

# A Journey of Discovery

NATIONAL CANCER INSTITUTE

## NCI: A Journey of Discovery

BY JOHN E. NIEDERHUBER, MD, DIRECTOR, NATIONAL CANCER INSTITUTE

Many of you will be entering a medical profession that is in the midst of great change and uncertainty. But change can

offer both rewards and challenges—and here at NCI, I take those challenges very seriously.

One of the greatest challenges we, as medical professionals, face today is access to care. We have a very fragmented health care system. National studies have shown that cancer delivery is inadequate or lacking for large numbers of patients. These

include underrepresented and disadvantaged groups, elderly patients, and rural residents. While science and technology are advancing at a phenomenal rate, there may come a time in the near future when the greatest risk for cancer patients will be their limited access to optimal care and our latest discoveries.

At NCI, we are acutely aware that the vast majority of people in our country are

diagnosed and cared for in the communities where they live. Community hospitals and private practice oncologists provide outstanding health care for millions of Americans, and NCI is committed to identifying ways to integrate the latest that science has to offer into this already exceptional community-based care. It is likely that many of you will start your first practice at a community hospital and with a private-practice group.

Last year, NCI launched the NCI Community Cancer Centers Program (NCCCCP) precisely to examine how we can best provide access to the latest scientific advances in the community setting. During a three-year pilot phase, NCCCCP is developing and evaluating programs designed to determine the essential elements of effective community-based cancer care and to identify ways to facilitate broader engagement in cancer research.

The NCCCCP pilot phase involves 14 sites representing a cross-section of this country's population and its health care systems. NCCCCP will focus on minority and medically underserved populations and will investigate multidisciplinary ways to address disparities in cancer care. Through activities such as enhanced community outreach, patient assistance, and cancer screening and follow-up, the NCCCCP sites





will evaluate the effectiveness of these types of efforts to change the course of cancer for the people in these communities.

The NCCCP will also create a network of sites that will serve as a model for enabling cancer research through the greater inclusion of community-based practitioners. The network being developed through this pilot project may provide new options for the conduct of clinical trials and may speed the testing of new drugs and devices to combat cancer. Additionally, the NCCCP will examine the underpinnings of the future of cancer research. Through its efforts to expand and standardize the collection of blood and tissue samples and its focus on electronic medical records, the NCCCP will inform our efforts to address barriers that have hindered their widespread adoption.

Cancer clinical trials provide access to cutting-edge advances and state-of-the-art care. They help develop new options for cancer prevention, diagnosis, and treatment. Yet, only three percent of adults with cancer participate in clinical trials. In underserved urban and rural communities and diverse racial/ethnic populations, the adult accrual rate is even lower. These groups include populations with disproportionately high cancer rates, so their absence from clinical trials is a significant factor in ongoing healthcare disparities.

The disparity problem is complex. Through this pilot program and a range of other programs, such as the Community Networks Program, the Patient Navigation Research Program, and the Minority Institution/Cancer Center Partnership, NCI is working to better understand the problem and address the causes. Research confirms that equal treatment at the same stage of disease yields equal outcomes across all populations. Equal access to optimal care could dramatically reduce cancer mortality in the United States.

With the success of the NCCCP pilot, we hope to expand the number of participating hospitals to reach an even broader range of communities in the future. And we will achieve ultimate success by the cancers prevented or diagnosed at their earliest stages, and by the number of lives saved. We hope that if this pilot is successful, you will become a vital part of its ultimate goal.



## NCI & You

### Training the Researchers of the Future

Cancer researchers in the decades ahead will face a new landscape of challenges and opportunities. For this reason, NCI continually adapts its training programs to accommodate rapid developments in the frontiers of science and technology.

NCI annually funds over 2,200 research-training and career-development awards to provide support for individuals—from high school students to established investigators—many of whom need protected time away from administrative responsibilities to expand their research programs and mentor junior investigators. These investments will ensure a steady flow of well-trained investigators to focus on the challenges of fighting cancer and, ultimately, increase the diversity of the cancer research workforce.

### Introduction to Cancer Research Careers (ICRC) Program

NCI recognizes the importance of identifying, training, and mentoring talented researchers from populations underrepresented in science and individuals from disadvantaged backgrounds. Toward this end, NCI created the ICRC Program.

“ICRC gives diverse students a window into what a career in science could be like while also giving investigators a chance to work with interns who bring in new

perspectives,” says Dr. Teresa Estrada, ICRC program manager. “All students in the program want to become scientists, and NCI helps them fill in the details on their maps of how to get there.” She adds that because all of the ICRC interns have some prior research experience, they’re able to hit the ground running once they are assigned to an investigator, which allows them to make significant contributions to projects.

#### The ICRC 2-Day Visit

The ICRC Program sponsors highly-qualified undergraduate, post-baccalaureate, and graduate students on an all-expense-paid, two-day visit to the NIH, located in Bethesda, Maryland. ICRC participants will have the opportunity to tour the facilities of the NCI and the NIH, listen to and network with research fellows, and potentially interview for an internship with NCI investigators. This program provides participants with the opportunity to experience NCI first-hand and personally interact with some of the world’s leading cancer researchers.

Successful candidates for the ICRC Program will have a strong academic record, demonstrated research experience, and a commitment to a career in biomedical, behavioral, or population science research.

#### The ICRC Summer Internship

If a student is hired by an NCI investigator as an intern, he/she will work under the investigator’s direction and in concert with other researchers, fellows, and technicians. Interns will also have the option of attending seminars on topics related to



basic, clinical, biomedical and behavioral research; human health; healthy lifestyles; and health disparities.

All interns are provided with travel funding and summer housing. Housing is available from mid-May through late August. Each intern and investigator mutually agree to start and end dates for internships. If an intern elects to start before or after the period during which housing is available, he/she will be responsible for his/her own housing during those periods of time. In addition, interns receive monthly stipends that are based on their attained educational level. All interns are required to carry health insurance. No-cost health insurance is available for interns who work a minimum of three months. Interns who stay beyond the summer period for a post-baccalaureate position are responsible for housing costs for the remainder of their internship.

