



National  
**Eczema**  
Association

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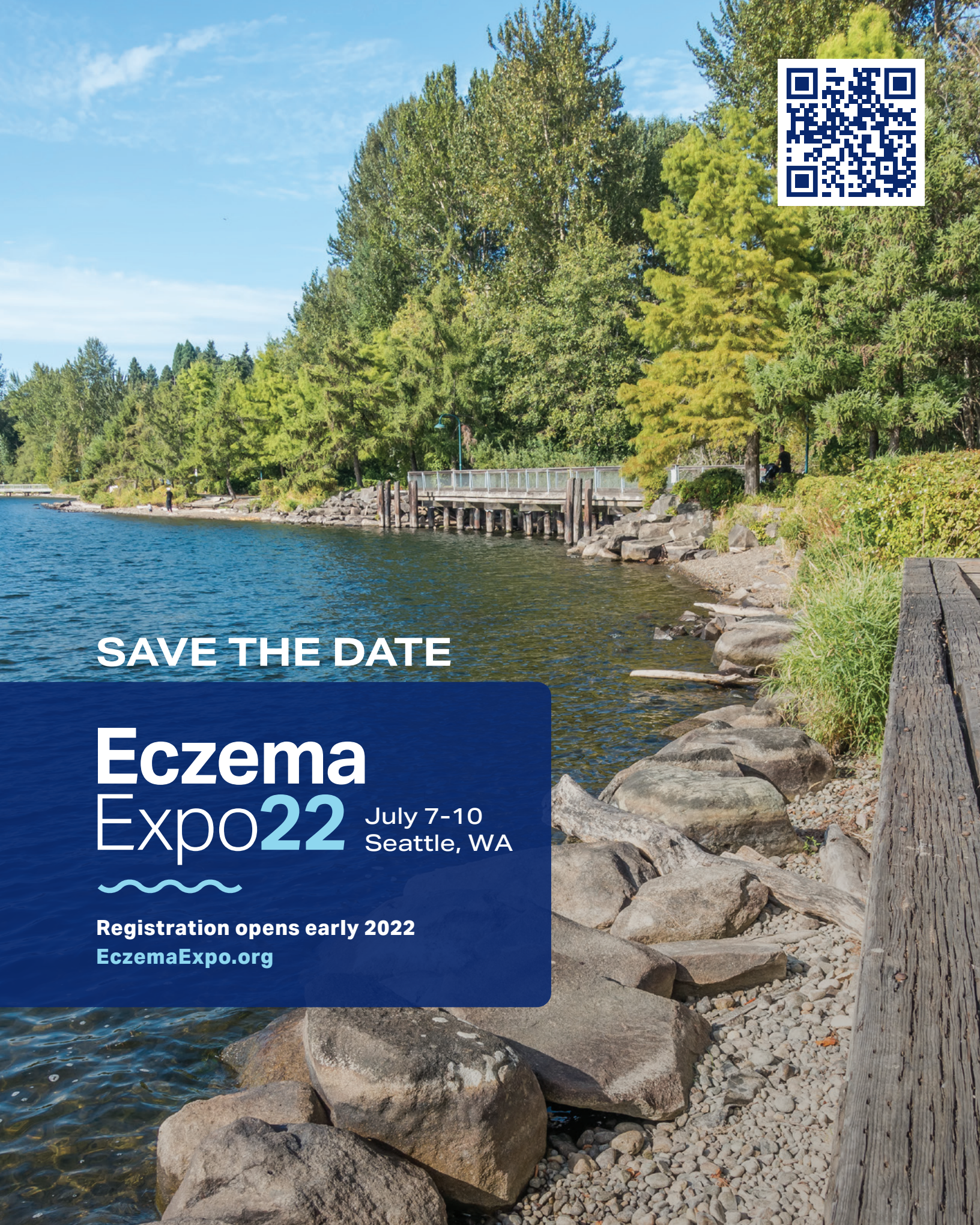
# NEA Magazine

Research, Support and Education for Those Affected by Eczema

## The Human Skin Microbiome

The science behind  
bacterial colonization  
and atopic dermatitis.

p6



SAVE THE DATE

# Eczema Expo22

July 7-10  
Seattle, WA

Registration opens early 2022  
[EczemaExpo.org](https://EczemaExpo.org)

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### Sherpas, Shackets and Skiwear, Oh My: Staying Warm, Stylish and Flare-free This Winter

Don't worry: having eczema doesn't mean you have to sacrifice fashion. We connected with a panel of experts and asked for their advice on dressing with style for winter this year.

Founded in 1988, the National Eczema Association (NEA) is a 501(c)(3) nonprofit and the largest patient advocacy organization serving the over 31 million Americans who live with eczema and those who care for them. NEA is supported by individual and corporate donations. Advertising is accepted for publication if they are relevant to people with eczema and meet certain standards. NEA Magazine provides health information from a variety of sources, but this information does not dictate an exclusive treatment course and is not intended as medical advice. Persons with questions regarding specific symptoms or

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# Letter from Julie

Happy New Year! And welcome to our first NEA Magazine of 2022.

At NEA, we have a simple resolution for the new year: to strengthen our connection with you and our impact on your behalf. Whether you're new to the NEA community or have been with us for years, we are here to facilitate connection with others in the community; to provide you with the latest news and information; and to improve the quality of life for everyone living with eczema.

We're feeling optimistic about 2022. Top of my list? Seeing you in person again at Eczema Expo in Seattle, Washington July 7-10! The virtual Expos of the past two years were amazing too (I could almost feel the hugs!) and we will offer a hybrid model this year, with most of the sessions accessible virtually for those not able to join us in person. So, whether you can be there in Seattle or virtually: save the date and we'll update you soon with more details.

As challenging as the last year (plus) has been, many of us have come to discover a few lessons or blessings along the way. We asked our community: "What Did Your Eczema Teach You in 2021?" Flip ahead to Page 5 to hear what 17 members of our NEA community have learned from their eczema; their answers might surprise and inspire you. We also connected with our ecz-perts about how to keep up with winter fashion trends without a flare (Page 19) and how to pick the right pair of gloves for your individual skincare needs (Page 16). Our research feature explores the microbiome and the thousands of different bacterial species that live on our skin, all of which play a critical role in supporting our immune system (Page 6).

One of my favorite new sections in the Magazine is NEA Artists (Page 22) — I so love seeing the way you express yourself and tell your story through art — please keep sharing!

Cheers to a new year!

With warmth & gratitude,

Julie Block - President & CEO

**Our Mission:** NEA is the driving force for an eczema community fueled by knowledge, strengthened through collective action and propelled by the promise for a better future.

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## NEA NEWS

### Advocacy Victories, Ambassador Highlights, New NEA Research Grants, Why I Give & Eczema Out Loud's First Anniversary

#### Advocacy Accomplishments

2021 was an exciting year in advocacy. We helped usher state legislation into law, held over 100 legislative meetings and rejoiced as our Advocacy Ambassadors shared their eczema stories with policymakers across the country. We were successful in advocacy efforts at both the state and federal levels:

- **Federal efforts:** The Safe Step Act (S. 464 / H.R. 2163) was reintroduced in Congress at the beginning of 2021. The Safe Step Act is important to patients as it ensures that patients and providers are able to access the best treatment options. NEA Ambassadors had the opportunity to educate legislators on eczema and encourage them to cosponsor this legislation. We are thrilled that over 100 House members and 29 senators are cosponsors!
- **State efforts:** We were involved in legislative victories for patients in eight states! Our involvement included: writing letters, meeting with legislators and providing key testimony at hearings.

We are excited to see what happens in 2022! To learn more about our advocacy priorities and how to get involved, visit [NationalEczema.org/advocacy](http://NationalEczema.org/advocacy).

#### Additional NEA Ambassador Highlights

In 2021, NEA Ambassadors continued paving the way for a better future by sharing their patient and caregiver experience with audiences who make decisions affecting the health and healthcare of those living with eczema, including pharmaceutical companies, health care providers, insurers and policy makers. In addition to the

Advocacy Ambassador highlights listed above, Ambassadors were also active in research and community outreach:

- **Research activation:** Ambassadors helped design NEA research surveys which gathered new information on the needs of the eczema community from thousands of patients and caregivers across the country.
- **Community outreach activation:** Ambassadors organized eczema awareness events in their communities and helped spread the message that no one in the eczema community is alone — and that NEA is here to help.

To join our efforts and turn your eczema experience into advancements in the eczema landscape, become a NEA Ambassador at [Ambassadors.NationalEczema.org](http://Ambassadors.NationalEczema.org).



From left to right: NEA Ambassadors Claire Rozanski and Christy Cox with NEA Ambassador/Board Member Lynell Doyle, coordinating an eczema awareness event and NEA fundraiser in their Michigan community.

#### Eczema Out Loud Turns One!

Our NEA podcast Eczema Out Loud has been up and running for a full year! In our newest episode, we explore the relationship between eczema and food with an allergist/immunologist and a dietitian. If you have eczema you've likely wondered if and how your diet affects your skin. Tune in to find out if the old expression "you are what you eat" has anything to do with healthy skin. Listen to this episode and more at [NationalEczema.org/podcast](http://NationalEczema.org/podcast) or on your preferred podcast streaming service.

