alter normal cells in our skin, leading to skin cancer, I propose to sequence individual melanocytes and keratinocytes from normal human skin.

Dermatopathology Research Career Development Award

Maija Kiuru, M.D., Ph.D.
University of California, Davis

Molecular Basis of Inherited and Sporadic Melanocytic Nevi—Defining Markers of Moles

Moles can be risk markers, mimickers, or precursors of melanoma, the deadliest skin cancer. Melanoma results from mutations in pigment-producing cells. Although understanding these mutations has lead to improved targeted therapies, diagnosing moles and melanoma is not always clear-cut, even via biopsy. I will define mutations in moles to understand how they develop, establish markers to improve diagnosis, and identify molecular targets for prevention and treatment.

Pediatric Dermatology Career Development Award

Leslie A. Castelo-Soccio, M.D., Ph.D.
University of Pennsylvania

Pediatric Alopecia and Hair Disorders

Pediatric dermatology needs advanced tools for quantifying alopecia hair loss and for identifying genes underlying rare hair disorders. I propose using computer-vision imaging tools to enable clinical precision and standardization of care for pediatric alopecia patients. I will identify genes for loose anagen syndrome, uncombable hair syndrome, and hereditary mucoepithelial dysplasia to enable more effective therapies. This research platform can be adapted to identify genes in other pediatric skin and hair disorders.
Career Development Award Renewals

To receive a second or third year of funding, CDA recipients must provide evidence of substantial progress on their research projects and continued productivity in their academic and research careers. The following individuals have met the high standards for renewal of their awards.

Clinical Career Development Award in Health Care Policy/Public Health

Katrina E. Abuabara, M.D. / Year 2
University of California, San Francisco
Eczema Epidemiology and Comorbidities

Esther E. Freeman, M.D., Ph.D. / Year 3
Harvard University
Incidence and Determinants of Kaposi's Sarcoma Despite Antiretroviral Treatment for HIV

Jonathan I. Silverberg, M.D., Ph.D., M.P.H. / Year 3
Northwestern University
Racial and Ethnic Health Care Disparities in Atopic Dermatitis

Clinical Career Development Award in Dermatologic Surgery

Christian L. Baum, M.D. / Year 2
Mayo Clinic, Rochester
Prognostic Risk Factors and Interventions for Patients with cSCC and CLL/NHL

H. William Higgins, II, M.D., M.B.E. / Year 3
Brown University
The Clinical Epidemiology of Melanoma in Situ

Sherrif Ibrahim, M.D., Ph.D. / Year 3
University of Rochester Medical Center
Chemoprevention of Squamous Cell Carcinoma in High-Risk Patients

Emily Stamell Ruiz, M.D. / Year 2
Harvard University
Skin Cancer Equity and Expenditure Analysis

Joseph F. Sobanko, M.D. / Year 3
University of Pennsylvania
Appearance and Quality of Life in Dermatologic Surgery Patients

Physician Scientist Career Development Award

Tamia Harris-Tryon, M.D., Ph.D. / Year 2
University of Texas Southwestern
Determining the Function of Resistin Like Molecule a(RELMa) in Cutaneous Host Defense

John C. Selby, M.D. / Year 2
University of Iowa
The Mechanobiological Paradigm of Keratinocyte Re-Epithelialization: Effects of Matrix Stiffness

Science of Human Appearance Career Development Award

Ka Wai Mok, Ph.D. / Year 2
Icahn School of Medicine at Mount Sinai
Identifying the Key Niche Signals for Hair Follicle Formation

Medical Dermatology Career Development Award

Joshua Arbesman, M.D. / Year 2
Case Western Reserve University
Identifying Novel Preventive Approaches in Melanoma Using Genetics of Very High-risk Families

Aaron Mangold, M.D. / Year 3
Mayo Clinic, Scottsdale
Prognostic Value of Inositol Polyphosphate 5-Phosphatase in Cutaneous Squamous Cell Carcinoma

Robert Micheletti, M.D. / Year 3
University of Pennsylvania
Cutaneous Vasculitis: Expanding Knowledge Through Exploration of Large Multidisciplinary Database

Haley B. Naik, M.D. / Year 2
University of California, San Francisco
Investigating the Role of the Skin Microbiome in Hidradenitis Suppurativa
Women’s Health Career Development Award

Chung-Ping Liao, Ph.D. / Year 2
University of Texas Southwestern
Mechanisms Regulating Hair Pigmentation and Development