NCI has facilities in Bethesda, Rockville, and Frederick, Maryland, and interns may be matched with an investigator at any of the locations. Housing will be provided at a convenient location so that a car will not be required.

For more information: [icrc.nci.nih.gov](http://icrc.nci.nih.gov) or [ICRC-contact@mail.nih.gov](mailto:ICRC-contact@mail.nih.gov)

## The Cancer Prevention Fellowship Program (CPFP)

The overarching goal of the CPFP is to provide a strong foundation for clinicians and scientists to work in the field of cancer prevention and control. As part of the program, we offer training toward an MPH

degree at an accredited university during the first year, followed by mentored research with investigators at NCI.

This mentored research is the centerpiece of the CPFP. With input from senior scientific mentors and from program scientific staff, each fellow develops original scientific projects and reports findings at scientific meetings and in leading journals. The primary goal is for each fellow to develop an independent research program in cancer prevention.

In addition to the outstanding opportunities for cutting-edge research in the basic, quantitative, and social and behavioral sciences that have been the hallmarks of the CPFP since its inception in 1987, specialty training is offered in clinical cancer prevention research and in the ethics of prevention and public health.

Furthermore, a joint NCI and FDA initiative provides opportunities for prevention research in drugs, biologics, and medical devices. Other educational opportunities are provided throughout the fellowship to complement the research training, including the NCI Summer Curriculum in Cancer Prevention, the Molecular Prevention Laboratory, the weekly NCI Cancer Prevention and Control Colloquia Series, and the weekly Fellows' Research Meeting, as well as leadership and professional-development training and a variety of training opportunities outside NCI.

For more information: [cpfp.cancer.gov](http://cpfp.cancer.gov) or [cpfpcoordinator@mail.nih.gov](mailto:cpfpcoordinator@mail.nih.gov)

## NCI and Health Disparities

Cancer affects people of all races and ethnicities in the United States. Today, one in four deaths in this country can be attributed to cancer, and one in three Americans will eventually develop some form of the disease. Each day, 3,800 people in United States are diagnosed with cancer and another 1,500 die from it.

The burden of cancer, however, is greater for the poor, ethnic minorities, rural populations, and the underserved compared to the general population. Ethnic minorities are diagnosed with cancer and die from it more often than the U.S. white population.

In recent years, there have been significant advances in biomedical science and in the understanding and treatment of cancer. Yet, there are many people in this country who do not benefit sufficiently from these research advances. This “disconnect,” or gap, between what we know and what we deliver is a critical determinant in health disparities and in who is at risk.

NCI’s commitment to research that improves the quality of cancer care is a theme that runs through all of the Institute’s research. Indeed, there is still much to learn about why some fare better with cancer than others, why some racial and ethnic groups have higher incidences of cancer than others, and how to assist those who may lack the language capacity, mobility, or the knowledge to navigate our healthcare system.

Established in March 2001, NCI’s Center to Reduce Cancer Health Disparities (CRCHD) is central to NCI’s efforts to reduce the unequal burden of cancer and train the next generation of competitive researchers in cancer and cancer health disparities research.

CRCHD initiates, integrates, and engages in collaborative research projects with NCI Divisions and NIH Institutes and

Centers to promote research and training in cancer health disparities research and to identify new, innovative scientific opportunities to improve cancer outcomes in communities experiencing an excess burden of cancer.

In addition, CRCHD:

- Coordinates and strengthens the NCI cancer research portfolio in basic, clinical, translational and community-based research to address cancer health disparities;
- Leads NCI’s efforts in the training of students and investigators from diverse populations who will be part of the next generation of competitive researchers in basic cancer and cancer health disparities research; and
- Creates state-of-the-art regional networks/centers dedicated to cancer health disparities research and care through geographic program management.

**This “disconnect,” or gap, between what we know and what we deliver is a critical determinant in health disparities and in who is at risk.**



## Looking Toward the Future

CRCHD's future plans focus on building partnerships to sponsor new disparities research that brings together advances in biomedicine, clinical research, and population-based sciences. Research that enhances access by underrepresented and underserved populations to proven interventions in prevention, early detection, treatment, follow-up, and survival and that increases our understanding of the biological differences in cancer will also be important. At the same time, the support of community-based, trans-disciplinary research will continue to be a hallmark of the work of CRCHD. Finally, emphasis will be placed on the training of new minority investigators and the development of creative and culturally appropriate community and clinical models that can be widely disseminated.

## CANCER DISPARITIES STATISTICS

- The **death rate** for all cancers combined is 35% higher in African American men and 18% higher in African American women than in white men and women.
- Rates of **prostate cancer** are 60% higher for African American men than in white men.
- Hispanic men and women have lower **survival rates** for most cancers, even after accounting for differences in age and stage distribution.
- American Indian/Alaska Native women are 40% more likely to have **kidney/renal pelvis cancer** as white women.
- The prevalence of cigarette smoking, which accounts for nearly 90 percent of all cases of **lung cancer**, is especially high among Native Americans/Alaska Natives, populations with low socioeconomic status, and people who never completed high school.
- Asian Pacific Islander American men, followed by Asian Pacific Islander American women, have the highest mortality rate for **liver and bile duct cancer**, plus the highest incidence and mortality rates for **stomach cancer**.



## Select CRCHD Programs

### Diversity Training Branch

It is clear that the success of research designed to reduce the disproportionate burden of cancer incidence and mortality in many underrepresented minority populations will depend substantially on the presence of a cadre of culturally sensitive, well-trained, competitive, underrepresented minority researchers. Therefore, the ultimate goal of the Diversity Training Branch (DTB) is to significantly increase the number of underrepresented minorities participating as competitive NCI/NIH-funded cancer researchers. To this end, DTB employs three main strategies:

**1** Broadening the participation of underrepresented minority individuals in cancer-related research and training activities while encouraging them to become independent, competitive cancer researchers.