## Why I Give to NEA

My name is Angela Fox, and I live in Texas with my husband and two children. My 9-year-old son Cooper has severe eczema. He was diagnosed when he was 10-months-old.

### This is, in my opinion, the hardest thing about living with eczema

The hardest thing about eczema has been watching my son hide in a shell and wither away before our eyes. There were times he was in so much pain he couldn't move his limbs. He couldn't regulate his own body temperature.

We've struggled with finding the right treatment to work and continue working for Cooper. We live on the edge thinking, "When is that next shoe going to drop?" We've been down the road of so many medications that have failed to help him.

As his mom, I wanted to fix it, and I couldn't. I felt a lot of guilt wondering, "Is it my fault? Is there something I did? Something I didn't do?"

### This is why I give to NEA

I donate to the National Eczema Association because without NEA my son might not be here. We found NEA when Cooper was four years old; we had been desperately searching for anything that would help him. We felt so isolated.

We found community and support at NEA. It was eye-opening to meet other families going through what we were going through.

As a researcher by profession, my husband wanted to understand the science behind eczema. At NEA we found the information and guidance we'd been looking for all in one place. My husband needed the science, and I needed the connection. We got both at NEA.

## "We donate because NEA was the beacon and the light for our family during a very dark time"

### This is my hope for the future of eczema

For everyone, I hope that in the future families with young babies have options for medications that are not so scary.

For Cooper, I want him to develop a higher self-esteem and a higher regard for people like him that struggle. I want Cooper to live a fulfilled life, and I don't want eczema to run his life. I want him to understand that everybody has struggles, and his just happens to be his skin. I hope his eczema and his experiences inspire him to want to make other peoples' lives better.



Angela Fox (above left) pictured with her family.

## NEA Research Grants Expands Its Impact

In December, NEA announced its 2021 Research Grant recipients, a total of nine individuals from around the globe whose work touches on all aspects of eczema, from the science behind itch and inflammation, to how the disease changes over a lifespan, to new pathways for potential therapies.

The 2021 grants totaled \$515,000, marking a significant jump in NEA's investment, from \$305,000 in 2020, with a new award tier and increase from six to nine recipients.

NEA is the largest private nonprofit funder of eczema research, having invested over \$2.2 million since its first grant was awarded in 2004.

The 2021 research grant recipients are as follows:

#### Impact Research Grant

- Concepcio Soler, PhD, University of Barcelona, Barcelona, Spain

#### Champion Research Grant

- Katrina Abuabara, MD, MA, MSCE, University of California, San Francisco
- Wilson Liao, MD, University of California, San Francisco

#### Catalyst Research Grant

- Cameron Flayer, PhD, Massachusetts General Hospital, Boston, MA
- Sarah Whitley, MD, PhD, University of Pittsburgh, Pittsburgh, PA
- Joy Wan, MD, MSCE, Johns Hopkins Medicine, Baltimore, MD

#### Engagement Research Grant

- Stephanie Le, MS, MD, University of California, Davis
- Ge Peng, MD, Juntendo University Graduate School of Medicine, Tokyo Japan
- Mary Moran, MS, University of Rochester, Rochester, NY

## HEARD ON THE STREET

# What Did Your Eczema Teach You in 2021?

### To stop caring about other people's opinions!

@ellemaejones

It taught me that I can't control how people view me. That if I make them uncomfortable, that's a THEM problem. It's not my fault. I'm not gross. And no ... I can't stop scratching just because someone dislikes how it sounds. It also taught me that people with eczema are some of the strongest people there are. Myself included.

@haloena

I learned that my children are three of the strongest people I know, and that as a mum I'm stronger than I ever knew. ❤️

@allergy\_queen\_of\_3

That it can come at any age. To never take the small things for granted. Simple pleasures like wearing anything you want without worrying if your eczema is showing.

@char\_lovella\_icasiano

Mental health is a real thing.

@fxcken\_\_agoraphobic

I learned how mentally taxing eczema can be on the entire family, not just its victim.

@Gabby Glushenko

How much the words "just don't scratch" are now a trigger for me.

@poison\_illustrations

I have discovered that taking collagen has made a difference. My hands were in such a state for the better part of the year, I couldn't get it under control no matter how hard I tried. I started taking collagen six weeks ago and noticed my hands were beginning to heal from the inside after just a few weeks. The improvement is amazing.

@browne\_jacqui

I learned that I can't use the heat on the lower setting in my car, only the heat that's directed towards the windshield. The hot air was giving me horrible flares on my shins. Took me all of last winter to realize this. And nursing compression socks didn't help.

@Kat Beckler Kelly

I learned that eczema has total control over my life. It flares without warning. It is unmerciful. I learned that I don't do well with vaccines (massive head-to-toe flare). It is debilitating. I learned that Prednisone exacerbates my chronic depression. I've had it my whole life and managed it fairly well until 2021. Now, it's taken over my life 24/7. I learned that insurance companies are jerks about covering Dupixent. I learned that eczema and menopause are enemies in my body.

@Trish Handspiker

### I am stronger than the itch and pain! 💪

@amcastillo5

Just because you haven't found what helps you yet doesn't mean you'll never find it. Newness is created every day. There is hope. ❤️

@gemrad87

Eczema is beautiful ❤️  
@thechronicallyillcutie

That I can be loved and accepted for it! I think that fear of being different and an "outcast" kept me from fully being okay with who I was, all because of my skin! Now that I have become more aware of my flare ups, more consistent with my routine and have access to better products, I've been able to understand my body and myself better! It's been a year of growth for sure. ❤️

@eliannaleighadams

### It taught me to be grateful for what my skin does for me and to have faith in its healing process — no matter how long it takes.

@victOriali

You learn to work through it. There are days you absolutely hate it and can't help but explode in tears, and there are days you feel like you're on the path of having it under control and it renews your purpose. Eczema has debilitated me and ruined my self-esteem (or maybe my self-esteem ruined my eczema?), but you have to force discipline within yourself. Eczema has allowed me to see purpose in exercise. I'm grateful and ungrateful, but I have surely learned a lot in just one year.

@puuthulhu

Daily care is time consuming, but necessary to stay away from a bad flare up. I'm glad my son is old enough to take charge of some of his own skincare now, but full treatments take teamwork.

@Bobbi Rasmussen

## RESEARCH

# THE HUMAN SKIN MICROBIOME AND ITS CHANGES IN ATOPIC DERMATITIS

by **Jodi L. Johnson, PhD**, Departments of Dermatology and Pathology, Feinberg School of Medicine, Northwestern University

**Human skin is colonized by a diverse system of bacteria, fungi and other organisms which interact both with each other and with the human body (Figure 1). In fact, more than 1000 different bacterial species live on the skin.<sup>1</sup> This is called the skin microbiome, which is part of the total human microbiome that lives on the skin, in the respiratory system, in the urinary system, vagina and in the gut.**

Dr. Richard Gallo, PhD, of the University of California San Diego states, "Healthy skin depends on the microbiome to maintain its normal functions. Bacteria on the skin can actually act like a part of the immune system and is important for controlling the skin barrier and environment." The skin is not just a flat surface, but is made up of hair follicles and sweat glands, giving the skin microbiome approximately

25 m<sup>2</sup> of surface on which to live.<sup>3</sup> The Human Microbiome Project was launched by the National Institutes of Health in 2007, allowing the first studies to learn about which bacteria colonize the skin and how the skin microbiome changes over time and depending on body site (i.e. moist vs. dry body sites).<sup>4</sup> Previously, we discussed how JAK inhibitors and biologics are potentially changing the future of eczema treatment. In this final article in the series about potential new treatment options for atopic dermatitis (AD), we explore how the microbiome is affected in AD and how manipulating the skin microbiome is being investigated as a new type of treatment approach.

## THE SKIN MICROBIOME IN AD

Scientists have been exploring what kinds of organisms make up the healthy skin microbiome, and how the microbiome impacts and is affected by the development and progression of atopic dermatitis (AD). Several significant observations have come from research to date, including: 1) the human skin microbiome is disturbed in AD with a type of bacteria called *Staphylococcus aureus* (*S. aureus*) being the dominant **pathogenic** (see Glossary) species that helps drive disease;<sup>5</sup> 2) keeping a diverse microbiome promotes skin health;<sup>6</sup> and 3) the composition of the microbiome can be influenced and changed through various treatment approaches.<sup>7</sup>



**Figure 1:** Human skin is colonized by a diverse system of bacteria, fungi, and other organisms which interact both with each other and with the human body. The microbiome is altered in AD and can potentially be targeted therapeutically to improve patient outcomes. Figure from "Applying Live Bacteria to Skin Improves Eczema," (theconversation.com).<sup>2</sup>

## NEA QUIZ

### What are Interleukins?

- A. Non-malignant blood cells commonly found in people diagnosed with Leukemia;
- B. two sensory processing channels that connect the hypothalamus with the amygdala;
- C. small proteins made and secreted by cells of the immune system that send a signal to another cell to respond in a certain way; they are abbreviated "IL" and numbered (IL-1, IL-4, IL-12, IL-23, et cetera)
- D. a popular network of streetcars in Germany

See the answer on the bottom of page 10!

