In this newsletter:

Research Cores
Page 02

Pilot and Feasibility Grant Funding Opportunities
Page 03

Seminar Series
Page 06

Membership
Page 07

Publications
Page 08

Upcoming Events
Page 09

Honors & Awards
Page 10

WELCOME

by: Amy Paller, MD

The Northwestern Skin Biology & Diseases Resource-Based Center is one of only six NIH/NIAMS-funded SBDRCs in the nation. Our goal is to foster and synergize skin and epithelial biology research across multiple disciplines on both Northwestern University campuses and throughout the larger Chicago clinical research community. We proudly support more than 71 faculty members from 25 departments, divisions and centers across Northwestern, in addition to faculty among our Chicago Biomedical Consortium affiliates.

Amy Paller, MD
Director, Skin Biology and Diseases Resource-based Center
Research Cores

SBDRC RESEARCH CORES

Our Core facilities are designed to help SBDRC investigators accomplish their research goals related to cutaneous biology and to provide a level of support to newly recruited junior investigators who are interested in skin research. The Cores strive to provide all SBDRC users with access to specialized techniques, expertise, biological analysis and instrumentation that enhances research progress. The Cores promote optimizing the capabilities of manpower, sharing available resources and efforts while being cost effective. Visit the SBDRC website for more information.

STEM CORE

The Skin Tissue Engineering and Morphology (STEM) Core enables researchers to apply primary skin culture models in their research program by providing training, services, specialized equipment, and materials for the initiation, maintenance, processing, and analysis of primary human skin cell cultures, i.e., keratinocytes, melanocytes, fibroblasts, neurons, and immune cells (with the TEST IT Core). The STEM Core also generates short- and long-term mouse keratinocyte cultures for studies aimed at defining the cellular and molecular basis of skin defects evident in engineered mouse models. Users also have access to a large supply of primary human keratinocytes isolated from neonatal foreskin, female and male adult skin, and a library of patient keratinocytes. Please contact Associate STEM Core Director, Bethany Perez White bethany.perez-white@northwestern.edu for any questions.

TEST IT CORE

The Translational and Experimental Skin Testing and Immune Tracing (TEST IT) Core has a well-equipped facility and the necessary support to develop critical experiments. TEST IT provides service, equipment, protocols, and training to help investigators differentiate healthy skin from skin with abnormal immune responses. The TEST IT Core will help to develop the methodology needed to understand cutaneous immune responses in health and disease. TEST IT provides cutting edge technologies and expert support for clinical and translational studies, aiming to dissect mechanisms of immunopathogenesis at the single cell level, and exploring novel disease-specific biomarkers with diagnostic and therapeutic applications. State-of-the-art equipment and training is available. Please contact Core Director Caroline Le Poole caroline.lepoole@northwestern.edu for any questions.

GET IN CORE

The Gene Editing, Transduction and Nanotechnology (GET-iN) Core provides a variety of innovative customized services for cell engineering via gene modifications for in-vitro and in-vivo applications including gene knockdown and overexpression, CRISPR-Cas9 editing, Luciferase reporters for transcription factors and different labels for cell tracking. The GET iN Core can generate high titer Lenti-, Retro- and Adeno-viral stocks. The Core is planning to provide services related to epigenetic gene expression modifications using CRISPRa and CRISPRi technology in the near future. Please contact GET IN Core Managing Director, Pankaj Bhatta p-bhatta@northwestern.edu for any questions.
The Northwestern Skin Biology and Diseases Resource-based Center is offering Pilot and Feasibility award funding for proposals that involve research in cutaneous biology. The studies are designed to:

- Foster research about keratinocytes leading to sufficient preliminary data for procurement of federal funding
- Attract established investigators to pursue research related to skin biology
- Encourage collaborative opportunities between the Department of Dermatology and other departments within the medical school and the university
- Provide mentorship in grant writing as well as feedback regarding the conduct of scientific investigation for more junior scientists

"Our goal is to foster and synergize skin and epithelial biology research across multiple disciplines on both Northwestern University campuses and throughout the larger Chicago clinical research community."

Applications for our 2021-2022 Pilot & Feasibility Awards are now open. To learn more about the P&F application requirements, see the current request for proposals on our website. The deadline to apply is April 26, 2021.
What is the title of your P&F project?
A role for epidermal keratinocytes in small fiber degeneration in diabetic peripheral neuropathy.

What is your research focus and how did you become interested in the topic?
My research focuses on the role of epidermal keratinocytes in cutaneous sensory fiber degeneration and associated pain related behaviors.

I became interested in the topic during my collaboration with Dr. Daniela Menichella, investigating the mechanisms of sensory nerve degeneration in DPN.

