

# SKIN CANCER RESEARCH INSTITUTE

*The "Skin Deep" research that saves lives*



CREATING HOPE

THROUGH DISCOVERY

From Cover: Immune cells (shown in pink and green) try to control the growth of a group of skin cells (blue dots on brown) replicating out of control—a characteristic of cancer.

As the focal point of the Department of Dermatology at Case Western Reserve University, led by Kevin D. Cooper, M.D., the Skin Cancer Research Institute engages the foremost experts in dermatology and oncology to work collaboratively across disciplines to identify new ways to treat and prevent skin cancers.

The Skin Cancer Research Institute (SCRI) at Case Western Reserve University exists to:

- > Discover causes of skin cancers
- > Prevent skin cancers more effectively
- > Develop new therapies for skin cancer treatment

# COMPASSIONATE CARE AT THE FOREFRONT OF DISCOVERY

The Department of Dermatology at Case Western Reserve University is one of the top centers of excellence worldwide in skin research, education, and clinical care.

Its outstanding faculty delivers the best available treatments to patients, while continuously promoting discovery and innovation through the translational pathway that takes research “from lab to life.”

The Department of Dermatology is:

- > 1 of 6 National Institutes of Health (NIH)-designated Skin Diseases Research Centers nationwide.
- > 1 of 7 NIH-designated Centers of Research Translation—the only one in dermatology.
- > 1 of 7 programs to receive a Third Frontier Grant from the State of Ohio in 2008, to establish the Ohio Center of Innovative Immunosuppressive Therapies.

An initial investment towards its first research center in the early 1990s has since yielded \$55 million in external research funding to advance prevention and treatment for skin diseases.

- > 19 full-time faculty members
- > 41 clinical studies in progress
- > 5 invention disclosures and patent filings
- > 58 publications in peer-reviewed journals in the past year
- > 2 new spin-off companies established



## ABOUT KEVIN D. COOPER, M.D.

Dr. Kevin D. Cooper is professor and chairman of the Department of Dermatology and professor of Oncology and Pathology at Case Western Reserve University and University Hospitals Case Medical Center. He is director of the NIH Skin Diseases Research Center at Case Western Reserve University, director of the Murdough Family Center for Psoriasis, and principal investigator of the NIH Psoriasis Center of Research Translation.

Dr. Cooper joined Case Western Reserve University in 1995 from prior positions at the National Cancer Institute, National Institute of Health, and University of Michigan. At Case and University Hospitals Case Medical Center, he has developed a highly interactive, matrixed program that intersects teaching and seven geographical clinical sites with research activities that span basic laboratory, translational, and clinical trial investigations.

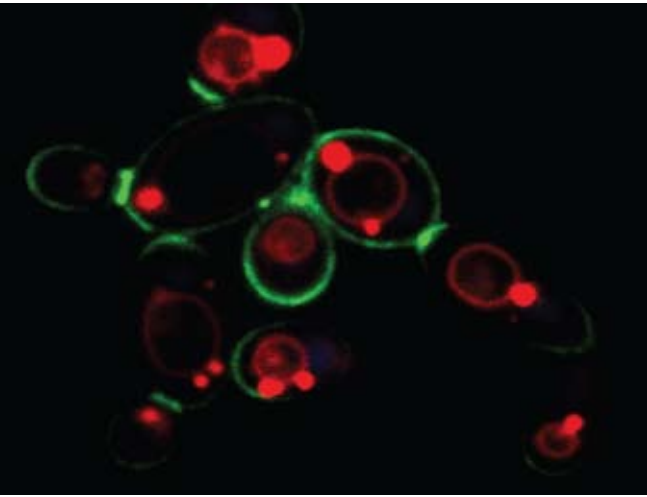




## COLLABORATING PROGRAMS

Like spokes of a wheel, centers extending from the Department of Dermatology address all of the major skin diseases and disorders through a nexus of research and clinical specialties.

Dermatology researchers collaborate scientifically within the School of Medicine, with numerous experts from multiple schools at Case Western Reserve University, and with many collaborating clinicians and researchers at University Hospitals Case Medical Center and the VA Medical Center.



### Skin Study Center

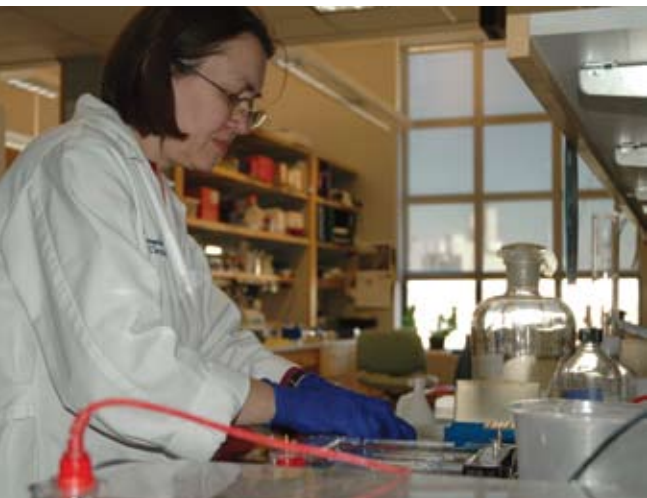
Houses state-of-the-art equipment for studying skin responses, advancing sun protection methods, developing photodynamic therapy, and bridging the gap between clinical patients and scientists in the lab.