To show that the skin microbiome is altered in AD, a study was performed with 12 pediatric patients with moderate-to-severe AD and 11 healthy controls, aged 2–15 years.<sup>8</sup> Skin from different AD disease states (baseline disease state, disease flare and post-treatment for disease flare) were sampled for bacteria and compared to each other and to the bacteria from skin of healthy controls. While the number of patients in this study was small, AD treatments varied (e.g. corticosteroids, antibiotics and calcineurin inhibitors were all used), and methods for sampling skin to collect microbial populations have since advanced, this study found that the amount of *S. aureus* was greater during disease flares than at baseline or post-treatment and correlated with worsened disease severity.<sup>8</sup>

A subsequent study additionally showed that the skin microbiome is different in pediatric (ages 2-12) versus teenage (ages 13-17) and adult (ages 18-62) AD patients (teenage and adult patients were grouped).<sup>9</sup> In AD non-lesional (i.e. skin visibly unaffected by AD), the microbiome diversity was significantly higher in young children than in adults-teenagers. In general, research has demonstrated it is better to have a diverse microbiome than to lose bacterial diversity. A diverse microbiome helps the skin barrier function properly and acts as one of the major communicators with the human immune system.<sup>1</sup>

Finally, increased presence of *S. aureus* was shown to precede AD in a study with newborn infants. Bacteria first colonize our skin when we are born – studies have shown that birth by passage through the birth canal versus by Cesarean section can alter a person's microbiome.<sup>10,11</sup> Scientists asked the question whether skin **colonization** at infancy by the pathogenic bacteria *S. aureus* could contribute to the development of AD. Indeed, in 149 white infants whose microbiomes were analyzed at birth and at seven time points over their first two years of life, it was found that at age three months *S. aureus* was more prevalent on skin

of infants who later went on to develop AD.<sup>11</sup> This evidence, together with studies performed in mouse models, led to the conclusion that changes to the skin microbiome can promote, or be a driver of, AD.<sup>12</sup> Further studies have since added strength to this conclusion, showing down to the species level that increases in specific types of *S. aureus* associate with worsened AD severity.<sup>13</sup>

## CONVERSATIONS BETWEEN THE MICROBIOME AND THE HUMAN IMMUNE SYSTEM IN AD

In addition to the microbiome being different in AD compared to healthy skin, the way that the microbiome interacts with the skin and immune system is also different. For example, in skin actively involved in AD (i.e. lesional skin) *S. aureus* was found to reside in the dermis, a deeper layer of skin, which can increase inflammation and result in skin swelling.<sup>14</sup> This ability of *S. aureus* to penetrate further into the skin has been shown to be due to a protein it makes called a “protease” that can break down connections between skin cells and allow the bacteria to push deeper into the skin. Once the bacteria has broken through the skin barrier, the body reacts by releasing immune system-associated chemical messengers called **interleukins (IL)**, in this case IL-4, IL-13, IL-22, thymic stromal lymphopoietin and others, resulting in inflammation. If the skin barrier is already compromised, like in patients with filaggrin mutations, more bacteria can penetrate the skin and increase these immune messengers even more.<sup>14</sup>

The above study in mice also found that use of moisturizers or barrier repair products resulted in less ability for *S. aureus* to move into the skin and the interleukin differences were partially restored to more normal levels.<sup>14</sup> Similar results have been seen in humans. In a more therapeutically targeted approach, AD patients treated with dupilumab (a **monoclonal antibody (biologic)** that blocks the IL-4 receptor on cells) showed increases in microbial diversity (a sign of healthier skin) and a decreased level of *S. aureus* on the skin.<sup>15</sup> A recent study confirmed and extended these findings, demonstrating that AD patients on dupilumab saw microbiome changes in both lesional and non-lesional skin and in the nose.<sup>16</sup> Together, these data show that not only does the microbiome influence the human immune system, but modulating the human immune system has impacts on bacterial survival and colonization.

## CONVERSATIONS BETWEEN BACTERIA WITHIN THE AD MICROBIOME – RESTORING BALANCE THROUGH CROSS-TALK

How does *S. aureus* colonize the skin in AD? While the answer to this is complicated, studies have shown that antimicrobial proteins naturally found in the skin are reduced in AD skin compared to healthy skin.<sup>1</sup> The outer skin layer, the stratum corneum, is naturally slightly acidic and *S. aureus* grows poorly in acidic conditions. However, AD patients have lost this skin acidity, giving the chance for *S. aureus* to overgrow. *S. aureus* isolated from AD patients also is more “sticky,” binding more

strongly to AD skin. This is even more of a problem in skin of people with filaggrin mutations who have deformed cells in their stratum corneum, making it even easier for these sticky *S. aureus* to bind.<sup>1</sup>

What if other members of the microbial community on the skin fought back? Members of bacterial colonies on the skin surface talk to each other and sometimes the **commensal bacteria** can push back the **pathogenic bacteria**.<sup>1</sup> An example of this is that the presence of other staphylococci besides *S. aureus* at two months of age protected infants against later developing AD.<sup>1</sup> The more commensal bacteria *S. epidermidis*, *S. hominis* and *S. lugdunensis* all produce molecules that target *S. aureus*, but these bacteria are reduced in AD.<sup>17</sup> One study in mice found that if *S. aureus* were exposed to a particular protein secreted by other commensal bacteria on the skin, *S. aureus* was unable to exert its pathogenic effects that lead to damage and inflammation.<sup>18</sup> This observation led to a great deal of excitement and further study of the ability of commensal bacteria (or their products) to be used therapeutically against *S. aureus* to treat AD.

## GLOSSARY

**Biologic** — A drug made from biological (living) sources like humans, animals, plants, fungi or microbes. Biologic drugs are sometimes called “biologic response modifiers” because they change a process already occurring in cells or in a disease. In AD, new biologic drugs like monoclonal antibodies can modify the immune reaction driving the disease.

**Colonization** — The term colonization related to bacteria means the action of the bacteria establishing itself in a particular body location. Bacteria can colonize the skin, the inside of the nose, the gut and other body areas.

**Commensal bacteria** — The term “commensal” means when two organisms live together and benefit from each other. In terms of commensal bacteria, this means all the human microbiome that interact with the environment and human systems, helping to promote overall human health.

**Pathogenic bacteria** — The term “pathogen” means disease causing and a pathogenic bacteria is one which causes disease or helps set up conditions for disease. We are familiar with this when someone gets a case of food poisoning from a bacteria called *Escherichia coli* in raw or undercooked meat. On the skin, *Staphylococcus aureus* or *S. aureus* is a pathogenic bacteria involved in AD.

**Interleukins** — Small proteins made and secreted by cells of the immune system that send a signal to another cell to respond in a certain way. They are abbreviated “IL” and numbered (IL-1, IL-4, IL-12, IL-23, etc.).

## CHANGING MICROBIOME POPULATIONS TO PROMOTE SKIN HEALTH AND REDUCE DISEASE

After learning how the skin microbiome can influence the severity of AD and impact the skin barrier as well as the immune system, scientists wondered if they could therapeutically change the microbiome to improve skin health. Several methods have been used to try to reduce *S. aureus* in AD including topical steroids in combination with antibiotics, oral antibiotics, and use of emollients and bleach baths (which have been shown not to have antimicrobial effects<sup>19</sup>). However, despite the known pathogenic contributions of *S. aureus* in AD none of the attempts to reduce *S. aureus* itself have really improved AD over the long-term.<sup>20</sup> General antimicrobial or antibiotic approaches also impact commensal bacteria in addition to pathogens.

“Trying to ‘eradicate’ Staph doesn’t really work, so instead we’d like to see more microbial diversity as a sign of a ‘better’ skin microbiome in patients with AD.”

~ Dr. Jennifer Schoch, Fellow of the American Academy of Dermatology at the University of Florida

Another area of investigation was to try to use a topical probiotic approach to support commensal bacteria and thereby improve skin bacterial diversity. These types of approaches include use of emollients that contain bits of proteins, called peptides, that act to support certain bacterial growth<sup>7</sup> or emollients containing bacterial lysates (all the contents of bacterial populations),<sup>21</sup> or by transplanting a specific type of commensal bacteria such as *Roseomonas mucosa* onto the skin.<sup>22</sup> The transplantation approach appeared promising in its Phase I/II clinical trial with transplantation of this bacteria resulting in decreased AD severity, topical steroid requirement and *S. aureus* burden.<sup>22</sup> Preclinical and clinical trial results regarding transplant with other commensal microbes support their potential use as an AD therapy. However, these studies remain preliminary, and the effect on the cutaneous microbiome and safety, including long-term safety, of commensal organisms that target *S. aureus* is unknown.<sup>1</sup> Dr. Gallo suggested that, “There should be distinctions made between the different approaches for targeting the skin microbiome, some of which utilize more broad tactics which may or may not be guided by known mechanisms of action and others, such as the bacteriotherapy technology approach, which requires a very detailed and comprehensive understanding of microbe-host behaviors.”