**2** Raising the competitive research capacity of Minority-Serving Institutions (MSIs). This concept focuses on partnering MSIs, which include Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), and Tribal Institutions (e.g., Colleges) serving Native American populations, with NCI-designated Cancer Centers, and is called the Minority Institution/Cancer Center Partnership Program (MI/CCP). The long-range goals of the MI/CCP program are to increase the cancer research capabilities at the MSIs; to increase the number of underrepresented minority scientists engaged in

cancer research and other related cancer activities; and to improve the effectiveness of NCI-designated Cancer Centers in developing and sustaining activities focused on the disproportionate incidence, morbidity, and mortality of cancer in underrepresented minority populations.

**3** Becoming a national resource and help raise the level of the effectiveness of other programs and organizations inside and outside NCI and NIH that are interested in increasing the number of competitive underrepresented minority individuals and institutions participating in the cancer research enterprise.

### The CURE Program

NCI recognizes that today's pipeline to a competitive career in cancer research is a multi-year, multi-institutional, educational, and research continuum from high school to the first professional appointment. As such, the Institute funds innovative programs that offer long-term support to those qualified underrepresented minority students and professionals who are at risk of being lost from the pipeline. This strategy, which recently celebrated its 10th anniversary and trains the next generation of competitive underrepresented minority cancer researchers, is called the Continuing Umbrella of Research Experiences (CURE).

The CURE philosophy of research training and career development builds on the success of the Research Supplement for Underrepresented Minorities and strategically





addresses each level of the biomedical research and educational pipeline to:

- Increase the pool of underrepresented minority candidates;
- Emphasize scientific areas of greatest need; and
- Expand and extend the period of training and career development.

## The Cancer Disparities Research Partnership Program

This program supports the planning, development, and conduct of radiation oncology clinical trials at institutions that care for a disproportionate number of medically underserved, low-income, ethnic and minority populations not traditionally involved in NCI-sponsored research. In addition, the Cancer Disparities Research Partnership Program (CDRP) supports the planning, development, and implementation of nurturing partnerships between applicant institutions and committed and experienced institutions that are actively involved in NCI-sponsored cancer research.

CDRP Objectives:

- Build and stabilize independent and collaborative clinical research capabilities at institutions that provide radiation oncology care to populations experiencing the negative consequences of cancer-related health disparities.

- Increase the number of clinical scientists engaged in radiation oncology research by providing access to and participation in clinical trials involving the target populations.
- Improve the effectiveness of the applicant institution and its partner institution in developing and sustaining activities focused on radiation oncology clinical trials and on cancer mortality and morbidity in the target populations, continuing past the life of the grant.
- Establish priorities for and initiate stable, long-term collaborations and partnerships that will strengthen competitive cancer research, research training, career development, education, and outreach capabilities at both the applicant institution and the partner institution that address problems and issues related to the disproportionate cancer incidence and mortality among medically underserved minority populations.

# Lauren V. Wood, MD

NCI, SENIOR CLINICAL INVESTIGATOR, VACCINE BRANCH

**Did you know you wanted to go into research when you started medical school?**

**Dr. Wood:** My interest in research goes back to the time I started working, which was the summer after eighth grade. It was then that I attempted to get summer jobs doing research or in biomedical research insti-

tutions. In fact, I applied to NIH for a summer position every summer from that point on all the way through college.

Because of this interest, I chose to attend Duke University School of Medicine, where they have a fairly unusual curriculum. They cram two years worth of typical med school coursework into one intense, 10-month period during your first year, and

then you go directly into your clinical rotations your second year of medical school. That means that by your third year of med school, you're able to participate in research. You can do a year-long research project or some combination of coursework and research. I spent my third year doing immunohematology research in the laboratory of Wendell Rosse and took additional classes.

I originally thought that I was going to do pediatric hematology oncology, but while I was in med school, they were just starting to describe the first cases of AIDS, and by the time I was in my residency, researchers had identified HIV as the cause of AIDS. There were a lot of similarities between AIDS and cancer—the immune system is compromised, and both cancer cells and HIV are able to hide and escape from the

immune system. In addition, patients with AIDS often end up getting cancers. So during my residency years, my interest in HIV really started to peak, especially because it was a disease that disproportionately affected African Americans. I didn't see a whole lot of African American investigators back then, so that's where I decided to focus my career.

**Do you think there are common characteristics that you see in successful researchers and promising research students?**

**Dr. Wood:** For many people who aren't sure whether research is for them, particularly if they don't come from a research background, bench-related research can seem intimidating. But many people who do not have that kind of basic experience do have a desire to be involved in research in the sense that they want to be working with patients, testing agents, studying diseases, and studying interventions to see what therapies are going to make a difference in people's health.

The term that's very popular right now is "translational clinical research," that is, research that goes from the bench to bedside and back to the bench. You can be involved anywhere along that spectrum when it comes to biomedical research involving human subjects or studying an aspect of a disease that may impact clinical outcomes in patients. The key is to have a passion for what you do and the endurance to keep asking difficult questions and trying to solve hard problems.

**I know you also didn't take off your pediatrics hat when you chose to go into HIV. You've been doing most of your research work around children and adolescents and young adults.**

**Dr. Wood:** I trained in both internal medicine and pediatrics before completing my fellowship training in allergy and immunology. Although my HIV research focused more



on the pediatric population since joining the Vaccine Branch, I've been treating more adults and expanded into oncology. My focus now is immune-based therapies, including vaccines for adults with cancer as well as adolescents and young adults with HIV infection. We now generally have very, very powerful drugs that we can give in combination that will shrink away most, if not all, of a patient's tumor, depending upon what tumor it is. But even if we can make all of the tumor go away, as measured by imaging studies, we know that microscopic tumor cells still exist that we can't detect. It's these hidden cells that are responsible for a tumor coming back, which is why we want to try to harness the immune system to get rid of them and to ultimately "cure" a person of cancer.

**You joined NCI in 1992. Was it odd to be at NCI while working on HIV or was there cross-pollination with NIAID at that time?**

**Dr. Wood:** There was cross-pollination with NIAID, but from the very, very beginning of the epidemic, NCI has always had a huge effort and a commitment to HIV and AIDS research that was totally independent of NIAID. Part of the reason for that was the expertise of scientists studying viruses that cause cancer, like Dr. Bob [Robert] Gallo, who was the chief of NCI's Laboratory of Tumor Cell Biology and a co-discoverer of HIV, or what was known then as HTLV-3. It was a natural fit.