### Skin Diseases Research Center

Comprises 60 individuals across 15 departments to advance knowledge and treatment of skin diseases.

### Center of Research Translation (CORT)

A \$6 million grant from the NIH brings together physicians and scientists to create new therapies and provide relief to patients with psoriasis.



### Murdough Family Center for Psoriasis

Created through a gift of \$5 million from the Murdough Family Foundation, this center supports the entire cycle of care to serve patients with psoriasis by identifying unmet medical needs, leading research discovery, translating research into new psoriasis therapies, and providing nursing outreach to bring new therapies to the community.

### Center for Medical Mycology & Biofilms

A clinical testing lab for physicians, corporate partners in pharmaceutical development, as well as international clinical trials and basic lab studies that analyze interactions between fungal biofilms and host immune cells.



### NCI-Designated Case Comprehensive Cancer Center and NIH Clinical and Translational Science Collaborative

The Skin Cancer Research Institute also benefits from the rich milieu created by the Case Comprehensive Cancer Center—a designated center of the National Cancer Institute, and the Clinical and Translational Science Collaborative—a member of an elite consortium of centers created and funded by the National Institutes of Health. These core School of Medicine centers provide critical cutting-edge technologies and expertise to advance research and enhance clinical care.

# VISION

## > TRANSFORMING SKIN CANCER INNOVATION

One of the most robust skin cancer research engines in the nation, the Department of Dermatology is poised to create a research institute unique in scope on a national scale. Its efforts are validated by generous grant funding from the National Institutes of Health as well as through its continuous stream of groundbreaking discoveries over the past decade.

What exists now within this rich infrastructure is an opportunity to transform discovery in skin cancer research.

CWRU plans four new centers exclusively dedicated to the study of skin cancer, which will complement existing centers of excellence in the Department. The emerging centers include:

- > Melanoma Center
- > Basal/Squamous Cell Carcinoma Center
- > Photo Medicine Center
- > Environmental Agent Center

The Skin Cancer Research Institute has an opportunity to be unique in the nation in its capacity to bring new therapies “from lab to life” by aligning specialized skills and catalyzing new knowledge through these centers.



## COMMON SKIN CANCERS

Basal cell carcinoma is the most common human cancer and can result in severe disfigurement. About one in six Americans will get a basal cell skin cancer during their lifetime, caused by UV exposure.

Melanoma is the deadliest skin cancer because it metastasizes to other organs if not removed early. Each year approximately 68,000 cases of melanoma will be diagnosed, and that number is growing.

Squamous Cell carcinoma is the second most common skin cancer. Like melanoma, it can metastasize to other organs if not treated promptly. There are about 250,000 cases of squamous cell skin cancer per year.



Minh Lam, Ph.D., applies high-tech imaging techniques for research in the emerging field of photodynamics, the application of light and photosensitive chemicals to target harmful cells. Case Western Reserve's discovery and application of the Pc 4 molecule is the most targeted photodynamic treatment known. Unlike other cancer treatments, Pc 4 allows doctors to target "bad" cells, while leaving healthy cells intact.

## RESEARCH

### > TRANSLATING TODAY'S PROBLEMS INTO TOMORROW'S CURES

Remarkable discoveries in skin cancer research are already unfolding:

#### Pc 4 Photodynamic Therapy

A hallmark translational program at the Skin Cancer Research Institute is in Pc 4 photodynamic therapy. The technique is highly specific in targeting and killing tumor cells by activating the Pc 4 molecule with light.

Researchers have taken this molecule from early cell testing to human trials and they anticipate applications for the therapy in skin lymphoma, among other skin cancer applications and autoimmune diseases currently under investigation.

#### Applying Photodynamics to Attack Microbes

Researchers are exploring applications of Pc 4 photodynamic therapy to kill the bacteria and fungi that cause disease and infection, which could have wide applications, especially for topical wounds.

#### Preventing Skin Cancer

Department of Dermatology and the Center for Proteomics and Bioinformatics researchers are collaborating with industry to develop more comprehensive tests to measure how well sun protectants work on the skin. Also, by testing the effectiveness of ingredients used for UV protection, researchers are working to identify additional modes of skin cancer prevention. For example, antioxidants in green and white tea are shown to help the skin repair itself immediately after UV exposure, thus discouraging the formation of mutations that can lead to cancer.

#### Identifying New Pathways for Skin Cancer Treatment

In cancer, Regulatory T cells, part of the body's immune response, become confused and protect the tumor cells they should be destroying—among these abnormal cells, there is a higher presence of IL-6, a cytokine that carries signals between cells. It is believed that IL-6 is influencing these Regulatory T cells and preventing them from doing their job of eliminating cancerous cells. By understanding how IL-6 works in the skin, researchers hope to use it to fight cancer.

