

momentum

Spring 2005

A newsletter from the DAMON RUNYON CANCER RESEARCH FOUNDATION

considering the alternatives

FOCUS ON: COMPLEMENTARY AND ALTERNATIVE MEDICINE RESEARCH

60-80% of cancer patients try non-traditional approaches to ease suffering from their disease. New research designed to test the safety and effectiveness of these therapies is helping patients sort fact from fiction and bring all therapeutic options together to achieve maximum benefit.

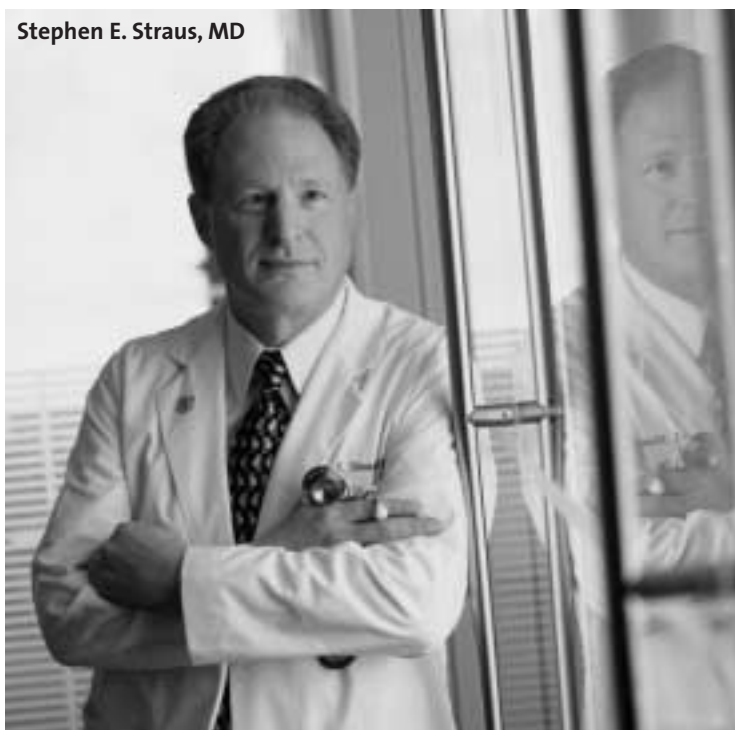
In times past, discussions of acupuncture or green tea might have been overheard at Woodstock or the Haight, but today all you need to do is tune into Oprah or open *The Wall Street Journal*. With all of the alternative products and therapies flooding the market in recent years, consumers don't know which way to turn to find out if any of the health claims they hear about have any merit. To help navigate these new waters, Congress established the National Center for Complementary and Alternative Medicine (NCCAM) in 1999. The person tapped to be the first director was well-known virologist and former Damon Runyon Fellow **Stephen E. Straus, MD**. His charge as head of NCCAM—one of the 27 institutes and centers that comprise the National Institutes of Health (NIH)—is to execute the center's mission of exploring complementary and alternative healing practices in the context of rigorous science, training complementary and alternative medicine (CAM) researchers and disseminating accurate information about CAM to the public and professionals.

In this Q&A, Dr. Straus takes us into the fascinating world of CAM and the new research that will determine its usefulness for cancer patients.

IS IT COMMON FOR CANCER PATIENTS TO SEEK COMPLEMENTARY OR ALTERNATIVE TREATMENTS?

SS: Yes, very common. For most this comes in the form of complementary medicine, which are therapies that individuals receive *in addition to* the standard treatments for their condition. Very few cancer patients choose a purely alternative medicine strategy *in place of* the standard of care, especially for treatable cancers like melanoma, breast or testicular cancer. It is important for physicians to give people control over their health, allow them to make their own decisions, give them information and make them feel empowered. On the other hand, there are times that we have to advise patients not to neglect what works.