**Do you still get to do as much research as you'd like?**

**Dr. Wood:** It is harder, because as a citizen of the NIH intramural community, the more senior you become, the more administrative responsibilities you take on. But the good thing for me is that I'm still able to see patients regularly, which is important to me.

**What kind of patients are you seeing now?**

**Dr. Wood:** We have a Phase I study open in patients with malignant melanoma that is investigating a monoclonal antibody called GC-1008, which is directed against a protein

of the immune system called TGF-beta. Another protocol that was just approved and that I'm very excited about will examine the immunogenicity of the FDA-approved quadrivalent HPV vaccine in HIV-infected and HIV-negative adolescents and young adults. We will also be initiating a study of a TARP-peptide vaccine in patients with stage D0 prostate cancer. The TARP protein is expressed in most prostate cancers and is an excellent target for immune-based therapy.

**Is your career still as exciting to you today as it was when you started?**

**Dr. Wood:** Yes, it is! I never get tired of the intellectual stimulation, and there are always surprises, always chances to discover something new, especially in clinical research. Even though we do our very, very best to come up with good laboratory assays and good animal models that will predict how a drug or a compound or a vaccine may potentially behave in patients, humans are not monkeys or mice.

**What one piece of advice would you give to a med student who was interested in a career in research?**

**Dr. Wood:** Be passionate, be persistent and take advantage of research training experiences, especially those available through NIH—both intramurally (in Bethesda) and extramurally. There are programs specifically for underrepresented minorities—one in particular is called the Research Supplements to Promote Diversity in the Health Research Professions. I frequently tell medical students, "Every single person should consider applying for a research loan-repayment training program." Because the bottom line is that, even if you don't think you want to pursue biomedical research as a career, the kind of training, discipline, and exposure that you will get from conducting research is going to make you a better practicing clinician. In fact, any kind of research training will make you a better physician because it will sharpen how you think.

# Worta McCaskill-Stevens, MD, MS

## NCI, MINORITY-BASED COMMUNITY CLINICAL ONCOLOGY PROGRAMS

### What got you interested in doing research?

**Dr. McCaskill-Stevens:** I always had a curiosity about science, but, when I went into medicine, I had no idea that I was going to end up where I am. My idea of medicine as a career was that I would exclusively be seeing patients. I thought I would probably end up working in a small town some-

where, but, after college, I worked for a couple of years as a medical writer and editor before going to medical school. That's when I began to investigate research, and, when I took graduate classes in New York, I was introduced to the process of research and I developed a passion for answering questions.

### Once in medical school, did you seek out a mentor to help you down the research path or did you continue in a more traditional clinical path?

**Dr. McCaskill-Stevens:** Where I attended medical school, we had very good mentors, but it really started much earlier than that. I'm proud to say my first grade teacher came to my medical school graduation! I think it's really important to be in an environment where people tell you that you can do whatever it is that you want to do.

### How did you get interested in cancer research?

**Dr. McCaskill-Stevens:** Again, that came from my time working as a writer; I was really interested then in gynecologic oncology.

When I went to medical school, I had a shift and got interested in breast cancer.

### Can you talk a bit about your work in breast cancer disparities?

**Dr. McCaskill-Stevens:** Well, as a citizen, I am definitely interested in health disparities, but my official interest started when I was on faculty in medical oncology as a co-director of the Breast Center. I was approached by one of the NCI-sponsored research oncology groups to participate in a "think tank" about how to increase minority participation in clinical trials. One of the things I got involved in very early on was trying to engage minority physicians in cancer research. The continuum of breast cancer care provides an excellent model for the introduction of clinical trials to minority patients and their health care providers.

### Have you seen more awareness and attention about the issue of disparities since then?

**Dr. McCaskill-Stevens:** I definitely think the field has expanded; it now takes into consideration biology, policy, and a whole spectrum of issues. It's important to keep in mind that one person, one discipline, or one type of researcher can't do it all. Each person brings his or her own expertise to the table, and, working together, we can find the answers to the questions.

### So at this point, are you still doing research or are you in more of an administrative role?

**Dr. McCaskill-Stevens:** I do both! I was a clinical researcher, and now I'm overseeing programs, but it's been my clinical experience that has allowed me to be able to do that. For example, I was the program director for the large breast cancer prevention trial, the Study of Tamoxifen and Raloxifene [STAR].



You were in academic medicine at Indiana University before coming to NCI. What brought you here?

**Dr. McCaskill-Stevens:** It was a very difficult decision to leave the university environment. Such career decisions usually involve factors related to family, location, and your personal visions about many aspects of life. In addition to these factors, I knew that NCI would allow me to be close to research areas for which I have passion. I think it's important to realize, however, that career changes and career growth are often painful, but ultimately very rewarding.

What advice would you pass on to a med student who was interested in research?

**Dr. McCaskill-Stevens:** I would say, "Explore a lot of different areas." Even if, for instance, you want to do orthopedics, step outside of that a little bit while you're in training. Ask questions about the research evidence for the clinical decisions you make and learn the skills required to critique published research findings. Use your medical school training as a tool for fine-tuning your skills to attain your career visions and to contribute to science and improved health care for all.



# Jeffrey White, MD

NCI, DIRECTOR, OFFICE OF CANCER COMPLEMENTARY AND ALTERNATIVE MEDICINE

## What got you interested in research?

**Dr. White:** My undergraduate work was in engineering physics, and it was a very laboratory-intensive kind of study. When I made the transition to medicine, I maintained that interest in science and research. The medical school I went to, Howard University, was

very much grounded in the clinical side of medicine, so I made sure to seek out

research opportunities wherever I could find them. In fact, I started the summer after my freshman year by doing a summer research program in which I worked in the lab studying estrogen receptors in breast cancer, and that was the beginning of my active medical research.



