



Stem Cells Offer a Glimmer of Hope for a devastating childhood skin disease

"As skin diseases go, recessive dystrophic epidermolysis bullosa is about as severe as it gets," says Angela M. Christiano, Ph.D, the Richard and Mildred Rhodebeck Professor of Dermatology and the Director of the Department's Basic Science Research Group. Unfortunately, there are thousands of kids and families in the U.S. who know this all too well.

An inherited skin disorder, epidermolysis bullosa (EB) usually begins in infancy, sometimes *in utero*. In the most severe form of the disease, recessive dystrophic EB, painful, disfiguring blisters, much like third-degree burns, form all over the skin in response to the slightest trauma. Epithelial tissue that lines the mouth, esophagus, lungs, and other structures can also be affected. "There's no curative therapy, just wound care and medical management at the moment," says Dr. Christiano.



Dr. Angela M. Christiano

But there's a glimmer of hope. A team of researchers at Columbia, including Dr. Christiano, is testing a promising new approach to EB: a modified bone marrow stem cell transplant.

The idea behind the treatment is to give EB patients a long-lasting supply of type VII collagen, an adhesive pro-

cont. on page 3

welcome!

The Department of Dermatology at Columbia University Medical Center is delighted to introduce you to the first issue of *SkinTouch*, our new newsletter. *SkinTouch* is aimed at keeping our friends informed about advances in patient care, research, and education at Columbia Dermatology, and to introduce readers to our talented physicians, fellows, residents, and staff. Additionally, we will use this forum to thank our donors for their continued support and generosity. We are deeply grateful for their vote of confidence as we continue our efforts to ensure that the department can sustain and build its outstanding research, academic and patient-care programs.



Featured in this Issue:

- 2 Department Overview
- 4 A Conversation With
Dr. Robert Walther
- 5 The Department's
Clinical Research Unit
- 6 Residents' Update



Chairman's Message

It is a great pleasure to present the premiere issue of *SkinTouch*, the newsletter of Columbia's Department of Dermatology.

To familiarize you with our Department, in this issue we offer a glimpse of the past, present, and future of Columbia's Department of Dermatology and its three main functions: patient care, research, and medical education. Our stories include a feature on the Department's groundbreaking research into using stem cell therapy as a treatment for epidermolysis bullosa, a devastating, often fatal childhood skin disease. You will also find a brief departmental overview; a conversation with Dr. Robert Walther, our senior and longest-serving clinician; a description of our outstanding clinical research unit led by Dr. Julian Mackay-Wiggan; and an interview with next year's chief resident, Dr. Nicole Le Boeuf.

These stories provide just a sampling of the Department's activities and they demonstrate our commitment, not only to providing the very best patient care, but also to advancing medical knowledge and training the next generation of clinicians and researchers.

We welcome your feedback — and your involvement. Gifts from friends and alumni allow us to underwrite the costs associated with improving our patient care, research, and academic programs, allowing our patients to benefit from the Department's scientific advancements and the world-class skills of the physicians we train.

On behalf of the entire Department, I thank you for your interest and your support.

David R. Bickers, M.D.
*Carl Truman Nelson Professor
and Chairman*

An Overview of the Department

Columbia's Department of Dermatology offers excellence in groundbreaking research, advanced patient care and outstanding medical education. The descriptions below will provide our readers with a short description of the Department's three main areas of activity:

patient care: The Department of Dermatology's clinicians are board-certified dermatologists specializing in fields ranging from medical dermatology, cutaneous oncology and Mohs micrographic surgery, to skin allergies, pediatric dermatology, psoriasis, disorders of hair and nails, and cosmetic dermatology. Many of our physicians are included annually in *Castle Connolly's America's Top Doctors* list, and are well-known both nationally and internationally.

research: Columbia Dermatology's research consists of the Basic Science Research Group (BSRG), and the Clinical Research Unit. While BSRG focuses its efforts on investigative dermatology, the Clinical Research Unit investigates the latest in pharmaceutical clinical therapies. Together, this diverse group of research investigators are working to advance research relevant to the diagnosis, pathogenesis and treatment of skin diseases.

education: The Department of Dermatology offers excellent research and clinical opportunities to Columbia medical students as well as a three-year residency program and one- to three-year fellowship programs, depending on the area of specialization. The department also has established special academic collaborations with the American University of Beirut in Lebanon and the University of Aachen in Germany, and extends continuing medical education programs to voluntary faculty members through a monthly "Super Wednesday" program.

clinical facility sites:

Herbert Irving Pavilion
Columbia University Medical Center
161 Fort Washington Avenue, New York, NY

ColumbiaDoctors Eastside
16 East 60th Street, New York, NY

James J. Peters Veterans Medical Center
30 West Kingsbridge Road, Bronx, NY

To make an appointment, please telephone (212) 305-5293.