Probably the most common complementary approach for cancer patients is in the area of mind/body medicine. Being diagnosed with cancer is such a huge emotional and psychological crisis for many individuals and their families that some may invest in spiritual approaches. They may pray more often, meditate or use various relaxation techniques to help them through the stress and fear of the procedures or the side effects from cancer drugs. Many cancer treatments are associated with nausea, and sometimes



Stephen E. Straus, MD

the cancer itself may be associated with pain. Patients may seek acupuncture or massage to help relieve these symptoms. In addition, patients may feel that the cancer itself speaks to some inherent problem with the body's resistance to disease and seek dietary supplements such as vitamins, antioxidants or herbal products.

HAS CAM "COME OUT OF THE CLOSET?"

SS: Definitely. Ten years ago, nobody wanted to admit that there was this secret parallel universe of health care going on, with one community not really speaking to the other. Today, the medical community is becoming more open to non-traditional approaches. Still, few patients learn about CAM from their doctors. They learn about it through word of mouth, the internet, lay magazines, TV talk shows, retreats or patient groups. This is changing though. I have been invited to speak at many of the major cancer centers, including

some that are making efforts to learn how to use CAM in a productive way in cancer patients. There is also a Society for Integrative Oncology, which consists of cancer specialists at major academic health centers who are trying to figure out how to incorporate the benefits of CAM into the cancer patient's experience while cautioning them about the things that could be harmful. It's important that patients speak to their physicians and let them know what their interests and concerns are.

WHAT KIND OF RESEARCH IS BEING DONE ON CAM APPROACHES IN CANCER?

SS: Cancer is our largest clinical domain, not only because it affects so many people but also because such a large number of cancer patients currently use CAM. Trying to understand the basic biology of CAM mechanisms will be relevant to many diseases, including cancer. For example, NCCAM is funding a group at Mass General studying what is going on in the nervous

system and the brain during acupuncture. We have also joined with the National Cancer Institute to support a major study of vitamin E and selenium in the prevention of prostate cancer and a study in which lung cancer patients receive shark cartilage in addition to traditional chemotherapy. Shark cartilage does not seem to interfere with conventional treatments and may prevent tumors from forming new blood vessels (angiogenesis inhibition).

NCCAM is also funding dozens of studies of herbal products. A key goal of many of these studies is to determine whether an herb interferes with the action or metabolism of standard medicines, because there are a number of products that do. One of the most infamous is St. John's Wort, which was shown to interfere with the metabolism of irinotecan, a topoisomerase II inhibitor that is used to treat some solid tumors. There is also evidence that very potent antioxidants may reduce the effectiveness of radiation and chemotherapy.

(continued on next page)

\$13.9 million SUPPORTS CLINICAL INVESTIGATOR AWARD

Eli Lilly and Company, the founding sponsor of our prestigious Clinical Investigator Award, has recently committed an additional \$12.5 million, bringing its total investment in this award program to \$27.5 million. An anonymous donor has also committed \$1.4 million to support our early career clinical researchers who are racing to translate scientific discovery into new ways to prevent, diagnose and treat the many forms of cancer. We are deeply grateful to these visionary donors.

(continued from front cover)

ARE THERE SPECIAL CHALLENGES IN CONDUCTING CAM RESEARCH?

SS: The rules of the road are the same—we take no shortcuts when doing CAM research. Studies must be done with rigor, objective endpoints, good metrics for disease status and recovery, and randomization. But there are some special challenges. For example, in our studies of herbs, it is very important to know where and how the products are manufactured. We learned a very valuable lesson a few years ago when we tried to assess an herbal mixture that was sold in the U.S. under the name “PC-SPES.” This product—a mixture of 8 different herbs—was being touted for prostate cancer. Because initial clinical studies by good investigators suggested that it might indeed be beneficial, NCCAM funded four studies of PC-SPES, including a randomized, controlled clinical trial. Researchers found that in fact there were significant reductions in PSA levels in men with prostate cancer who were on PC-SPES. However, it was subsequently revealed by the California State Department of Health that the PC-SPES sold in herbal shops and health food stores

around the country were contaminated with a potent estrogen called diethylstilbestrol (DES). Since some estrogenic agents are known to benefit prostate cancer, the effect of the herbs themselves could not be validated. The product was withdrawn from the market, and we stopped our studies because we had not sufficiently defined the product. We now invest a considerable amount of energy and cost into defining and characterizing products and ensuring that the research we fund uses properly defined products.