# LEO Pharma

At LEO Pharma, our vision is to be a preferred medical dermatology care partner. We have been working to improve people’s lives around the world for more than 100 years. We are proud to support the National Eczema Association’s efforts to reduce the burden of eczema through research and education that enhance care and improve patient outcomes.



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advertisement

Bacteriotherapy technology is defined as the purposeful use of bacteria or their products in treating an illness and can include modifying the bacteria to have a desired trait. A very small trial (five people) was conducted where multiple strains of bacteria with antimicrobial activity were applied to the skin resulting in a significant decrease in *S. aureus* at the site of application.<sup>17</sup> One specific type of bacteria, *S. hominis* A9, which had been previously found to be capable of inhibiting *S. aureus* growth and is found in the skin of 21% of healthy subjects but only 1% of AD patients, was isolated from healthy human skin and placed on mice using a lotion.<sup>23</sup> This resulted in reduced skin redness and inflammation and improved eczema-like symptoms in the mice.

To follow up, a small Phase I clinical trial in humans was done to assess how *S. hominis* A9 would work in 54 moderate-to-severe AD patients, 36 of who used *S. hominis* A9-containing lotion and 18 who used control lotion. *S. hominis* was applied to the arms of the 36 patients twice daily for seven days and the microbiome of these patients was sampled before treatment and on days four and seven of the treatment.<sup>23</sup> *S. aureus* colonization was found to be reduced at both days four and seven, and the local inflammation at the site of application was improved. The AD microbiome also stayed improved for 96 hours after treatment was stopped. This one-week application of the bacteria and the small number of people in the study did not allow the researchers to observe clinical improvement of AD symptoms, but future studies are planned to test this.<sup>22</sup> Dr. Gallo said, "Picking the bacterial strain and species is really important for this type of therapy to be successful. The choice of bacteria should have a low infection possibility and be bacteria that have evolved to live on the skin."

There remains a good deal of promise with trying to alter the skin microbiome for AD patients and increase bacterial diversity as part of the battery of treatment options for AD. The field of microbiome research is very rapidly advancing. Some of the additional approaches to utilizing or targeting the human microbiome therapeutically in AD can be found on the National Eczema Association's Eczema Treatments in Development web page: <https://NationalEczema.org/new-treatments>.

Dr. Schoch said, "Increasing bacterial diversity and healthy skin bacteria will likely be an exciting new way to treat AD. I am particularly excited to see if, eventually, we can use similar techniques to reduce the incidence of AD by applying these therapies early in childhood even before AD has a chance to develop."

#### TAKE-HOME POINTS:

- The diversity of the skin microbiome is crucial for maintaining healthy skin – a healthy barrier and a healthy skin immune system.
- This diversity is reduced in AD, specifically with reduced commensal bacteria and increased pathogenic bacteria like *S. aureus*.
- Methods are being tested in early clinical trials to modify the skin microbiome, promoting commensal bacteria and reducing pathogenic bacteria.

#### NEA Quiz Answer:

**C.** Interleukins are a group of cytokines secreted mainly by white blood cells. They are abbreviated "IL" and numbered (IL-4, IL-13, IL-31, etc.) of the immune system. Nearly 40 different interleukins have been discovered to date and multiple interleukins are thought to contribute to atopic dermatitis. New therapies targeting 10 different interleukins and/or their receptors are currently in development.

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#### GET THE FACTS

# Honey and Eczema

By Clare Maloney

**Honey has emerged as a popular ingredient in a variety of skincare products marketed towards people with eczema — but just how real are the potential benefits?** Can honey really help my skin? How do I apply it? Do I need to apply a solution locally on my skin, or are there benefits to eating honey? NEA is here with the facts straight from the hive.

First, it's important to recognize the differences between types of honey and how they may potentially help the skin. We spoke with Dr. Vivian Shi, FAAD, associate professor in the department of dermatology at the University of Arkansas for Medical Sciences, who outlined the most talked-about types of honey as they relate to skincare:

- ➔ **Medical-grade honey:** Honey that is standardized and processed through methods like gamma irradiation and filtration, in a lab-controlled setting, to remove contaminants and impurities. Recommended if using topically for eczema.
- ➔ **Manuka honey:** Honey that is specifically derived from the nectar of the Manuka tree, found in Australia and New Zealand. Manuka honey is known for its unique antimicrobial properties.<sup>1</sup>
- ➔ **Raw honey:** Honey that is directly sourced from the beehive. Raw honey is not heated above 118 degrees Fahrenheit at any time and has not been pasteurized (processed). Not recommended for topical use.

## So, what's all the buzz about?

People have been harnessing the medicinal benefits of honey for more than 2000 years.<sup>2</sup> When applied topically to the skin, honey can act as a thick emollient, helping to lock in moisture and maintain hydration, which people with eczema know is key to protecting the skin barrier.<sup>1</sup> The flavinoids and polyphenols found in honey are thought to provide "anti-inflammatory, anti-oxidant, anti-allergic and wound-healing benefits for eczema skin," said Dr. Shi. "An enzyme in honey called glucose oxidase produces hydrogen peroxide and kills bacteria, which further supplements honey's antibacterial and wound-healing properties." These properties can help reduce redness or swelling in the skin as it occurs by fighting off pathogens.<sup>1,3</sup>

## Finding (and affording) the right honey

Many popular skincare brands sell products containing honey, but medical-grade honey may also be applied topically to the skin on its own. In recent years, Manuka honey has been praised by beauty influencers and popular skincare brands for its unique properties, or Unique Manuka Factor (UMF) rating, which distinguishes it from other honeys for its especially potent antibacterial properties.<sup>2</sup> According to the National Cancer Institute, "Manuka honey contains a significant[ly] higher concentration of the 1,2-dicarbonyl compound methylglyoxal, which may account for its antibacterial activity; this agent may release small amounts of hydrogen peroxide, which may also contribute to its antibacterial activity."<sup>3</sup> It's because of this

## GET THE FACTS

feature that those who swear by Manuka claim it helps them maintain clear, hydrated skin by fighting off bacteria. Dr. Shi explained that “there is wide variation in raw honey and the majority of medical-grade honey does typically contain Manuka honey, derived from the flower of a single source, as in *Leptospermum scoparium*, the Manuka tree.”

While there are many reasonably priced honey products available, Manuka honey tends to run on the more expensive side, which, according to Dr. Shi, doesn't necessarily mean a better product. “Finding a medical-grade product that fits into your budget is the best approach,” she said. “Medical-grade honey can have reasonable pricing and may have purchasing options covered through some insurance plans when bought through a medical supplier.” For people living with eczema, the question of “is it worth it” boils down to a personal decision; it may be worth the cost to try to find something that really works, whereas there may be alternatives to try first that don't cost as much money.

### What's the best way to incorporate honey into my skincare routine?

Current research shows honey's properties can be beneficial for people with eczema when applied topically.<sup>4</sup> For someone trying honey topically for the first time, it's natural to wonder about the “stickiness” of honey on your skin. However, according to Dr. Shi, “stickiness is actually beneficial as a moisturizer and wound care product,” she said. “It helps seal in moisture and acts as a strong protective film layer to prevent entry of germs, allergens and irritants.” Consider trying a small amount first, topically, to see how your skin reacts, and, as always, be sure to talk through any changes to your personal treatment regimen with your healthcare provider to be sure it's right for you.

While some honey products are made to act as a dietary supplement to support skin health in general, more research is needed to determine whether any of these same benefits apply when honey or honey products are ingested orally instead of applied directly to the skin. The best time to apply honey topically is before a flare-up as a preventative measure, said Dr. Shi, as opposed to during an active flare where prescription medication may be required.

### Are there any risks or negative drawbacks to consider?

The biggest risk to consider is a rare, but possible allergic reaction. “Honey is relatively safe to apply topically. In very rare instances, some people may be allergic to honey or the contents in honey products,” said Dr. Shi. “For example, in raw honey, impurities such as pollen and flower contents can cause allergic contact eczema in people who already have eczema and are more prone to it.” As with any new product you try on your skin, it's helpful to conduct a patch test and wait 1–2 days, especially if you have a history of allergic responses.<sup>1</sup> If you do experience a reaction, you should stop application of your honey product and talk to your doctor.

### Is honey the real deal?

From sweeteners to salves, honey has proven to be a tried-and-true staple in many households for centuries. Bottom line: everyone's skin is different, and more research is still needed to confirm how effective honey is as a potential treatment for eczema skin in particular.

Although, many of its properties suggest that it can help maintain hydration as well as fight inflammation, redness and swelling, either on its own at medical-grade quality or within a skincare product.