What is the potential impact of your research?
Increase our understanding of the mechanisms through which keratinocytes promote regeneration of cutaneous nerves in PDN. Identify keratinocyte-derived factors that promote regeneration of cutaneous nerves as new molecular targets for the development of novel treatments for both impaired wound healing and painful neuropathy of diabetic patients.

How can SBDRC members and researchers contact you to collaborate?
E-mail: a-belmadani@northwestern.edu
Phone: 312-503-3202
E-mail: d-menichella@northwestern.edu
Phone: 312-503-3223

Daniela Menichella, MD, PhD &
Abdelhak Belmadani, PhD

What is the title of your P&F reasearch project?
The Role of Nucleoli in Skin Differentiation

What is your research focus and how did you become interested in the topic?
I have been interested in the function of the nucleoli for more than 25 years. I got interested in it because of the complexity of the structure and the multi-functionality of it, much of which has not been explored.

What is the potential impact of your research?
Being an important organelle, understanding its function in differentiation could help explain many disease states and could help develop intervention strategies.

How can SBDRC members and researchers contact you to collaborate?
Email: s-huang2@northwestern.edu
Call: 312-503-4269

Sui Huang, MD, PhD
Peter Sporn, MD

What is the title of your P&F research study?
Single Cell Transcriptomic Analysis of Pulmonary and Cutaneous Sarcoidosis to Inform Mechanistic Studies in a Mouse Model

What is your research focus and how did you become interested in the topic?
I have always been fascinated by immune-mediated and inflammatory lung diseases. As a pulmonary physician, I became interested in sarcoidosis years ago for a variety of reasons, including the fact that the disease was poorly understood, that few other clinicians focused on the disease, and that it disproportionately and more severely affects African Americans, whose needs are underserved. Over the years, along with colleagues in pulmonary medicine, dermatology and other specialties, we have built a robust multi-disciplinary clinical sarcoidosis program at Northwestern. We are part of an international Sarcoidosis Clinical Studies Network, funded by the Foundation for Sarcoidosis Research, and recently were designated as an inaugural Sarcoidosis Center of Excellence by the World Association of Sarcoidosis and Other Granulomatous Diseases (WASOG). In addition to clinical and basic studies related to sarcoidosis, my laboratory investigates innate immunity and host defense against bacterial and viral infections in the lung.

What is the potential impact of your research?
We believe that our investigation of gene transcription in sarcoidosis at the single cell level and our mechanism-focused studies using genetic approaches in the mouse will reveal previously unrecognized unique cell populations and pathways that are important in sarcoidosis pathogenesis. This new knowledge should help lay the basis for novel treatment approaches in the future.

How can SBDRC members and researchers contact you to collaborate?
I am appreciative of support from the SBDRC Pilot and Feasibility Program, and welcome the possibility of collaboration with other SBDRC-affiliated researchers. I may be reached by email at p-sborn@northwestern.edu.

Jaehyuk Choi, MD, PhD

What is the title of your P&F research study?
Optimizing scRNA-seq to Improve Understanding of Skin-resident T cells. We are using single cell technologies to identify and characterize the T cells in the skin. The goal is to make an atlas that defines the differentiation state and effector functions of unconventional T cells in different compartments of the skin.

What is the research focus and how did you become interested in the topic?
The phenotypes of skin lymphomas are determined by the cancer’s cell-of-origin and somatic mutations. By studying skin lymphomas, we have serendipitously encountered heretofore underappreciated skin-resident T cells.

What is the potential impact of your research?
Our research may implicate a novel cell type in the skin. We hypothesize that these cells play an important role in health and disease.

How can SBDRC members and researchers contact you to collaborate?
They can email me at jaehyuk.choi@northwestern.edu.
On March 16th the SBDRC hosted a seminar featuring world-renowned physician scientist Martin Steinhoff, MD, PhD, MSc, PRCPI. Dr. Steinhoff gave a seminar to SBDRC members and the Northwestern Dermatology community. During the talk Dr. Steinhoff discussed:

- Understanding the principles of peripheral and central itch
- Deciphering the mechanism of histamine–dependent and independent itch
- Similarities and difference of cytokine–induced itch
- Mechanisms of itch scratch cycle
- Modern management of chronic itch

Professor Steinhoff is Chairman of the Department of Dermatology and Venereology & Residency Program Director, as well as Director of the Dermatology Institute and Translational Research Institute (TRI) at Hamad Medical Corporation, Qatar. He is also Full Professor at Weill Cornell University New York & Qatar.