# EDUCATION

## > PREPARING FOR FUTURE DEMAND

Meeting the unknown needs of the future in skin cancer is a department imperative. Students are attracted to the opportunity to learn from leading experts in the field, and to be immersed in the most modern research and clinical techniques available. The Department offers:

- > Dermatology Residency Training Program – medical school graduates train to become dermatologists in the setting of one of the top 10 research departments in the country.
- > Physician-Scientist Training Program – trains future physician-scientists for translational research.
- > Dermatology Nurse Practitioner Training Program – influences national standards for dermatology nurse practitioner training as hospitals struggle to meet growing demand.
- > Ph.D. Training Program – Ph.D. candidates study skin diseases and basic mechanisms of skin disease.
- > Medical Student Research – students engage in research with established mentors to develop their skills and advance medical science.



Jeremy Bordeaux, M.D., M.P.H., director of the Dermatologic Surgery and Melanoma Program at University Hospitals Case Medical Center, recently received the prestigious Theodore Tromovich Award, presented to a fellowship-trained Mohs micrographic surgeon who has performed outstanding skin cancer research.

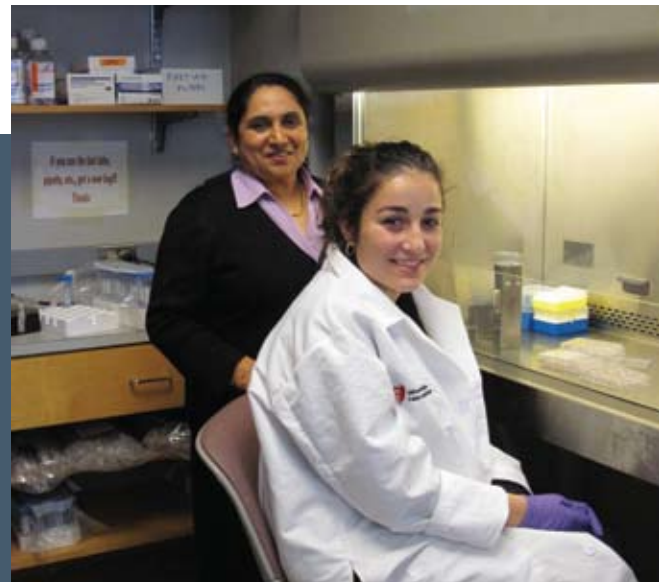
# COMMUNITY OUTREACH

In addition to hosting free clinic days with skin cancer screening services, nurse practitioners visit community locales to enhance awareness for skin disease and treatment.

# SKIN CANCER ADVOCACY

Members of the Department are active in lobbying the Food and Drug Administration (FDA) to establish consistent guidelines to ensure that sunscreen in retail stores is effective in protecting skin from the sun's most damaging rays.

For her medical thesis, Jenny Dvorkin, a third-year medical student, works under the mentorship of Pratima Karnik, Ph.D., to examine chemicals in the environment that may alter melanocyte function—the pigment-producing skin cells where melanoma develops.





## HOW YOU CAN HELP

Supporters of the Skin Cancer Research Institute play an integral role in making discovery possible. The impact of this support touches many individuals as researchers work to save lives through new knowledge and cures.

Attracting funding to establish four new centers exclusively dedicated to skin cancer research is a major priority.

- > Melanoma Center
- > Basal/Squamous Cell Carcinoma Center
- > Photo Medicine Center
- > Environmental Agent Center

Contributions that will make these centers possible include the creation of:

- > **Endowed professorships and chairs** – support faculty recognition, recruitment, and retention; drive program development and operations; and sustain matrix collaborations with medical, radiation, and oncology experts.
- > **Endowed fellowships** – allow promising students an opportunity to pursue research careers, which is essential to sustain the pipeline of research for the future. Funds support fellows' salary and benefits, supplies, research costs, travel for presentations, and publication costs.
- > **Endowed Lectureships** – encourage the exchange of ideas by inviting renowned experts in the field to speak to regional faculty researchers and research partners, and to present and create dialogue on emerging research. Funds provide for honorarium and travel costs.

Endowments can be funded through outright gifts, bequests, and life income arrangements.

You can make a difference today in the fight against skin cancer. For more information, or to learn about the many ways to give, contact:

**Bernadette Clemens**  
Director of National Development  
Case Western Reserve University  
(216) 368-5033  
bernadette.clemens@case.edu

**Michael Seeley**  
Executive Director of Development  
Case Western Reserve University  
School of Medicine  
(216) 368-6883  
michael.seeley@case.edu.

“The Skin Cancer Research Institute provides a distinct opportunity to illuminate hope, identify solutions, and enhance treatments to save the lives of patients in Northeast Ohio and beyond through an unparalleled strategy for translational research and a team of the finest clinicians and researchers in the country.”

— Kevin D. Cooper, M.D., chairman of the Department of Dermatology at Case Western Reserve University and University Hospitals Case Medical Center



10900 Euclid Avenue  
Cleveland, OH 44106-4923  
(216) 368-6883  
www.casemed.case.edu/