The second major challenge in CAM research is delivering therapies such as acupuncture in a reproducible way. There are many forms of acupuncture, and practitioners don't necessarily administer it uniformly. This problem requires us to seek a consensus from experts so that there is a defined and describable approach used in our studies. Ultimately, the goal of any experiment is for someone else to replicate it and get the same result. Only when this condition is met can one's results be generalized. It's our responsibility to merge these two worlds—to respect CAM and its claims and to address it openly and fairly but to do so with tools that will give meaningful answers.

HOW DID A DAMON RUNYON SCIENTIST COME TO LEAD THE NATION'S EFFORT TO ASSESS CAM?

SS: As a Damon Runyon Fellow at Washington University in 1977, I was studying the molecular biology of human viruses. This prepared me for a faculty position at the NIH, where I began to use the laboratory as a rigorous tool to investigate what I saw in the clinic. It was through treating patients with chronic and complicated viral diseases that I began to see the larger clinical dimension of these illnesses. Blood tests to determine how much virus was present in a patient at any given time did not tell the whole story. These patients were also some of the first to seek complementary and alternative approaches, so I welcomed the opportunity to bring my research background to the discipline of CAM. My goals fell right in line with those of NCCAM—to address practical clinical problems in complicated terrain using rigorous scientific tools and do it with clarity and objectivity. It has been a tremendously rewarding experience.

For more information about complementary and alternative medicine and the research being conducted in this area, go to NCCAM's comprehensive website at www.nccam.nih.gov.

GO VERTICAL

THE ABSOLUTELY URBAN CLIMB FOR CANCER

GO VERTICAL Achieves New Heights

Our third annual race to the top of the Sears Tower in Chicago and inaugural race up the John Hancock Tower in Boston raised more than \$200,000 for cancer research. Many thanks to the more than 800 heart-strong and dedicated climbers who participated in these fun and challenging events. Take the next Go Vertical challenge on November 13, 2005 (Chicago) and February 12, 2006 (Boston).

For more information, visit www.drcrf.org.

Highlights from GV Boston '05



Top left: A team from Alta Communications. Bottom left: Top women's finisher, Jamie Bloch. Right: DRCRF Executive Director, Lorraine Egan and Alan Leventhal, owner of the Hancock Tower and DRCRF Board Member.

DAMON RUNYON CANCER RESEARCH FOUNDATION'S LIVING VISION BREAKFAST

join us
as we
honor...



Ken Langone, Chairman & Managing Director, Invemed Associates, Inc., at our annual breakfast benefit on June 1st at The Pierre Hotel in New York City with keynote speaker Harold Varmus, MD, Nobel Prize winner and President of Memorial Sloan-Kettering Cancer Center. For more information, call Michael Stiver at 212.455.0501.

science NEWS

Charles G. Drake, MD, PhD (DR-Lilly Clinical Investigator '04-'09) has found that earlier use of prostate cancer vaccines achieves enhanced benefit in a mouse model of the disease. His results revealed that the immune system can be prompted to attack cancer cells much more efficiently when a vaccine is applied at the time of initial hormone therapy rather than later on when the mice become tolerant of the cancer.

Juli Feigon, PhD (DR Fellow '82-'85) has determined the three-dimensional structure of a major domain of the protein telomerase, which plays a key role in many types of cancer. The structure will provide insights into how telomerase works and aid in the design of new cancer drugs that inhibit its activity.

John T. Grayhack, MD (DR Fellow '52-'54) has made a major breakthrough in cancer gene therapy by endowing immune cells with the ability to specifically target metastatic prostate cancer in mice. The therapy successfully infiltrated tumor tissues and prevented tumor spread without causing the toxic immune suppression that has been associated with earlier forms of cancer gene therapy.

James D. Griffin, MD (DR Fellow '77-'79) has developed a new targeted therapy for chronic myelogenous leukemia. The drug may ultimately be more effective than Gleevec®, the current frontline treatment.