Research Career Development Award

Wenqing Li, Ph.D. / Year 2
Brown University
Clinical and Genetic Epidemiology of Atypical Nevi

Roberto R. Ricardo-Gonzalez, M.D., Ph.D. / Year 2
University of California, San Francisco
Study of Innate Lymphoid Cells Type 2 in the Skin

Lam C. Tsoi, Ph.D. / Year 2
University of Michigan
Identification of Psoriasis-Associated IncRNAs through Systems Biology Framework

Dermatopathology Research Career Development Award

Julia S. Lehman, M.D. / Year 3
Mayo Clinic, Rochester
Discovery and Validation of Tissue-Based Biomarkers of Acute Graft-Versus-Host Disease of the Skin

Karolyn A. Wanat, M.D. / Year 3
University of Iowa
Pathogenesis of Cutaneous Leishmaniasis: Role of Mast Cells and Eosinophils

Pediatric Dermatology Career Development Award

Anubhav N. Mathur, M.D., Ph.D. / Year 3
University of California, San Francisco
Determining the Role of Regulatory T Cells in Skin Barrier Repair

Fellowships

DF fellowships provide a one-year salary stipend of $30,000. Fellowships are available to individuals who have recently completed their dermatology residency training and are embarking on careers in academic research.

Dermatologist Investigator Research Fellowship

Yiyin Erin Chen, M.D., Ph.D.
University of California, San Francisco
Tuning of Cutaneous Immunity with Commensal Bacteria

Our skin is densely coated with diverse microbes and constantly determining whether specific microbes are beneficial or harmful. Disturbing the skin microbial ecosystem or altering the immune response to beneficial microbes can contribute to common skin diseases, such as eczema and acne. We will investigate exactly how a common skin microbe, corynebacteria, modulates the immune system, and then how to genetically modify corynebacteria to produce immune therapies.

William Damsky, M.D., Ph.D.
Yale University
Modeling Immune Checkpoint Inhibitor Therapy in Mice to Optimize Treatment Strategies in Melanoma

Responses to immune checkpoint inhibitors in melanoma are heterogeneous, and many patients will succumb to disease. We will use novel mouse models to study the relationship between melanoma genetic heterogeneity (specific driver mutations and random ultraviolet light-induced mutations) and response (no response, partial response, or cure) to this immunotherapy. Then these models will be used to identify the elements underlying response and resistance mechanisms.
**Allen W. Ho, M.D., Ph.D.**
Harvard University

**IL-10 Regulation in CD4+ T Lymphocytes and its Role Mediating Cutaneous Inflammation**

Immune homeostasis plays an important role in modulating inflammatory responses, preventing unregulated inflammation in cutaneous autoimmune disorders. This proposal combines emerging genomic technologies and analysis with traditional molecular and cellular immunology studies to identify the gene module necessary for immune-suppressive cytokine production by a specific subset of regulatory T cells, and then its contributions to regulating cutaneous inflammation in the autoimmune disease lupus.

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**Neda Nikbakht, M.D., Ph.D.**
Thomas Jefferson University

**Convergence of Epigenetic and Immune Modulators in Cutaneous Melanoma**

We propose to investigate a new class of anticancer drugs, the BET inhibitors, to treat melanoma. The primary goal is to identify how melanoma tumors respond to BET inhibitors and how they develop resistance to these drugs. Another goal is to determine if other drugs that unleash immune system activity against melanoma will improve the effectiveness of BET inhibitors in this often deadly cancer.

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**Bahram Razani, M.D., Ph.D.**
University of California, San Francisco

**Role of A20 and ABIN1 in Psoriatic Inflammation**

Certain versions of particular genes make us more prone to developing psoriasis. We will study two genes—called A20 and AB1N1, which are highly associated with psoriasis—by finding out in which tissues they are most important for psoriasis development. This will help us understand why certain people get psoriasis and how we might be better able to treat it.

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**Karl Staser, M.D., Ph.D.**
Washington University in Saint Louis

**Modulating Immunity in Graft-Versus-Host Disease**

Bone marrow transplants can cure deadly blood cancers. However, these transplants can also sometimes cause graft-versus-host disease (GVHD), in which the transplant mysteriously attacks the patient’s healthy skin and organs. This causes sickness and even death. We aim to understand how the transplant causes this unwanted damage so that we can find better medicines for GVHD, thus allowing us to cure cancer without causing new problems.