## What got you interested in medicine after being in physics?

**Dr. White:** I guess you could say I have eclectic interests, and as I was progressing through my engineering degree, I decided that I really wanted a career that incorporated as many of my major interests—including nutrition and health—as possible. It became apparent that engineering wasn't the path that could do that, so I started to explore medicine.

## Did you ever see yourself as being a traditional practitioner, or did you always know that you would pursue an academic or a research-oriented career, combining your two interests?

**Dr. White:** The transition to medicine was radical for me in a lot of ways. I was very

interested in the clinical side of medicine—all of it, from psychiatry to surgery—but with regard to a practice, I don't think I ever really thought that I would pursue a career only as a practicing physician. I liked the idea of discovery, of developing new findings, and being involved not just in the practice of what had already been established as a standard of care, but in trying to ask new questions and coming up with new answers.

## What got you interested in the alternative and complementary medicine field that you're now responsible for?

**Dr. White:** It was really the continuation of my interest in nutrition that led me to this position. It had been a sustained interest since my undergraduate days, but I hadn't found a lot of outlets for it in conventional medicine.

## Do you feel like there is growing acceptance of complementary and alternative medicine?

**Dr. White:** Yes, I think there's been more acceptance and interest in it, from both practitioners and researchers, predominantly in interventions that address supportive care, which would include many of the mind-body approaches and spirituality issues, as well as some of the physical therapy-related things like massage.

## Do you think that cancer, in particular, lends itself to looking into these types of alternative and complementary protocols?

**Dr. White:** I think because of both the challenge of the disease and the management of the patients, there is a natural connection there. Within cancer therapeutics, for example, we have found some conventional cancer therapeutics out of traditional medical systems, such as traditional Chinese medicine.

### What's the most exciting thing going on in your office right now?

**Dr. White:** One of our core research activities is looking more deeply at traditional medicine, and we're working right now on a very exciting medicine, an herbal mixture that comes out of traditional Chinese medicine, with a biochemist at Yale, Dr. Yung-Chi Cheng. He's studying this mixture, which is over 1000 years old, in combination with chemotherapy in animal models of cancer and starting to explore some of the mechanisms by which it seems to diminish the side effects—and also improve the effectiveness—of certain chemotherapeutic agents. It's exciting to get to see it at the very early stages as it's starting to unfold.

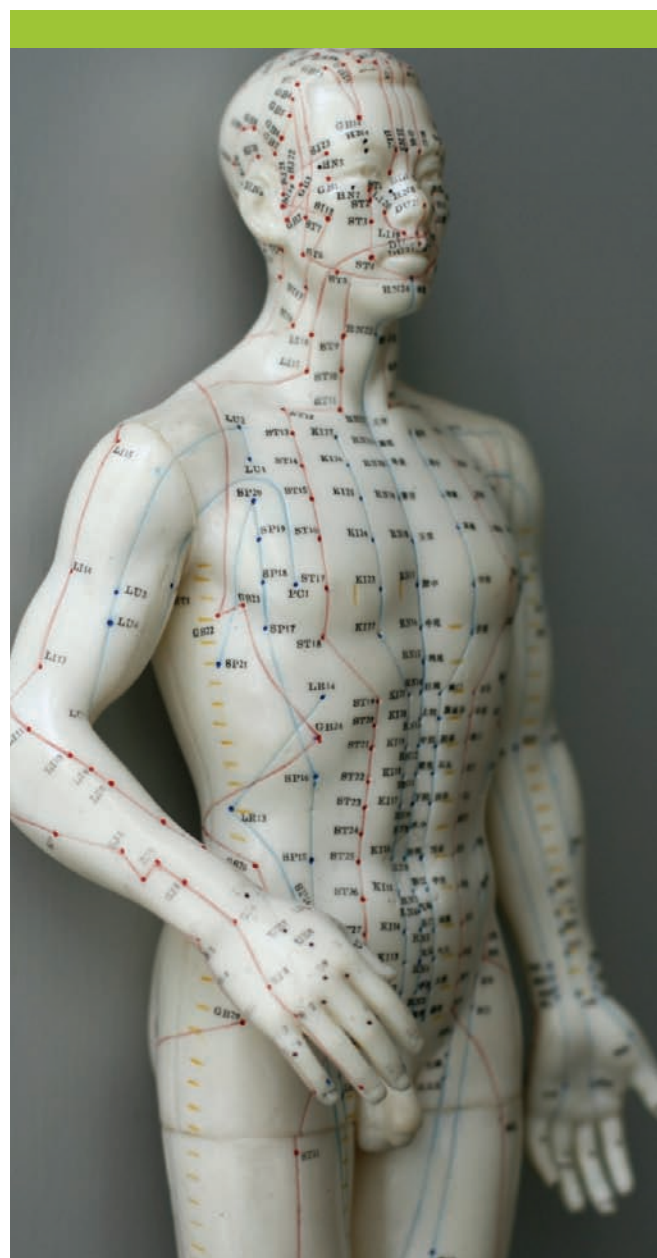
### Since your school wasn't research-focused, did you have mentors along the way who helped you?

**Dr. White:** Oh yes, I can think of at least four: Dr. Suresh Mohla, in whose lab I worked the summer after my freshman year; he's now here at NCI. Dr. Jack White, the head of Howard's Cancer Center was my faculty advisor and was just great to me. The cancer center director who came behind him, Dr. Kenneth Olden—who went on to be the director of the National Institute of Environmental Health Sciences—was also a great mentor. Finally, Dr. Warren Ashe, who was the dean of research at Howard, was also a great mentor; his enthusiasm about research was infectious.

### What advice would you give to a minority med student interested in research?

**Dr. White:** That first summer program I participated in really affected my entire career, so I would certainly say look for those opportunities. They may not be all that well publicized, so you might have to do a little digging. Go talk to the dean of research at your school and tell him or her what it is that you're trying to figure out.

Also, don't be so locked into a particular idea or area of research that you don't end up getting a good experience because you can't find one that really fits exactly what it is that you think you want to do. In research, there are so many transferable experiences.