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## MY JOURNEY

# Tricky Nickel: How I Finally Found My Most Elusive Trigger

by Christy Cushing

**On a hot summer Friday back in July 2009, I waited patiently in my dermatologist's office for the results of my skin patch test. I needed to know what was causing the severe atopic dermatitis on my face and neck.**

Having lived with eczema my entire life, I was no stranger to flare-ups. Growing up and living in the mountainous desert of Salt Lake City, Utah, the extreme winter and summer climate constantly dried out my skin. As a 10-year-old child, I remember lathering my hands with an absurd amount of Vaseline before placing them in blue cotton gloves every night. That's when I also started clipping and filing my nails short every week to limit the impact of my scratching.

In my early twenties, I conformed to conventional healthy standards of diet and exercise by becoming a vegetarian and running half marathons. For nearly 10 years, my diet primarily included oats, beans, leafy greens, nuts and whole grains. I thought I was setting myself up for success by putting my health first.

But in 2008, the stock market crashed to one of its lowest points in U.S. history. I had just started a new stressful job and within a few weeks after the stock market crash, my company informed us they would be laying off a member of our team. As the newest member of the team, I worked harder than normal to try to prove myself. My sleep suffered and the toxic pressure caused my eczema to rage out of control.

My dermatologist suggested that I eliminate all fragrances, including those in my shampoo, lotions and laundry detergent. That change improved my eczema symptoms by about 50% within a couple weeks. However, I continued to experience severe eczema all over my face, including my eyelids, around my lips and along my neck.



All photos courtesy Christy Cushing

Next up, we tried skin patch testing. The test started on a Monday when a nurse applied over 127 potential allergens within little squares all over my back. She told me not to cleanse or scratch my back, as both actions could compromise the results.

At my follow-up appointment, the nurse noted a couple red spots appearing in the boxes on my back. After reviewing the results, my dermatologist identified that I was allergic to neomycin, thimerosal and nickel. While acknowledging that I don't wear jewelry or makeup, my dermatologist suggested I try an elimination diet called the Low Nickel Diet for four to six weeks.

Foods containing higher amounts of nickel include: soy, leafy greens, sprouts, peas, leeks, beans, soy, pineapple, raspberry, sesame seeds, sunflower seeds, marzipan, nuts, chocolate, bran, oats, millet, whole grains, whole wheat, unpolished brown rice, lentils, shellfish and more. When I received the list of high-nickel foods, I felt so overwhelmed: it was all the food that I regularly ate.

My amazing and supportive spouse, Stevie, took the list and began creating a new list that included all the foods I could still eat that were also lower in nickel. Since soy is found in practically all processed foods, Stevie began cooking all of our meals from scratch and reading the ingredient labels for all processed foods. After a month of strictly avoiding higher nickel foods my eczema symptoms nearly disappeared.

A naturally-occurring heavy metal, nickel is found everywhere. Nickel is in our air, soil and water. Some foods absorb and retain more or less nickel depending on how and where the foods are grown. Also, the majority of all stainless steel contains nickel. We stopped eating canned goods. After learning that nickel from stainless steel

cookware can leach into our food when heated, we slowly replaced all of our cookware with cast iron, glass and ceramic options.

The eczema around my lips improved immediately when I stopped using cheap utensils and metal coffee mugs. Our silverware is stainless steel 18/0, which means 18% chromium, 0% nickel, whereas the most common stainless steel silverware is 18/10 and the 10 is 10% nickel.

Over the years, caring for myself has been one of the greatest things I've done for my eczema. Previously I had ignored my eczema, hid behind my glasses or covered up my flare-ups with clothing. Now my skincare routine involves regularly moisturizing and paying attention to my skin. I try to get seven to eight hours of sleep and stay hydrated throughout the day. I am also so grateful for my spouse Stevie's love and support. His kindness reminds me to not judge my skin when I experience an active flare-up. I accept that I live with chronic eczema and that I need to take the time to care for my skin and my needs.

Visibility is powerful. My father and grandmother both lived with eczema. I watched them struggle with itch, inflamed skin, dandruff and hayfever just like me. We often gathered together to play cards and board games. But I don't ever recall us talking about our eczema. I wish I could have learned from them about the skincare practices they recommended or avoided.

At the encouragement of Stevie, in 2013, I started sharing my experience on my own website. I love connecting and learning from others who also live with eczema and nickel allergies.

*Christy Cushing is a NEA Ambassador who shares tips on how to live low nickel with stories, reviews and recipes on her website [NickelFoodAllergy.com](https://NickelFoodAllergy.com).*

# 3 Situations Where Gloves for Eczema Come in Handy

By Steve Nelson and Clare Maloney



**For most people, gloves are a wintertime staple meant to keep hands toasty in the cold. But for people with eczema, gloves can be skin-savers. Here's how.**

## Stopping the scratch: Gloves for babies and young children

NEA Ambassador Aisha Bryant knew she needed gloves for her one-year-old daughter Bailey when "she dug at her skin so hard, harder than normal, and it started to bleed." Similarly, NEA Ambassador Amy Chrnlich described "a daunting process" while trying to find the right gloves for her daughter Ella "to create a barrier between Ella's nails and her skin." While eventually finding 100% cotton gloves that worked for Ella, Amy said buying gloves in bulk was the most cost-effective solution for her family.

What if you've found the right pair of gloves for your little one — but they just can't keep them on? "There are three major eczema gloves for babies that I have found and personally use for my children," said Jamie Kim, a board-certified physician assistant specializing

in dermatology: Scratch Me Not sleeves, Handsocks mittens and "glove mittens."

Scratch Me Not sleeves "are nearly impossible to get off because they wrap around the shoulder and back," said Jamie. "When your child tries to scratch their face, they will rub their face with a delicate and soft [silk] surface instead of tearing up their skin." In her experience, Handsocks mittens are especially helpful for keeping hands warm in colder environments, but "you can't go wrong with either."

Glove mittens come in handy for parents who need more flexibility in children's protective wear; you can keep the fingers inside the glove in case of scratching or cold, or you can flip back the tip of the glove to expose your child's fingertips if they need to tie their shoes, button a shirt, or finish any other fine-motor activity before "closing up" their fingertips again inside the glove.

Aisha counseled other patients to be patient and keep trying. "Don't give up," she said. "Keep going until you find the right pair that works."

## Wet wraps: Using gloves to enhance healing

If you're looking for gloves to lock in next-level hydration while treating flares, then wet wrap treatments may be the option for you. "The most significant benefit to Ella from her eczema gloves was our ability to wet wrap her hands in a safe and effective way," said Amy. "We'd then put warmer, dry gloves over the damp ones."

A wet wrap treatment helps repair damaged skin by simultaneously trapping moisture while protecting the skin from scratching. This technique enhances the absorption of your product of choice (such as petroleum jelly) or prescription medication. Check out our step-by-step guide to safe wet wrap treatments here: [NationalEczema.org/eczema/treatment/wet-wrap-therapy](https://NationalEczema.org/eczema/treatment/wet-wrap-therapy).

## Trigger-guards: Using gloves to avoid irritants and allergens

NEA Ambassador Sarah Harris has lived with eczema all her life, in warm, dry climates, as well as colder, snowy climates. "Gloves have been an eczema treatment for me since I was a young child," she said. Whether it's chopping tomatoes, folding laundry or washing your hair, there are dozens of situations where your eczema-prone hands might benefit from gloves.

Dr. Elaine Siegfried, pediatric dermatologist at the St. Louis University School of Medicine, reminded us that the choice to wear gloves is largely a personal one. "As a summary recommendation, the type of glove depends on the occupational exposure (wet vs dry)."

According to Dr. Siegfried, best practices include:



Keeping several pairs of cotton gloves around the house for doing chores;



Washing reusable eczema gloves inside-out with perfume-free and dye-free soap (let them air dry thoroughly);



For wet work, wear a cotton base layer, then cover with unlined, powder-free vinyl or neoprene gloves;



Avoid getting any water inside your gloves (unless following instructions for a wet wrap treatment); and



Be sure to wear gloves while gardening.

## Picking the right fabric for Eczema Gloves

Morgan Maier is a physician's assistant at Seattle Children's Hospital who helps parents and children find gloves that work well for their eczema. "If someone's eczema is not under control, or if they're using steroids more than two weeks out of the month," she said, "I recommend using gloves that are 100% cotton and a snug fit."



NEA community member Jake Fricke, who lives with severe eczema and uses 100% cotton socks on his hands at night to prevent his hands from flaring.

**"If someone's eczema is not under control, or if they're using steroids more than two weeks out of the month, I recommend using gloves that are 100% cotton and a snug fit."**

**~ Morgan Maier, Physician's Assistant, Seattle Children's Hospital**



NEA Ambassador Sarah Harris, with her cold weather gloves outside in Vermont.

While it may seem counterintuitive that the gloves should be tight and close to the skin, Morgan explained that “occlusion,” or keeping the potential triggers outside the gloves, can lead to a “better response to everything touching the hands.” She said the most common fabrics to avoid were wool or anything synthetic, like polyester.” Just 100% cotton or as close to it as you can find. Cotton socks work too.”