David A. Guertin, PhD (DR Fellow '03-'06) was part of a team from the Whitehead Institute that identified a protein complex that may be a key player in many malignant brain and prostate tumors. Blocking the formation of the complex represents a promising strategy for new cancer drugs.

Gregory J. Hannon, PhD (DR Fellow '92-'94) is the winner of the 2005 AACR Award for Outstanding Achievement in Cancer Research. He is a pioneer in the

field of RNA interference (RNAi). One focus of his laboratory is to harness RNAi technology to search the human genome for novel therapeutic targets for cancer.

Mark S. Kaminski, MD (DR Fellow '83-'85) has shown that Bexxar, a drug he developed at the University of Michigan, shrinks lymphomas in 95% of patients without the side effects of chemotherapy.

Brian Kuhlman, PhD (DR Fellow '99-'02) is the winner of the prestigious AAAS Newcomb Cleveland Prize for a paper he published in the November 21, 2003 issue of *Science*. The prize recognizes the most outstanding first-time publication of an author's work that appeared in *Science* during a given year and is the oldest award conferred by the American Association for the Advancement of Science (AAAS). The paper described the development of a novel computer program for designing proteins.

David M. Livingston, MD (Vice Chairman, Scientific Programs, DRCRF) is the winner of the 2005 AACR-G.H.A. Clowes Memorial Award. The award recognizes outstanding recent accomplishments in basic cancer research.

Joseph T. Opferman, PhD (DR Fellow '01-'04) has shown that a protein that promotes survival of blood stem cells may provide clues about leukemia prognosis.

Hai Yan, MD, PhD (DR Scholar '05-'07) has discovered that a gene used during brain development can cause childhood brain cancers.

Bruce R. Zetter, PhD (DR Fellow '74-'76) has developed a new screening test for prostate cancer. In preliminary studies, the urine-based test appears to be more accurate than PSA testing.

new awardees

5 New Damon Runyon Scholars Chosen



Damon Runyon
Scholar Award

The Damon Runyon Scholar Award, now in its tenth year, supports the development of outstanding scientists as they establish their own independent laboratories. In September, our distinguished Damon Runyon Scholar Review Panel, chaired by Inder Verma, PhD, from the Salk Institute in La Jolla, California, selected five outstanding investigators to receive the \$300,000 award.

Qinghua Liu, PhD

“Biochemical analysis of the *Drosophila* RNAi pathway,” University of Texas Southwestern Medical Center, Dallas, Texas

David Z. Rudner, PhD

“Signal transduction through regulated intramembrane proteolysis,” Harvard Medical School, Boston, Massachusetts

Julien Sage, PhD

“The role of the retinoblastoma (Rb) tumor suppressor gene family in cancer initiation,” Stanford University, Stanford, California

Aaron F. Straight, PhD

“Mechanisms of chromosome transmission,” Stanford University, Stanford, California

Hai Yan, MD, PhD

“Molecular characterization of medulloblastoma pathogenesis,” Duke University Medical Center, Durham, North Carolina

33 New Damon Runyon Fellows Selected



Damon Runyon
Fellowship Award

The Damon Runyon Fellowship Award supports the training of the brightest young postdoctoral scientists by established investigators in leading laboratories across the country. In November, the Foundation’s Scientific Advisory Committee chose 15 new Fellows, and in February, 18 others were selected for the \$134,000 awards (\$174,500 for physician scientists*) designed to enlist the skills and creativity of the next generation in the fight against cancer.