# Olufunmilayo I. Olopade, MD, FACP

PROFESSOR OF MEDICINE AND HUMAN GENETICS  
DIRECTOR, CANCER RISK CLINIC  
THE UNIVERSITY OF CHICAGO MEDICAL CENTER

## What got you interested in research?

**Dr. Olopade:** When I started my oncology training, I was frustrated by the fact that many of our patients didn't do well. I thought that the best way to improve my patients' outcomes was to do research.

## Did you consider going back to get a PhD?

**Dr. Olopade:** Once I went into the subspecialty of hematology oncology, there was time for research that was built into the fellowship program. The more I did it, the more I got into it. I decided then I wanted a career that combined an ability

to do investigative work, basic research, and taking care of patients.

## What does your typical day or week look like right now?

**Dr. Olopade:** I spend one day a week in the clinic, and then the rest of the time I do research and administrative work. During the early part of my career, however, I spent only one-half a day in the clinic and most of the rest of my time in the lab trying to understand the science behind my specialty.

## You've done some recent research into the profiles of breast cancer in African American women and Caucasian women. Can you talk a little bit about what prompted you to do that research?

**Dr. Olopade:** I practice on the south side of Chicago, which has a very diverse patient population. We were puzzled when we realized we were seeing a disproportionate number of young women with breast cancer in our clinic, and we wanted to figure out the reason. We started looking into it, and we've found that there are population differences in the types of breast cancer that people have. Right now, we ask every woman to go and get a mammogram after the age of 40, but what we're thinking is that we need to do a better job of risk assessment, including personalizing risk assessment in different populations. We want all practitioners to understand that every patient that walks in the door is a unique individual living in a specific community. Interventions to improve health outcomes should be targeted at both the individual and community levels.

Also, we're actually trying to see whether we can develop better screening technologies for early detection of the most aggressive breast cancers that disproportionately affect young women. These newer technologies include new imaging modalities, such as MRI, which don't lead to unnecessary radiation exposure to the breast, and yet are effective in detecting cancer early in young women.





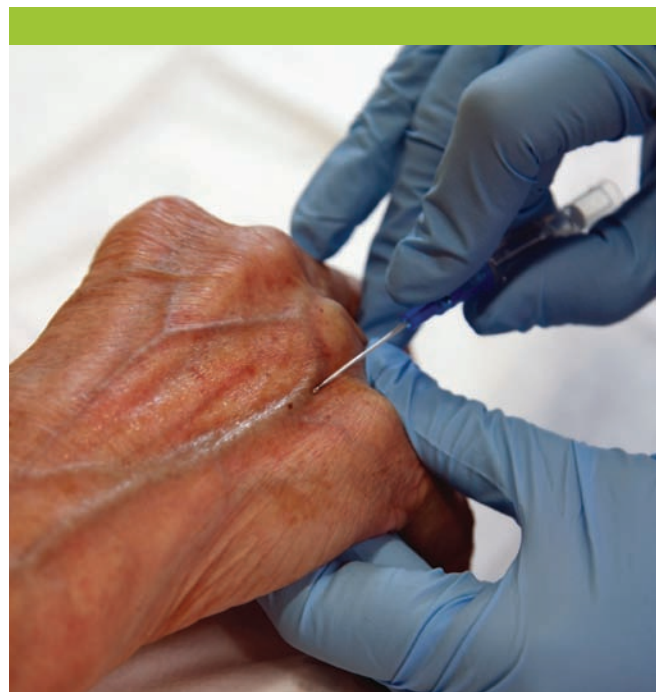
Can you talk a bit about the role NCI has played in your career?

**Dr. Olopade:** Their support through grant funding and the support I received through their minority scientist program within the American Association for Cancer Research exposed me to other investigators and to a network of superb mentors, which has been invaluable to my career. Furthermore, they've been the primary source of funding for my research. In fact, in my field, you can't really succeed in academia without NCI support because your career success is based on the resources you have to fund your ideas.

What advice would you give to a minority med student who has an interest in a research career?

**Dr. Olopade:** The mentor-mentee relationship is really important, and they should really look for a good mentor who will be their cheerleader. It doesn't matter whether the mentor is black or white or Hispanic; students should be open-minded and realize they may have to go outside their comfort zone to find someone who's going to support their career.

Also, you have to have a commitment and a passion for the work, because there are no easy answers. Research requires that you be a lifelong learner and be prepared to give a long, sustained effort in order to achieve success.



# LaVera M. Crawley, MD, MPH

ASSISTANT PROFESSOR (RESEARCH),  
DEPARTMENT OF PEDIATRICS, CENTER FOR BIOMEDICAL ETHICS  
STANFORD UNIVERSITY SCHOOL OF MEDICINE

**Did you know going into medical school that you wanted to pursue a career in research?**

**Dr. Crawley:** When I finished medical school and did my residency in family practice, I

really was on a track to be a clinician. But I wasn't completely happy with that track because I found that the needs of underserved patients I cared for were greater than what I could offer merely as a technically competent clinician. So that, coupled with curiosity about research, ultimately showed me that research was a much more fulfilling path for me and, I hope, for the population of

patients that my work serves.

Ironically, it was my National Health Service Corps obligation that played a big part in this because, through it, I was assigned to the Indian Health Service, and, while there, I became truly fascinated with the intersections of two cultural worlds. For example, practicing Western medicine, I was trained to see infectious diseases through a framework based in germ theory, and yet there I was with Navajo patients, who explained things in a completely different way based on their traditional world views. So, they were explaining that something like an ear infection was caused by transgressing some taboo that was related to something, say, like snakes or lightning. I was absolutely fascinated that these two completely different world views could coexist. The

question I asked myself was: How do you practice truly cross-cultural medicine when not everyone sees the world the same way? I was ultimately pointed in the direction of ethics as being a great place to ask those kinds of questions, so I pursued a fellowship in ethics, and it happened to be one that was at the Stanford Center for Biomedical Ethics, which is a very strong research center. I also went to the Kennedy Institute of Ethics, which offers an annual summer intensive in ethics, which I highly recommend. I now consider myself an empirical bioethicist. The only difference between me and any other researcher is that I focus on the ethical sides of medical and health care issues—things like health disparities, social justice, and equity issues.