With a cotton base, you can add another layer of gloves on top, based on the individual needs of your activity. Sarah Harris explained that she often wears cotton gloves inside her winter gloves. But the cotton base is what matters most. “You want your gloves to breathe,” she said.

**"You want your gloves to breathe."**

~ Sarah Harris

For more tips on protecting your hands at home, visit [NationalEczema.org/protecting-your-hands-at-home](https://NationalEczema.org/protecting-your-hands-at-home).

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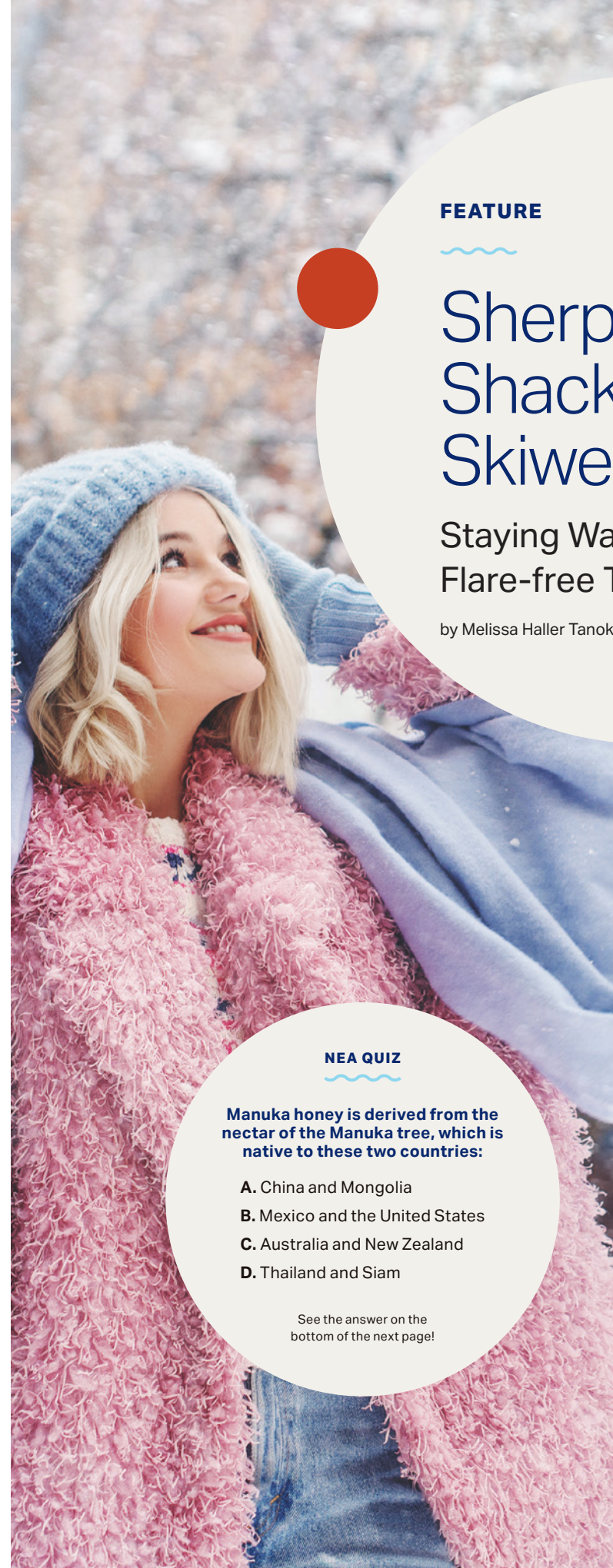
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# Sherpas, Shackets and Skiwear, Oh My:

## Staying Warm, Stylish and Flare-free This Winter

by Melissa Haller Tanoko



**NEA QUIZ**

**Manuka honey is derived from the nectar of the Manuka tree, which is native to these two countries:**

- A. China and Mongolia
- B. Mexico and the United States
- C. Australia and New Zealand
- D. Thailand and Siam

See the answer on the bottom of the next page!

Retail stores and catalogues are jam-packed with stylish and cozy winter trends, but people with eczema face unique challenges when choosing winter clothing. Warmer items are often made with fabrics that can cause irritation and itching. They can also lead to overheating, sweating and resulting flares.

But don't worry, having eczema doesn't mean you have to sacrifice fashion. We connected with a panel of experts and asked for their advice on dressing for winter this year: Daniel Boey, a world-renowned fashion producer and director (who also has eczema); Dr. JiaDe (Jeff) Yu, a board-certified dermatologist at Massachusetts General Hospital; and Dr. Rupam Brar, assistant professor of pediatrics at the NYU Grossman School of Medicine.

### The Latest Winter Trends

Boey highlighted a number of options for fashionable outerwear this year, noting that “designers are taking ski fashion and mixing it with our daily wear. Think puffer coats in bold, brash colors, mixed with cropped or cardigan knits.” For more formal wear, tailored long coats and trench coats are in style this year. He also mentioned that “ponchos and capes had a resurgence at Gabriela Hearst, Alberta Ferretti and Missoni.”

Sherpa seems to be in everything this season, providing the lining and/or outer layers of jackets, vests, hats, purses—you name it. Sherpa is a type of fleece fabric made from polyester, acrylic, or cotton and is sometimes called 'faux shearling,' named for its



dresses and two-piece sets. We also see lots of knitted polo shirts for men in the seasonal collections." Remember to look for lighter cotton knits that won't make you overheat.

### What to Look for in Fabric

Fabric is the most important aspect to consider when looking for eczema-friendly clothing, especially garments that lie directly against the skin. All of the experts we interviewed agreed that natural fabrics (other than wool) are a good choice for people with eczema. They also recommend looking for soft, finely-woven fabrics. Textiles with larger fibers tend to be itchier. The ideal fabric is 100% cotton, according to Boey and Dr. Yu, especially for garments that touch the skin directly. "Cotton is soft, cool, great at absorbing sweat, easily washable, allows the skin to 'breathe' and doesn't irritate skin as much," Boey explained.

It is best to choose organic cotton, whenever possible. Dr. Yu said, "100% organic cotton clothing is less likely to contain some potential allergens in clothing, including potentially allergenic dyes (disperse dyes) as well as formaldehyde resins, used in clothing labeled "wrinkle-free" or "stain-repellant." He continued, "Some fabrics have an 'OEKO-TEX' label which also certifies that they are free of harmful and potential allergenic chemicals. These are harder to find, but are optimal." Boey recommends Supima cotton, which can be found at major stores.

Clothes made from bamboo fibers are also eczema-friendly. "It's another soft, breathable material that is more absorbent than cotton. It's also effective at regulating body temperatures and has antibacterial properties," Boey said. Boey also uses the HEATTECH clothing made by Uniqlo. Even though it is made of synthetic fibers, it doesn't irritate his skin or cause overheating.

Dr. Yu and Dr. Brar routinely tell their patients to avoid wool. Dr. Yu said: "Even though it's a natural fabric, it is often very scratchy and the fibers can irritate anyone with exposed, sensitive skin."

Boey and Dr. Yu both stressed that triggers can vary widely from person to person. As a result, finding the right fabrics can be a process of trial and error. Boey said, "You have to experiment with different types of textiles until you know for sure what your body can tolerate. It's different for everyone."

While avoiding irritating fabric is important, Dr. Yu also underlined the importance of washing clothes carefully. He recommended, "Wash clothing in 100% fragrance-free detergents and avoid fabric softeners and dryer sheets."

**NEA Quiz Answer:**

**C.** According to the U.S. Department of Agriculture and the Invasive Species Compendium, the manuka tree (*Leptospermum scoparium*) is native to Australia and New Zealand.

**Reference:**  
The Invasive Species Compendium. *Leptospermum scoparium*. November 19, 2019. <https://www.cabi.org/isc/datasheet/30097>; Accessed December 19, 2021.

resemblance to the wool-lined clothing worn by the Sherpa people of Nepal. Sherpa mimics the bumpy texture of sheep's wool. Sherpa and fleece are generally OK for people with eczema, though it depends on the specific fabric and quality.

The shacket (a combination of shirt and jacket) is another hot trend this winter. "The shacket combines the best of two staples and is great to wear when the weather is cool but not cold enough for a full jacket," Boey said. "You can layer them over a tee, a thin sweater, a blouse or a dress. And men can embrace this trend too." He went on to say, "Shackets also happen to be made of really comfortable fabrics." These include cotton and flannel – both good choices for people with eczema.

This year, one way to update your wardrobe is to look for a few key pieces in the saturated (or vivid) colors that have been seen on the runways, in contrast to the neutral tones of past years. You can also choose to mix and match them. Boey explained, "Complementary and secondary hues of the color wheel are mixed (up) and matched, e.g., mustard meets lemon at Jil Sander, pink and marigold at Miu Miu."

In terms of fabrics on the runway, Boey said, "Knits are back in a major way. Designers are doing luxe knitwear in the form of skirts, maxi

Experts also recommend washing garments once before wearing in case there are any remaining chemicals or dyes. Boey also cuts the labels off his clothing (especially his base layer) prior to wear.