Dr. Steinhoff studied Medicine and Human Biology, University of Marburg, Germany, where he received his MD in oncology and PhD in neuroimmunology. He has published more than 230 peer-reviewed articles which include the first description of several mechanistic pathways in atopic dermatitis, pruritus and rosacea.

Dr. Steinhoff’s research has been funded with more than $72 million to date including NIH R01. He also conducted various clinical trials as PI. For his research, Professor Steinhoff received several prestigious international awards world-wide.

Dr. Steinhoff was member of the board of directors of the European Society of Dermatology Research (ESDR), and is an honorary member of several Societies for Dermatology.

Thanks for the interesting presentation and discussion!
If you meet one of the following criteria, consider applying for SBDRC membership today.

**Bench Research Members**
Faculty who have research programs related to cutaneous biology, are independent and have extramural federal funding. This represents the majority of our members.

**Junior Bench Research Members**
Full-time faculty members conducting cutaneous biological research without external funding or assistant professors with external funding (e.g., Dermatology Foundation CDA) who have submitted federal funding proposals. Their research frequently utilizes the core facilities and is enhanced by association with the center’s critical mass of funded investigators.

**Clinical Collaborative Associate Members**
Members of the clinical faculty who do not have wet laboratories but perform clinical research and have expertise in skin disorders. These members have contributed significantly to the translational endeavors of the center through collection of patient materials, data interpretation and participation in clinically relevant enrichment programs such as Bench to Bedside.

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**WELCOME NEW SBDRC MEMBERS!**

Rui Yi, PhD  
Professor of Pathology (Experimental Pathology) and Dermatology

Tomoko Hayashida, MD, PhD  
Research Associate Professor of Pediatrics (Nephrology)

Both clinical and bench scientists interested in cutaneous biology comprise our core membership in an effort to encourage communication and collaborations between clinicians who perform clinical research and bench scientists who hope to see their work translated into a human benefit.

*View individual profiles of our members*  
for publication and contact information, research and clinical specialties and more
Check out some of the recent publications within the last year stemming from work done in the Northwestern SBDRC Research Cores


The Northwestern SBDRC has a monthly seminar series targeted toward researchers. The seminar series will highlight exciting research from world-renowned physician scientists. The next seminar of this virtual series features Professor Ralf Paus, MD, FRSB. His seminar is entitled “Chemosensation biology of the human hair follicle: Why can it "smell" and "taste"?"

**Upcoming Events**

**NU SBDRC Retreat**
April 27 @ 4-5pm
NU SBDRC Short Research Presentations

**NU SBDRC Seminar Series**
May 13 @ 4-5pm
NU SBDRC Seminar Series: Ralf Paus, MD, FRSB

**NU SBDRC Research Retreat**
July 12 @ 9am
NU SBDRC Research Retreat

**IAC & TEST IT Core Monthly Seminar Series**

The 2021 June K. Robinson, MD Lectureship presents Robert D. Galiano, MD, FACS at 8am. At 10:45am, Dr. Jared Jagdeo, MD will present "Light Emitting Diode Visible Light Phototherapy"

The Northwestern SBDRC has a monthly seminar series targeted toward researchers. The seminar series will highlight exciting research from world-renowned physician scientists. The next seminar of this virtual series features Professor Ralf Paus, MD, FRSB. His seminar is entitled "Chemosensation biology of the human hair follicle: Why can it "smell" and "taste"?"

The Northwestern SBDRC retreat provides a forum to enhance interactions among center investigators. In the spirit of outreach and providing visibility for research activities related to skin biology at Northwestern, we open the retreat to the entire Feinberg School of Medicine scientific community and dermatology programs at other Chicago institutions. This is an opportunity to highlight achievements in skin research, find potential new collaborators and learn about new capabilities offered by the Cores with examples of their value.

The IAC and TEST IT Core facilities host a monthly seminar series to highlight technologies available in the core. They also present data generated in the core facility.

Email skin-center@northwestern.edu for details
Congratulations

AMY PALLER, MD

Department of Dermatology Chair and NU SBDRC Director, Dr. Amy Paller was awarded the prestigious 2021 American Skin Association’s David Martin Carter Mentor Award.

Dr. Paller was also awarded the Tanioku Kihei Memorial Award from the Japanese Society for Investigative Dermatology.

CAROLINE LE POOLE, PHD

NU SBDRC TEST IT Core Director, Dr. Caroline Le Poole was awarded the American Skin Association’s 2021 Research Achievement Award in Vitiligo and Pigment Cell Disorders.

JAEHYUK CHOI, MD, PHD

The SBDRC congratulates Dr. Jaehyuk Choi for his induction into the prestigious American Society of Clinical Investigation.