Stem Cells, from page 1

tein that anchors the outer layer of skin, known as the epidermis, to the layer below, the dermis. Patients with recessive dystrophic EB have two defective type VII collagen genes (one inherited from each parent), which leads to an abnormal form or even complete absence of this protein.

Initially, researchers had high hopes that EB could be corrected with gene therapy. In this approach, skin cells are harvested from a patient, grown in culture, and infected with a virus carrying sufficient, normal type VII collagen genes to replace the missing protein. After the skin cells incorporate the genes, they are grafted back onto the patient. For various reasons, the treatment has proven much more challenging than originally thought. First, the new skin cells don't persist in the skin after grafting. "Also, you can cover only a small patch of skin," says Dr. Christiano. "To cover the entire outer surface of a child would be cumbersome, if not impossible. And this doesn't address the epithelial tissues lining the inside of the body."

A few years ago, Dr. Christiano began looking at a different way to deliver

type VII collagen to affected tissue. "When patients have a bone marrow transplant, stem cells in the donated marrow repopulate the marrow in the recipient, but they also wind up in a lot of places, including the skin," she explains. This observation led her to reason that if an EB patient were given a bone marrow transplant harvested from an unrelated person with normal type VII collagen genes, the stem cells would eventually find their way to the patient's skin and other affected tissues and begin producing normal collagen. She and several other groups have since tested the concept on a special breed of mice that lack the type VII collagen gene. "It wasn't a home run, but there was marked improvement," says the researcher.

Dr. Christiano then turned to Mitchell Cairo, M.D., Chief of Pediatric Blood

and Bone Marrow Transplantation and Professor of Pediatric Medicine and Pathology at New York-Presbyterian Hospital at Columbia University. Dr. Cairo had developed a process called "reduced-intensity conditioning" before bone marrow transplantation, for use in non-malignant diseases like EB. This method, which destroys only a portion of the patient's marrow, yet allows permanent stem cell engraftment, comes with a much reduced risk profile that makes it feasible to think about attempting stem cell therapy in EB. Together, Drs. Cairo and Christiano had the workings of a potential EB breakthrough.

Clinical trials of the new treatment, using unrelated umbilical cord blood as the source of the stem cells, are scheduled to begin this July. EB children, and their parents, will be eagerly watching and waiting.

a welcome to Columbia Dermatology's newest faculty member

Columbia Dermatology is pleased to announce the addition of Dr. Huyen Nguyen to our clinical staff as Assistant Clinical Professor of Dermatology. Dr. Nguyen, formerly in private practice in New York City, received her medical school training at the University of California at Irvine and completed her residency at the University of Southern California.





A Conversation with our longest-serving faculty member

A Q&A with the Department's longest-serving faculty member, Robert R. Walther, M.D., Vice Chairman of the Department, Clinical Professor of Dermatology and Director of Clinical Services. Dr. Walther came to Columbia University in 1975 as a dermatology resident and joined the faculty in 1978. He served as acting chairman from 1989 to 1993, until the appointment of the current chairman, David R. Bickers, M.D.

Q: You came to Columbia during what some have called the golden age of dermatology. What kind of changes were taking place?

A: Until the fifties and sixties, dermatology everywhere was more of an art than a science. Dermatology at Columbia underwent a major change under the leadership of Dr. Leonard Harber [chairman from 1973-1989], who built a modern, academic department with a strong emphasis on basic science and a broader educational program.

One highlight of those years was the creation of a state-of-the-art audio-visual department, in the late seventies. Thanks to a gift from a patient, we obtained the Medical Center's first video camera — a very expensive piece of equipment back then — which allowed us to produce videos on how to conduct a dermatologic exam, how to perform a biopsy, and so on. It was a big boost for our teaching program. Private philanthropy has been immensely helpful to the Department over the years, smoothing out the inevitable rough spots in federal funding.

Q: What distinguishes the Department today?

A: We have strong clinical programs across the board, but certainly one of our strengths is pediatrics. For example, we have a specialized clinic for children with complex vascular birthmarks, and another for kids with a rare inflammatory skin condition called epidermolysis bullosa. Few medical centers have this level of expertise.