### It's All About that Base (Layer)

It's important to find clothes that fit well and provide room for air to flow. Boey and Dr. Brar both advised against tightly-fitted garments that can cause itching and overheating. Regulating heat with appropriate clothing that isn't too thick is another important aspect of managing eczema. Dr. Brar said, "Heat is such a big trigger for my patients with eczema." Boey recommended layering as the best way to ensure optimum comfort and avoid overheating. He recommends three layers: base, middle and outer.







He explained that the base layer "is of utmost importance." This is the layer of clothing that comes in direct contact with the skin. Boey chooses soft clothing, usually made from Supima cotton, or Uniqlo's HEATTECH material.

Boey said, "The middle layer is where you can make your fashion statement. These garments should keep you warm, but should be comfortable enough in an indoor environment as well."

The outer layer should "protect you from the biting cold of the outdoor winter weather," Boey said. He explained this can include coats, jackets or ponchos. He avoids turtlenecks or other garments with higher necks because they irritate his skin

### Key Take-Aways

Choosing the right winter clothing is possible when you remember these key points:

-  Avoid chemicals, especially clothing labeled "wrinkle-free" or "stain-resistant;"
-  Look for soft, breathable, natural materials like cotton and bamboo;
-  Choose lighter-weight clothing that won't make you overheat indoors;
-  Dress in layers;
-  Wear your most fashionable pieces over a comfortable base layer;
-  Stay warm and have fun!

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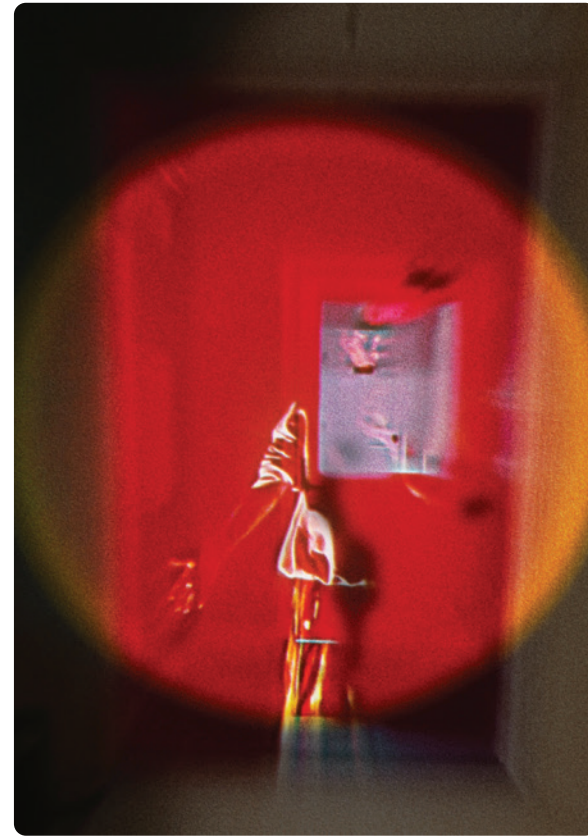
Hong Hu, Research Advisor,  
Lilly Research Laboratories

# Original Artwork from Our Community

We asked members of our eczema community to submit original artwork. It didn't necessarily have to deal with eczema, we just wanted to see your creative expression. And boy did we! We're so excited to showcase some of the work here. To submit your work for an upcoming issue, email [editor@nationaleczema.org](mailto:editor@nationaleczema.org).



← **Dried Rose Study**  
14x26 mixed media on wood  
Brigid Jurgens



↑ **(midnight) //**  
**(all of this is temporary)**

Mike Chavez



← **Down the Rabbit Hole**

16x20 oil paint on canvas

Brigid Jurgens



↑ **Insecurities: Embroidered Dress**

Lycra, hand embroidered with cotton thread and beads; tulle fabric using back stitch and French knots

Hannah Doggett



↑ **Insecurities: Screenprint**

Cotton with foil detailing heat pressed

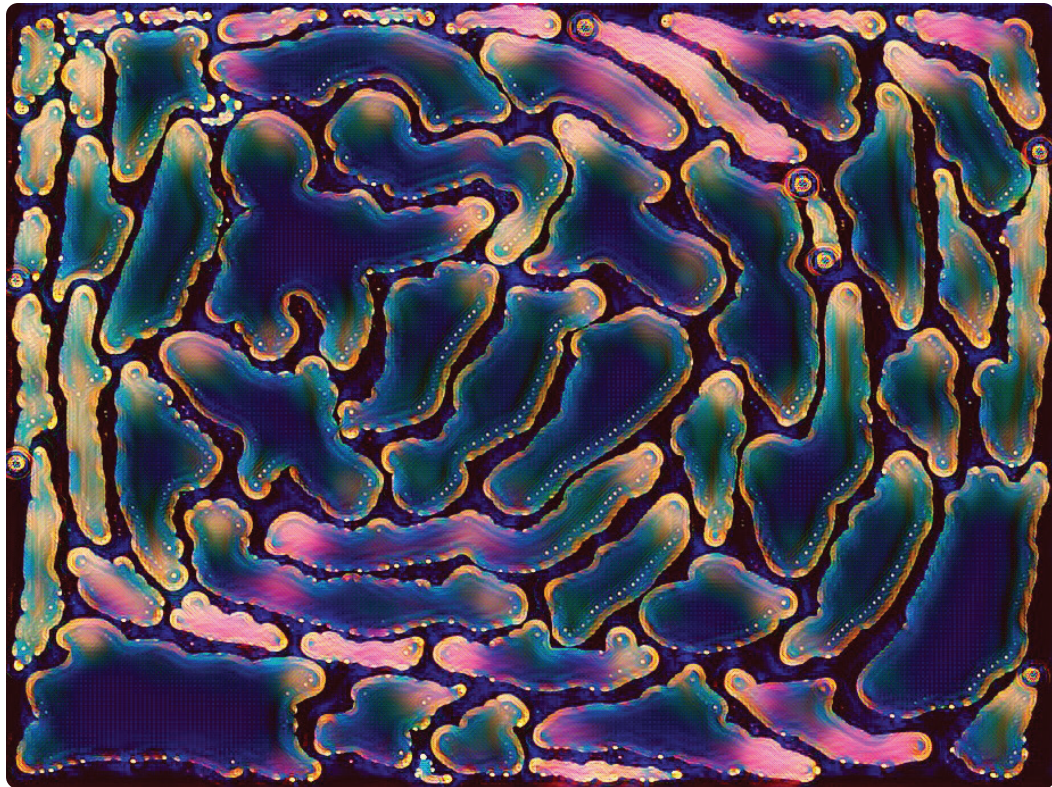
Hannah Doggett



← **A woman holds a flower. Who is she?**

*Watercolor and pressed flowers*

Nancy Wu



← **(Paradox)**

Mike Chavez

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# Spotlight on the NEA Research Grant

To better understand the future of eczema research, we connected with two former recipients of NEA Research Grants, Dr. Katrina Abuabara and Dr. Anna Di Nardo. We asked both doctors to share details about their background in research, what they're working on today, how the NEA Research Grant impacted their work and also how they would explain their research to a child currently living with eczema.

The 2021 NEA Research Grant recipients were just announced in December (including another grant for Dr. Abuabara!). Learn more in NEA News on Page 3. The 2022 grant cycle will open in May.



**Dr. Katrina Abuabara,  
MA, MSCE**

Associate Professor of  
Dermatology, UCSF

Associate Adjunct Professor of  
Epidemiology, UC Berkeley School  
of Public Health

## How did you come to first start researching eczema? Did something first inspire this direction?

*Dr. Abuabara:* I worked in public health before going to medical school, so I was interested in studying conditions that had a large impact on public health. When I began my dermatology training, I was surprised by how little was known about the long-term disease

course of eczema, one of the most common dermatologic conditions. I witnessed the impact and uncertainty of flares, and I saw what those long-term outcomes looked like for patients and parents. This experience motivated me to study long-term outcomes of eczema to try to identify factors that influence the disease course so that we could offer better counseling and treatments to patients.

## For what research were you first awarded a NEA Research Grant and when? Have you received more than one NEA Research Grant?

*Dr. Abuabara:* I was lucky to receive my first NEA Research Grant in 2017 to study how eczema activity and severity were associated with sleep throughout childhood. I received a second NEA Research Grant in 2020 to investigate eczema and differences in the causes and underlying immune patterns among older adults.

## What is the primary thesis of your current research?

*Dr. Abuabara:* My research group is trying to understand how sociocultural and environmental factors interact with genetic and biological factors to influence the disease course of eczema.

## How has the NEA Research Grant impacted your research?

*Dr. Abuabara:* The NEA Research Grants enabled me to pursue new ideas and generate preliminary data that subsequently led to a larger NIH grant.