**Did you have mentors along the way?**

**Dr. Crawley:** My first important mentor in medical school was Dr. Richard Carter at Meharry Medical College, who, at the time, ran the preventive medicine program. He was the first person who taught me to start asking questions and start looking for the evidence basis for health outcomes.

The next mentor I had was a medical anthropologist here at Stanford who also taught me how to further fine-tune the way I think about and ask questions about medical phenomena.

My third, and probably my key mentor right now, is an epidemiologist, Dr. Marilyn Winkleby, also here at Stanford. She looks at population-level differences, and her insights really help me think about inequities at a population level. She's also a great mentor in relation to what it means to be a woman in academia.



### What prompted you to get your MPH?

**Dr. Crawley:** My training at Stanford initially was under a medical anthropologist, so I had a very strong qualitative and ethnographic foundation. But I really felt that qualitative research is only one side of understanding phenomena, and I wanted to be able to do research in the quantitative realms. In my MPH, I focused on biostatistics and epidemiology; it was clearly calculated just for those skills.

### What then got you interested in cancer research specifically?

**Dr. Crawley:** Cancer is big in my family—my mother died from cancer and my father and other relatives have been diagnosed with cancer—so there were personal reasons as well as professional reasons for my interest in looking at cancer.

The research on which we recently published a paper looked at patterns of cancer prevention screening—breast cancer and colon cancer, specifically—wondering whether the perception of being discriminated against inside a medical setting had any relationship to whether patients were up-to-date with these different screenings. The literature on perceived discrimination often talks about whether one experiences discrimination globally in their life, but there haven't been that many studies that have looked at discrimination inside a medical encounter, and it seemed to me to be logical that, if someone felt they were treated unfairly in a medical setting, it would have ramifications with respect to medical procedures or medical outcomes.

What we found is that, if you are discriminated against, you are less likely to be up-to-date with cancer screening. What was really fascinating, however, is that we adjusted it for several factors, and we found that there are gender differences regarding discrimination and outcomes that we didn't expect; men and women respond differently to racial discrimination.

### How important has NCI's support been to your career and what you've been able to accomplish?

**Dr. Crawley:** I'm trying to figure out what superlative I can use that really expresses just how phenomenal the support that NCI has given me is; it's been just amazing. I received initial K01 grant support through the NCI Continuing Umbrella of Research Experiences (CURE) Program. CURE's yearly career development meetings were wonderful for me because they gave me implicit feeling that NCI cares about me, and they care about my contribution to reducing health disparities. Obviously, I'm a big NCI fan.

### Do you see yourself staying on the track of disparities research?

**Dr. Crawley:** Yes, my focus now as an empirical bioethicist is on issues of social justice and health care. Right now, that means health disparities and health inequities.

### What advice would you give to minority medical students who might be interested in research?

**Dr. Crawley:** One important thing is that, if you aren't at an institution that stresses research, seek it out on your own; there is always research being done somewhere in an institution. Most faculty members would love to have interested, curious, and critically thinking students to help with their work. Also, I would say that you should find out as much as you can about other opportunities to get research exposure such as summer programs, particularly if there are ones that are available NIH.

### What do you see in your future?

**Dr. Crawley:** I love what I do. I was talking to my husband just a couple of weeks ago, and I said that, if I was starting from scratch and had to design the best job for all of my sensibilities, interests, and skills, it would be the job I have now. My job is to think about how to improve life for people, what specifically needs to happen to make those kinds of improvements, and then convince an institution like NCI to fund it so we might ultimately improve the human condition. To me, that's the perfect job, and so I see myself doing this until I retire—and then some.

# Sam Mbulaiteye, MD

NCI, DIVISION OF CANCER EPIDEMIOLOGY & GENETICS

**I know you're an MD; what got you interested in research?**

**Dr. Mbulaiteye:** I got interested in becoming a doctor because I wanted to treat and cure people with disease. I had experienced the healing power of doctors as a young boy when I put sap—acidic juice from plants—into my eyes while playing. The sap caused extreme pain and a loss of sight, but the doctor who treated me restored my sight.

Once I became a doctor, I realized that one needed to study diseases to understand what caused them, why they developed in some and not in others, and why treatment outcomes differed in patients with apparently similar profiles.

**Can you give an example of how a mentor helped you in your path to becoming a researcher?**

**Dr. Mbulaiteye:** My mentors in Uganda advised me to complete medical residency in Uganda; to seek epidemiological training in the UK, which I did at Cambridge University; and to obtain solid research experience conducting case-control and cohort studies in Uganda. After obtaining great field experience, my mentors advised me to apply to the NCI to obtain first-world research experience and to get hands-on involvement in cutting-edge research. Here at NCI, my mentors have continued to give me wonderful support and encouragement, which has allowed me to further my career.

**What research are you currently working on and what excites you most about it right now?**

**Dr. Mbulaiteye:** My research is on Burkitt lymphoma, a rare cancer in the West, but endemic in Africa. The tumor is, for unexplained reasons, more common in males than females, and, in Africa, it often erupts on the face in children younger than five years and in the abdominal organs (e.g., kidney, liver, ovaries) in older children. Burkitt lymphoma is linked to Epstein-Barr virus, which was first isolated from Burkitt lymphoma tumor cells and the first human virus to be associated with human cancer, and to recurrent infection with *Plasmodium falciparum*, a cause of malaria, with the evidence being stronger for the latter than the former. I am conducting an exciting study to investigate the role of malaria in Burkitt lymphoma. My study will measure malaria indirectly by testing cases and controls for genes that protect individuals from getting severe malaria infection. This approach is exciting because genetic variation can be measured accurately and it does not change when people develop disease. Using this novel approach, it will be possible to test the hypothesis whether children who possess malaria-resistance genes are protected from developing Burkitt lymphoma.