Also, we're one of the few places in the city that still offers phototherapy for psoriasis. It's not financially remunerative, but it has clinical value, so we provide it as a service to the community. By the same token, we supply a significant amount of charity care, continuing a long tradition of community service in our Department.

We're also known for our consultation service for inpatients. The typical inpatient at Columbia is acutely ill, with multiple illnesses, often including skin disorders. Transplant patients are a case in point. Almost every person who comes here for a transplant ends up with some type of skin problem because they are immunosuppressed. It keeps us busy.

Q: You've served here in many capacities, as a clinician, administrator, teacher, and researcher. What have you enjoyed the most?

A: Seeing patients is what I like best. I've also enjoyed helping our patients to work their way through a sometimes complicated health care system.

Columbia Dermatology: selected milestones

1840 Presentation of the first lectures in America on the study of skin and its diseases.

1888 Identification of the first known case of contact dermatitis, an allergic reaction of the skin.

1952 Development of Nystatin, the world's first effective antibiotic for the treatment of fungal disease.

1977 Opening one of the country's largest and most modern ambulatory psoriasis treatment center.

1981 Development of photopheresis, a novel therapy for cutaneous T-cell lymphoma, a fatal form of skin cancer.

1998 Identification of the first human gene associated with hair loss and linked to a severe form of inherited baldness.

The Clinical Research Unit: making discoveries happen

Every scientist hopes for a “Eureka!” moment, when a profound insight instantly comes to mind. That’s what the ancient Greek scholar Archimedes supposedly exclaimed when he discovered how to measure the volume of irregular objects. Alas, scientific advances typically unfold over months and years, in laboratories and hospitals all over the country. It’s a wonder they happen at all, given the complexity, cost, and red tape of modern-day research.

That’s where the Columbia Dermatology’s Clinical Research Unit (CRU) comes into play. The CRU’s mission is to ensure that the Department is at the forefront of evaluating novel methods of diagnosing, preventing, and treating skin disease.

At any given time, the CRU oversees approximately 15 to 20 clinical trials, with more being planned. One current trial, for example, is evaluating two nitrogen mustard formulations for treating mycosis fungoides, the most common form of cutaneous T-cell lymphoma, a cancer of the immune system that affects the skin. Another trial is testing tazarotene, a retinoid, for the treatment of basal cell nevus syndrome, which is associated with numerous basal cell cancers. CRU researchers are also using a device that measures skin elasticity, which holds promise as a non-invasive means of assessing the progression of amyotrophic lateral sclerosis (also known as Lou Gehrig’s Disease), which causes muscle wasting. Another study is looking at better ways to prevent skin cancer among organ transplant recipients. Such patients face an unusually high risk for these cancers, yet all too often they fail to protect themselves from the sun.

All of this activity is overseen by Julian Mackay-Wiggan, M.D., M.S. and Assistant Clinical Professor of Dermatology at Columbia. A practicing dermatologist with special expertise in patient-oriented research, Dr. Mackay-Wiggan would like to help more of her colleagues become involved in clinical trials. “Many, if not most, are interested,” she says, “but they usually need help navigating the regulatory requirements, finding the biostatisticians, obtaining the equipment and supplies — the nuts and bolts of research.”

One of her goals is to establish a simple mechanism “so they can come to us with an idea and we can make it happen.”

For most would-be researchers (and even some veteran investigators), the biggest obstacle to launching a clinical trial is funding, says Dr. Mackay-Wiggan. While the University does provide some seed money for pilot projects, there isn’t enough money to support every worthwhile idea.

In addition to her role as the director of the current clinical research fellowship, Dr. Mackay-Wiggan would also like to nurture promising researchers at the residency level. “Some of our residents get involved in clinical trials, and we’ve started a small lecture series that introduces them to basic concepts in clinical research,” she says. “Ideally, we would like to offer a formal research rotation as well.”

Archimedes would probably approve.



Dr. Julian Mackay-Wiggan, Director of the Clinical Research Unit

Current trials include studies gathering data on or testing the effectiveness, or adverse effects of, therapies for alopecia areata (hair loss), atopic dermatitis, basal cell nevus syndrome, epidermolysis bullosa, mycosis fungoides, amyotrophic lateral sclerosis (ALS) and psoriasis.

For more information about available clinical trials, please contact our Clinical Research Unit at 212.305.6953.

The Department of Dermatology would like to thank the following friends and alumni for their 2009 support of the Resident's Education and Development (RED) Fund.