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**Matthew D. Vesely, M.D., Ph.D.**
Yale University

**PD-1H as a Novel Immune Checkpoint Molecule in Melanoma**

New advances in melanoma therapy, called immune checkpoint inhibitors, unleash the antitumor immune response to attack the melanoma. Many patients, however, fail to respond to existing immunotherapies. Thus new targets for enabling immune system release are needed to optimize antitumor immunity. This research study focuses on exploring a novel immune checkpoint molecule, PD-1 homolog (PD-1H), as a potential immunotherapy target for the treatment of melanoma.

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**Howa Yeung, M.D.**
Emory University

**Characterizing Sexual Orientation Disparities in Skin Cancer Risk Factors and Screening**

Lesbian, gay, and bisexual (LGB) persons may face under-recognized disparities in skin cancer risk factors. Using the nationally representative National Health Interview Survey 2015, we will analyze the rates of skin cancer risk factors, tanning bed use, and skin cancer screening skin examinations in LGB persons. These results will inform targeted skin cancer prevention strategies and underscore dermatologists’ key roles in advancing LGB health.
Grants

Dermatology Foundation research grants provide $20,000 to support the non-salary elements of a research project. Each year, the DF funds grants to support basic science, and medical and surgical studies with the potential to benefit the entire dermatologic community.

Patient Directed Investigation Grant

Vivian Y. Shi, M.D.
University of Arizona
**Linking Epidermal Barrier Function with Anti-Oxidant Defense Mechanisms in Atopic Dermatitis**

Systemic oxidative stress is a prominent feature of atopic dermatitis (AD). The protein Nrf2 is a master cellular regulator promoting antioxidative defense, skin barrier repair, and anti-inflammation. The expression of Nrf2-mediated antioxidative enzymes, skin barrier proteins, and inflammatory molecules will be correlated with skin barrier function and disease severity in AD patients. Our findings may help guide future studies of Nrf2 stimulators as potential therapies for AD.

Research Grant

Ian M. Ahearn, M.D., Ph.D.
New York University
**Targeting Nras Post-Translational Modifications in Melanoma**

The Nras gene is mutated in 20% of melanomas, and there are no targeted treatments that block its function. We have determined that movement of the Nras protein within cells depends on two reversible events, palmitoylation and carboxyl methylation. We will determine if these two events are potential targets for blocking mutated Nras function in melanoma, and thus disrupting proper Nras movement in melanoma cells.

Amanda S. MacLeod, M.D.
Duke University
**Role of IL-27 Signaling in Cutaneous Regeneration and Host Defense**

Following skin injury, wound healing requires keratinocytes at the wound edge to resist microbial invasion and to transiently proliferate to enable appropriate re-epithelialization. This project will illuminate novel functions and regulation of the cytokine IL-27 in regulating epithelial cell proliferation and antimicrobial host defense proteins in wounded skin, using both cell cultures and live animal models.

Pooja Mehta, Ph.D.
University of California, San Francisco
**Elucidating the Functional Role of Layilin on Regulatory T Cells**

Regulatory T cells (Tregs) suppress inflammation in tissues such as skin, but are also involved in skin autoimmune diseases and cancers. How Tregs function in skin is largely unknown. This project will define how the novel molecule layilin, that is preferentially expressed on skin Tregs, influences their function. Using this knowledge, we can develop new strategies to target skin Tregs in cutaneous autoimmune diseases and cancers.

Bryan K. Sun, M.D., Ph.D.
University of California, San Diego
**Identification of YAP1 Regulators in Epidermis**

Skin homeostasis depends on a balance between keratinocyte proliferation and differentiation. Within skin cells, a signaling pathway known as the Hippo pathway is involved in maintaining this balance. This project seeks to identify the genes and molecules that are important in controlling and regulating this pathway in the skin.
Research Awards Program

Research award applications are accepted by the Dermatology Foundation through October 15th of each year. Detailed application instructions are available on the DF website. All proposed research must be conducted under the sponsorship of a department or division of dermatology at a U.S. academic institution. Applications are competitively reviewed and ranked by the Foundation’s Medical and Scientific Committee according to scientific merit and the potential to advance the specialty and patient care.

To learn more about the Foundation’s Research Awards Program, visit dermatologyfoundation.org/rap or contact the DF staff at 847-328-2256.
To become a member, visit the DF Contribution Center at dermatologyfoundation.org