## How might your research one day help to improve patient outcomes?

*Dr. Abuabara:* Our goals are three-fold: first, to identify subgroups of patients most likely to experience a particular disease course or develop comorbid conditions so we can offer better counseling; second, to identify factors that could reduce eczema recurrence or persistence so we can offer better interventions; and third, to help understand which new treatments help to modify the long-term course of disease (in addition to improving symptoms in the near-term) so we can offer more comprehensive care.

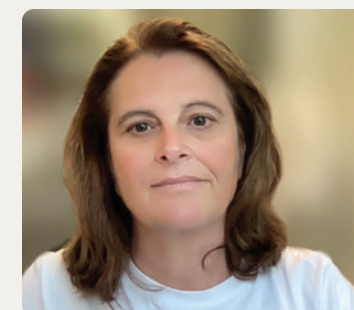
## What are the latest developments or findings in your field you find the most exciting?

*Dr. Abuabara:* We found that adult-onset eczema is unexpectedly common and is likely to have different drivers than childhood-onset disease. We also found increasingly high rates of eczema diagnoses among older adults. These are important findings because they help us to counsel adult patients better and facilitate work to understand which patients might benefit most from new targeted treatments. We have identified associations between eczema and other organ systems like the heart and brain and are now working to identify underlying mechanisms that may link different conditions and to identify whether some patients could benefit from additional

screening or treatment. Finally, I'm excited about new work on the role of environmental factors on eczema, including the impact of microbes that are found in the dust in people's homes.

## How would you explain your research to a child who lives with eczema?

*Dr. Abuabara:* We are trying to understand what makes you itchy at certain times and how eczema affects things like your sleep and schoolwork. We are also trying to understand when and why some kids get better so we can make all kids better sooner.



**Dr. Anna Di Nardo, PhD**

Vice Chair for Research,  
Professor of Dermatology

University of California San Diego

## How did you come to first start researching eczema? Did something first inspire this direction?

*Dr. Di Nardo:* Atopic dermatitis (AD) is a passion that I inherited from my late mentor, Professor Giannetti, back when I was a resident; I spent a few years in an allergy clinic and treating AD was our challenge.

## For what research were you first awarded a NEA Research Grant, and when? Have you received more than one NEA Research Grant?

*Dr. Di Nardo:* Almost 20 years ago, I received a small grant from NEA on cathelicidin in the skin mast cells that helped me obtain my first NIH grant. Now I am a principal investigator exploring new avenues for my lab's research.

## What is the primary thesis of your research?

*Dr. Di Nardo:* The lab is mainly studying mast cells' contribution to innate immune response. In doing that, we started to look at a specific receptor in skin mast cells that was important for the response to viruses called S1PRs. Recently, there has been a lot of attention to S1PRs, especially on T-cells that have resulted in the drug called fingolimod for multiple sclerosis. Research on S1PRs inhibitors has been proposed to treat AD for their activity on T-cells. However, I realized that very little is known about S1PRs in the skin barrier and in keratinocytes, and so we started to study them in the skin.

## How has the NEA Research Grant impacted your research?

*Dr. Di Nardo:* The NEA grant allows my lab to fill the gap of knowledge on S1PRs in the skin barrier.

## How might your research one day help to improve patient outcomes?

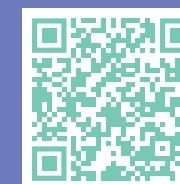
*Dr. Di Nardo:* If S1PRs are used in the treatment of AD, a better knowledge of their activity on the skin barrier is essential to improve or correct their performance.

## What are the latest developments or findings in your field you find the most exciting?

*Dr. Di Nardo:* We found that S1P receptors control how much the skin surface can retain water.

## How would you explain your research to a child who lives with eczema?

*Dr. Di Nardo:* The skin surface that is affected by eczema loses its capacity to maintain water inside your skin. We have found a new key to control the water that leaves your skin and keep it more moist.



Make a donation to the NEA Research Fund to support cutting-edge research work being done by leaders in the field like Dr. Abuabara and Dr. Di Nardo. Scan the QR code to donate.

[NationalEczema.org/research/research-we-fund/for-researchers](https://NationalEczema.org/research/research-we-fund/for-researchers)

# Black Americans Face Higher Out-of-Pocket Costs for AD

New study shows impacts of out-of-pocket (OOP) healthcare expenses associated with atopic dermatitis (AD) and Black Americans.

The NEA research team has published its third paper on the out-of-pocket (OOP) costs of atopic dermatitis (AD) in the United States: the paper characterized the categories and impacts of OOP healthcare expenses associated with atopic dermatitis (AD) and Black Americans.

In the study, NEA researchers found that “Black respondents with AD were significantly more likely to report OOP costs for prescription medications both covered and not covered by insurance, emergency room visits and outpatient laboratory testing.”

The study also found that more “Black individuals also reported OOP costs for office visit co-pays and deductibles, a variety of over-the-counter medications, hygiene products, childcare and transportation.”

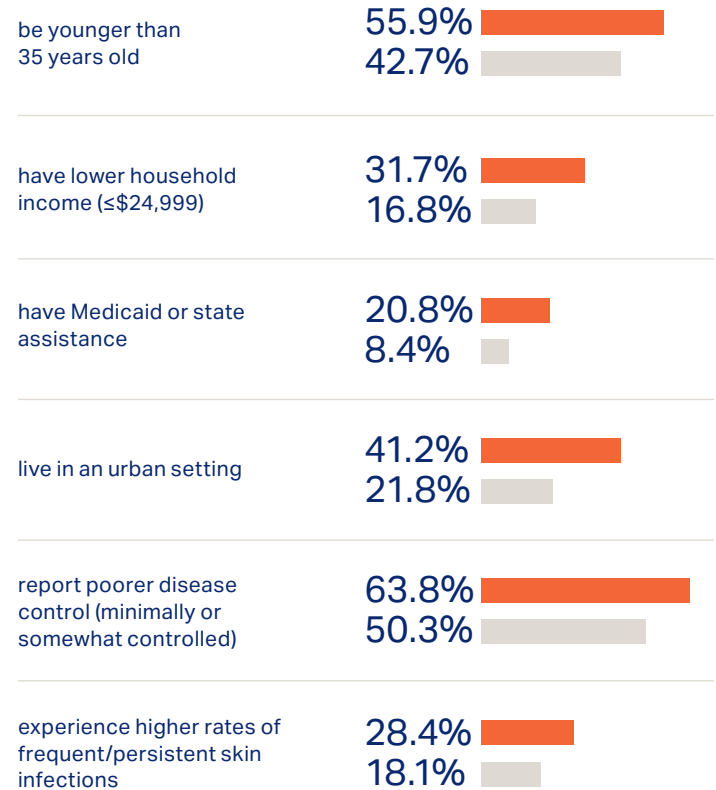
Despite elevated OOP costs across a variety of AD healthcare categories, “Black respondents were more likely to have a lower household income than their non-Black counterparts, and they were also more likely to report a severe or devastating financial impact on household finances. Black race itself was found to be a predictor of harmful financial impact among individuals with AD.”

The study highlights the need for healthcare providers to recognize the immense financial burden in this group of patients and proactively discuss OOP cost in tandem with efficacy and safety when considering a treatment plan. Because there is no “one-size-fits-all” treatment plan for AD, healthcare providers should engage in shared decision making with their AD patients — especially Black patients — and create an individualized treatment plan that is practical, feasible and financially responsible.

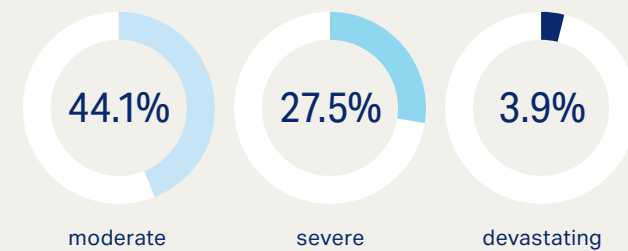
For more information about this study and other research conducted by NEA, visit: [NationalEczema.org/surveys](https://NationalEczema.org/surveys)

The research team explored the demographic differences between Black and non-Black respondents with AD to better understand the disparity in their financial OOP burdens.

**Black vs non-Black individuals with AD were more likely to:**



**Black individuals with AD reported moderate, severe and devastating household financial impact:**



Chovatiya, R., Begolka, W.S., Thibau, I.J. et al. Financial burden and impact of atopic dermatitis out-of-pocket healthcare expenses among black individuals in the United States. *Arch Dermatol Res* (2021).

Striving to deliver breakthroughs that **enable freedom** from day-to-day suffering for people living with chronic inflammatory diseases, which can be debilitating, disfiguring and distressing, dramatically affecting what they can do

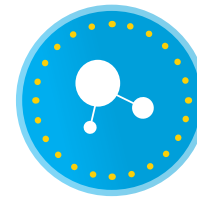


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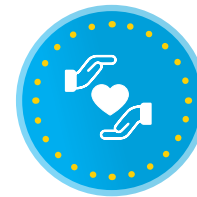
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Becoming an ambassador gave me the tools, platforms and avenues I needed to truly drive change and feel like there was finally SOMETHING I could do to change the course of my daughter's eczema journey."

AMY  
CHRNELICH