**How has your experience with NCI helped you in your pursuit of a research career?**

**Dr. Mbulaiteye:** NCI has the best facilities and the largest concentration of researchers in the world with singular focus on cancer research. The environment, rich with opportunities to interact with basic-science, clinical, and epidemiological researchers, has been incredibly supportive in my growth from a research trainee to an independent researcher. I am now pursuing an independent research program, conducting studies



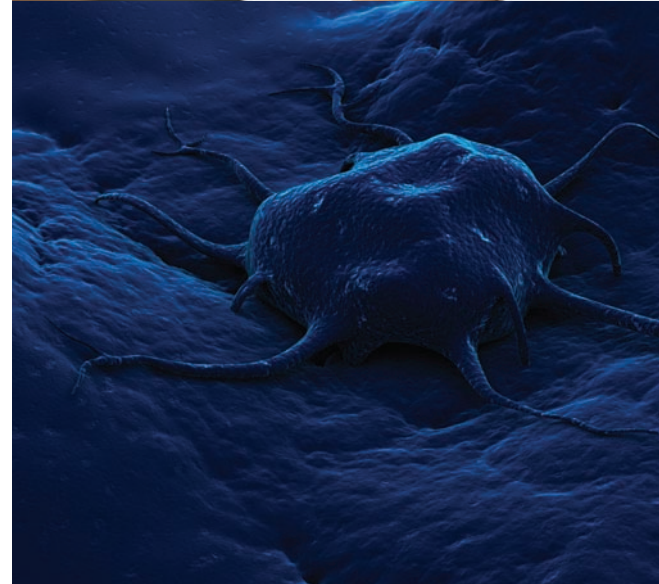
that I have proposed and designed and that will allow me to make a significant contribution in the field of cancer.

**What do you think minority researchers can bring to the research table?**

**Dr. Mbulaiteye:** Minority researchers bring talent, perspective, and diversity to the table. Because of who they are, they intrinsically highlight opportunities for research, training, and intervention for conditions that may affect them disproportionately.

**What advice would you give to a minority med student or other minority science-oriented student if they are considering a career in research?**

**Dr. Mbulaiteye:** Go for it. NCI is an especially great place for minorities to come for training. The exposure with investigators from diverse disciplines, interests, opinions, and countries is unsurpassed.



# Ashley Dixon

MS II, LOYOLA UNIVERSITY STRITCH SCHOOL OF MEDICINE

SUMMER INTERN, NCI'S INTRODUCTION TO CANCER RESEARCH CAREERS (ICRC) PROGRAM

**How did your experiences at NCI influence you?**

**Dixon:** Before I came to NCI, I had only had a few experiences doing smaller-scale research. My work at NCI helped me to see that, as a clinician, I'm able to treat the few hundreds—or thousands—of patients I have the privilege of working with directly, but doing research can really have a much more wide-reaching effect on the community. Also, while there, I worked in epidemiology, which allowed me to see beyond just pure bench research; I was looking at how different forms of cancer affect different populations. It broadened my perspective of what's available in terms of ways to conduct research.



**Do you have a particular area of research you're interested in yet?**

**Dixon:** Before I went to medical school, I was trained as a clinical massage therapist; so I'd like to marry my interest in complementary modalities with the more traditional medical training I'm currently gaining in medical school. I'm very interested in doing research on holistic and alternative health care, and how that might affect different cancers and musculoskeletal disorders.

**If you had classmate who was interested in research, what advice would you give to him or her?**

**Dixon:** I think a lot of students think research is going to be boring—just sitting in a laboratory all the time. But there are so many different opportunities, and there are so many questions that need to be answered by intellectually curious minds. If your goal is to “help people,” you can do that in a wide-reaching way through research.

**What was your summer at NCI like?**

**Dixon:** I was there for about three-and-a-half months, primarily working on answering epidemiologic questions about gall bladder cancer in Native American and Alaska Native populations. I did some statistical analysis and as well as poster presentations for some of the higher-ups at NCI.

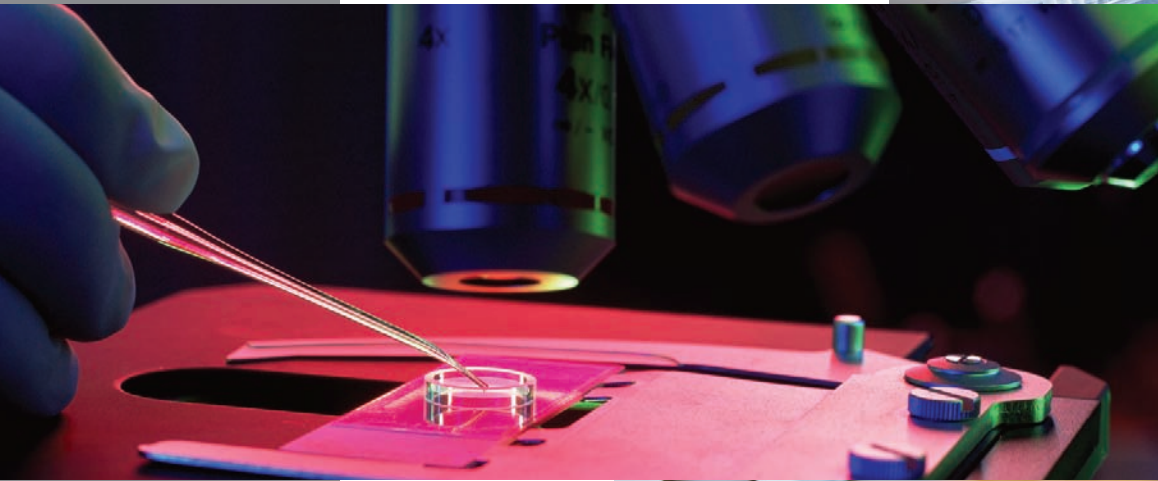
**Did you feel like you really got a peek into what the world at NIH and NCI looks like?**

**Dixon:** Yes! It was really eye-opening. In addition to performing my day-to-day duties, I got to spend a lot of time on the main NIH campus, sit in on lectures, and talk to other researchers.

“Many of you will be entering a medical profession that is in the midst of great change and uncertainty. But change can offer both rewards and challenges—and here at NCI, I take those challenges very seriously.”

— JOHN E. NIEDERHUBER, MD, DIRECTOR, NATIONAL CANCER INSTITUTE





From The Journal for Minority Medical Students

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