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medical education: Putting the Facts Together



Growing up in Tewksbury, Mass., Nicole LeBoeuf was certain that she would become a pediatrician, given her passion for science and for working with disadvantaged and disabled children. But in medical school, it was dermatology that came to the fore. "I had come to like geriatrics and surgery as well as pediatrics," she recalls. "It was confusing. Then, one day, a fellow student said to me, 'You should do a derm rotation — it's the only field in which you can do all three of those things.'" Pediatrics' loss would become dermatology's gain.

She soon discovered that the field did indeed offer all that and more, especially at Columbia. "One of the great strengths of this residency is the number of amazing cases that we see," says Dr. LeBoeuf, who is in her third year of training and is the Department's new chief resident. "Our patients come from all over the world with every conceivable skin disease."

An added benefit is that Columbia's dermatology residency brings Dr. LeBoeuf into contact with patients across the medical spectrum. "We're constantly

called to consult on other services," she explains. "We tend to be the team that unifies the diagnosis when others are struggling to put the facts together."

Dr. LeBoeuf also values the fact that residents here are constantly encouraged to dig deep beyond the diagnosis, to decipher not just what is going on but why. "The faculty teach us to think about the whole patient, not only the skin disease, which keeps our general medicine knowledge very high," she says.

Above: Nicole LeBoeuf (front), with her fellow residents.

2009-2010 residents:

Class of 2010: Christine Lauren, MD; Nicole LeBoeuf, MD; Jocelyn Leib, MD

Class of 2011: Shanthi Colaco, MD; Jessica Weiser, MD; Alexis Young, MD

Class of 2012: Andrew Avarbock, MD; Samantha Herman, MD; Rebecca Marcus, MD; Emily Mintz, MD; Vishal Patel, MD

Events

Columbia Dermatology's 2009 Alumni Reception in San Francisco

Every year, Columbia Dermatology faculty members take advantage of the annual meeting of the American Academy of Dermatology to meet with alumni from across the country. This year's party took place at One Market in San Francisco and provided our faculty and alumni with a great opportunity to catch up with old friends and introduce our current residents, soon to be alumni, to this special annual event.

Top: Dr. Robert Walther, '77, Dr. Robert Kalb, '86, and friends. Middle: Dr. Michael Tomcik, '77 with Kass Sadri, '77, and his wife, Deborah. Bottom: Dr. Channing Barnett, Resident, with Assistant Clinical Professor, Dr. Monica Halem, and 2009 Chief Resident, Dr. Lily Clark



Student Skin Cancer Screening at Columbia University's Morningside Campus

The rain on May 1st did not keep Columbia students from crowding onto College Walk to take advantage of the Department's first, free on campus skin cancer screening and learn about the importance of regular skin checks and sunscreen protection. Throughout the afternoon, Dr. Monica Halem, Assistant Professor of Dermatology and the organizer of the event, led a team of four dermatology residents who conducted the skin checks in a customized RV sponsored by the Skin Cancer Foundation's Road to Healthy Skin Tour. The larger-than-expected turnout led the Columbia Office of Government and Community Affairs to look into bringing the tour back in the fall.

Above: Students line up for skin checks on College Walk.

Columbia Dermatology's Midtown Skin and Laser Center Opens

In 2008, the Department opened its new Skin and Laser Center. This is a state-of-the-art facility located at 16 East 60th Street that offers the latest technologies and therapies for skin rejuvenation and resurfacing, including Botox injections, chemical peels, laser hair removal, photodynamic therapy, microdermabrasion, and Restylane/Juvederm/Radiesse injections. The opening was celebrated with a reception attended by CUMC faculty and staff, community physicians, and grateful patients. For more information about the treatments and procedures offered at the Skin and Laser Center, please call (212) 326-8889 or visit www.dermatology.columbia.edu/laser_center.

Dr. Robyn Gmyrek, Director of the Skin and Laser Center and Division Chief of Cosmetic Dermatology, consults with a patient.



Save the Date Grand Rounds: Super Wednesdays

September 23, October 28, and November 18, 2009

January 27, March 24, April 28, and May 19, 2010

The 68th American Academy of Dermatology Annual Meeting

March 5-9, 2010, Miami, FL

Columbia Dermatology Alumni Reception

March 7, 2010, Miami, FL



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For information about how you can support Columbia's Department of Dermatology,
please contact Kathy Brahimi at 212-305-9840 or email: kdb2126@columbia.edu