NOVEMBER 2004

Stefan Aigner, PhD

“Origin and function of a small non-coding RNA involved in fate determination of neural stem cells” with Fred H. Gage, PhD, The Salk Institute, La Jolla, California

John B. Biggins, PhD

“A chemogenetic approach towards elucidating non-genomic nuclear hormone receptor signaling” with John Tze-Tzun Koh, PhD, University of Delaware, Newark, Delaware

Craig J. Ceol, PhD

“Molecular genetic analysis of melanoma tumorigenesis in the zebrafish *Danio rerio*” with Leonard I. Zon, MD, Children’s Hospital, Boston, Massachusetts

Daniel P. Denning, PhD

“Characterization of ced-3-independent cell death in *Caenorhabditis elegans*” with H. Robert Horvitz, PhD, Massachusetts Institute of Technology, Cambridge, Massachusetts

Mark A. DePristo, PhD

“Experimental and computational characterization of protein evolutionary landscapes” with Daniel L. Hartl, PhD, and Shamil Sunyaev, PhD, Harvard University, Cambridge, Massachusetts

Zhihu (Jeff) Ding, PhD

“Prostate cancer mouse model: telomere dysfunction and telomerase reactivation in cancer initiation and progression” with Ronald A. DePinho, MD, Dana-Farber Cancer Institute, Boston, Massachusetts

David Halpin, PhD

“Development of reconstitution assays for mitotic spindle assembly” with Rebecca Heald, PhD, University of California, Berkeley, California

Kinneret Keren, PhD

“Probing intracellular fluid dynamics associated with actin-based cell motility using quantum dots” with Julie A. Theriot, PhD, Stanford University, Stanford, California

Daniel J. Klein, PhD

“Structural analysis of riboswitches by X-ray crystallography” with Adrian Ferré-D’Amaré, PhD, Fred Hutchinson Cancer Research Center, Seattle, Washington

Ngan Lam, PhD

“Regulation of sexually dimorphic cell-size asymmetry in *Caenorhabditis elegans*” with Judith Kimble, PhD, University of Wisconsin, Madison, Wisconsin

Paul Liu, PhD

“Exploring novel cell fate decisions and cell fate changes in *Parhyale* neuroblasts” with Nipam H. Patel, PhD, University of California, Berkeley, California

Ivan Maillard, MD, PhD *

“Molecular and cellular mechanisms of lymphoid reconstitution after bone marrow transplantation” with Warren S. Pear, PhD, University of Pennsylvania, Philadelphia, Pennsylvania

Ajit Nott, PhD

“Investigating retrograde signaling mechanisms” with Joanne Chory, PhD, The Salk Institute, La Jolla, California

Lisa Z. Scheifele, PhD

“Genomic stability of high copy yeast retrotransposons” with Jef D. Boeke, PhD, Johns Hopkins University, Baltimore, Maryland

Serena J. Silver, PhD

“Deciphering the role of miRNAs in signaling networks” with Norbert Perrimon, PhD, Harvard Medical School, Boston, Massachusetts

FEBRUARY 2005

Diego Alvarado, PhD

“Understanding and exploiting epidermal growth factor sequestration by Argos” with Mark A. Lemmon, PhD, University of Pennsylvania, Philadelphia, Pennsylvania

Jose L. Avalos, PhD

“Functional studies of Kv channel β -subunits” with Roderick MacKinnon, MD, The Rockefeller University, New York, New York

Ava E. Brent, PhD

“A molecular analysis of early embryonic development in the parasitoid wasp *Nasonia vitripennis*” with Claude Desplan, PhD, New York University, New York, New York

Kara Lynn Cervený, PhD

“From proliferation to differentiation: understanding the genes that regulate the balance between proliferation and differentiation in the retina” with Stephen W. Wilson, PhD, University College London, London, United Kingdom

Dinari A. Harris, PhD

“Identification and characterization of genes involved in RNA silencing in *Drosophila melanogaster*” with Richard Carthew, PhD, Northwestern University, Evanston, Illinois

Nathan J. Hillson, PhD

“Cellular mechanisms controlling the structure and dynamics of the replicating bacterial chromosome” with Lucy Shapiro, PhD, Stanford University, Stanford, California

Kamal Mohan Khanna, PhD

“Using novel imaging technologies to understand the underlying mechanisms of T cell activation and regulation” with Leo Lefrançois, PhD, University of Connecticut Health Center, Farmington, Connecticut

Anne Lanjuin, PhD

“Genetic identification of a neuronal circuit required for sex discrimination in the mouse” with Catherine Dulac, PhD, Harvard University, Cambridge, Massachusetts

Brian Lee, PhD

“Candidate survival genes: genetic analysis of tolerance to nutrient deprivation” with Kaveh Ashrafi, PhD, University of California, San Francisco, California

Kurt W. Marek, PhD

“The role of Xlmo4/Xlmo4-like in Ca spike-dependent neurotransmitter specification” with Nicholas C. Spitzer, PhD, University of California, San Diego, California

Mathew G. Miller, PhD

“A chemical genetic approach to the dissection of kinase function in the human pathogen *Plasmodium falciparum*” with Joseph Derisi, PhD, University of California, San Francisco, California

Kenny C. Mok, PhD

“The engulfment morphological checkpoint in *Bacillus subtilis*” with Kit J. Pogliano, PhD, University of California, San Diego, California

Norie Momiyama, PhD

“Exploring reaction space in three dimensions using DNA-templated synthesis and *in vitro* selection for the discovery of new chemical transformations” with David R. Liu, PhD, Harvard University, Cambridge, Massachusetts

Joseph Mougous, PhD

“A novel metagenomic screen for the discovery of antibiotics from environmental DNA” with John J. Mekalanos, PhD, Harvard Medical School, Boston, Massachusetts

Don X. Nguyen, PhD

“*In vivo* functional characterization of genes that mediate breast cancer metastasis to lung” with Joan Massagué, PhD, Memorial Sloan-Kettering Cancer Center, New York, New York

Chad G. Pearson, PhD

“Molecular characterization of *Tetrahymena* basal bodies” with Mark Winey, PhD, University of Colorado, Boulder, Colorado

John L. Rinn, PhD

“A wound-like expression program in cancer progression” with Howard Y. Chang, MD, PhD, Stanford University, Stanford, California

Guo Wei, PhD

“Bcl-2 family members in glucocorticoids resistance in acute lymphoblastic leukemia” with Stanley J. Korsmeyer, MD, Dana-Farber Cancer Institute, Boston, Massachusetts

CONGRATULATIONS TO ALL!

did you know...

CANCER IS NOW THE TOP KILLER OF AMERICANS UNDER 85

For the first time, cancer has surpassed heart disease for this dubious distinction. The good news is that mortality from both diseases is declining, but improved drugs and surgical procedures for heart patients and prevention strategies such as cholesterol reducing drugs has given heart disease the edge.

momentum PHOTO GALLERY



cancer fighter

Sugar Ray Robinson was an early champion of the Damon Runyon Fund, helping to raise money for the charity started by his friend Walter Winchell. Other celebrity endorsers in the early days of the Fund included Bob Hope, Marilyn Monroe, Joe DiMaggio, Jimmy Durante, Jerry Lewis, Marlene Dietrich, and Milton Berle.

Damon Runyon Cancer Research Foundation

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And it's easy! Simply call our dedicated Broadway Tickets line at 212.455.0550 between 9 am and 5 pm, Monday through Friday. Payment can be made by credit card (Visa, MasterCard or American Express) or by check. Your tickets will be waiting for you at the box office on the night of the show.

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(For more information about our Broadway Tickets service, go to www.drcrf.org)



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Make a lasting impact on the fight against cancer!

There is only one way we will triumph over cancer—by funding brilliant and creative scientists. After providing for your loved ones, consider a bequest to the Damon Runyon Cancer Research Foundation. You will be helping to provide the steady stream of support needed to maintain the fast pace of groundbreaking research that will lead to new treatments and save lives. The following is sample language you can share with your attorney:

I give the sum of \$ _____ to the Cancer Research Fund of the Damon Runyon-Walter Winchell Foundation, a charitable corporation located in New York, New York, for its general charitable purposes.

You can also leave a specific asset or a percentage of your estate to the Foundation. For more information, please call 212.455.0500.

Damon Runyon Cancer Research Foundation

EXECUTIVE DIRECTOR

Lorraine W. Egan

675 Third Avenue New York, NY 10017 1.877.7CANCER
Administration 212.455.0500 Fax 212.455.0509
Award Programs 212.455.0520 Fax 212.455.0529
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