



# JOSEPH R. BERTINO MEMORIAL LECTURE SERIES

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Thursday, April 28, 2022

1:00-4:00 PM

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Rutgers Cancer Institute of New Jersey

**RWJBarnabas**  
HEALTH

**RUTGERS**  
Cancer Institute  
of New Jersey  
**RUTGERS HEALTH**



# PROGRAM

## 1:00 PM ~ WELCOME

### **Steven K. Libutti, MD, FACS**

Director, Rutgers Cancer Institute of New Jersey  
Senior Vice President, Oncology Services, RWJBarnabas Health  
Vice Chancellor for Cancer Programs, Rutgers Biomedical & Health Sciences  
Professor of Surgery, Rutgers Robert Wood Johnson Medical School  
Affiliated Distinguished Professor in Genetics, Rutgers School of Arts & Sciences

### **Jonathan Holloway, PhD**

President, Rutgers University

## 1:10 PM ~ INTRODUCTIONS

### **Amy and Fred Bertino**

Daughter and Son of Joseph R. Bertino

### **William N. Hait, MD, PhD**

Founding Director, Rutgers Cancer Institute of New Jersey  
Global Head, Johnson & Johnson External Innovation

### **Kathleen W. Scotto, PhD**

Vice Chancellor, Research & Research Training, Rutgers Biomedical & Health Sciences  
Vice Dean, School of Graduate Studies  
Director, NJACTS Fellows Program  
Professor of Pharmacology, Rutgers Robert Wood Johnson Medical School

## 1:40 PM ~ PRESENTATIONS

### **Moderator**

#### **Peter Cole, MD**

Chief, Division of Pediatric Hematology/Oncology  
Embrace Kids Foundation Endowed Chair in Pediatric Hematology/Oncology  
Rutgers Cancer Institute of New Jersey  
Director of Hematology, Oncology & Cellular Therapies at Bristol-Myers Squibb Children's Hospital  
Professor of Pediatrics, Rutgers Robert Wood Johnson Medical School

### **Speakers**

#### **Frederick W. Alt, PhD ~ Anti-Cancer Drug Resistance, Gene Amplification & Beyond**

Charles A. Janeway Professor of Pediatrics  
Professor of Genetics, Harvard Medical School  
Investigator, Howard Hughes Medical Institute  
Director, Program in Cellular & Molecular Medicine, Boston Children's Hospital

#### **Bruce A. Chabner, MD ~ Travels with Joe Along the Folate Highway**

Allen Distinguished Investigator  
Clinical Director Emeritus, Massachusetts General Hospital

#### **Carl H. June, MD ~ Engineered T-Cells as Cancer Therapy**

Director, Center for Cellular Immunotherapies  
Director, Parker Institute for Cancer Immunotherapy  
Richard W. Vague Professor in Immunotherapy  
Professor of Medicine, University of Pennsylvania

## 3:45 PM ~ RBHS LIFETIME ACHIEVEMENT AWARD & CLOSING

### **Brian L. Strom, MD, MPH**

Chancellor, Rutgers Biomedical & Health Sciences

# About Joseph R. Bertino, MD

Dr. Joseph R. Bertino was a remarkable leader, physician, researcher, teacher, and friend. His journey began at Cornell University and he went on to receive his medical degree from Downstate Medical Center. He received postdoctoral training at the University of Washington, School of Medicine, under the guidance of Drs. Clem Finch and Frank Huennekens. Following his fellowship, Dr. Bertino joined the Departments of Pharmacology and Medicine at Yale University School of Medicine. At Yale, he was promoted to full professor and served as Chief of Oncology and Chemotherapy. He was the first Director of the Yale Comprehensive Cancer Center from 1973-1975. In 1987, he left Yale to develop the Molecular Pharmacology and Therapeutics Program at Memorial Sloan-Kettering Cancer Center with Dr. John Mendelsohn. In 2002, he was recruited by Dr. William Hait to the Rutgers Cancer Institute of New Jersey where he served as Associate Director and Chief Scientific Officer. He also served as Interim Director at Rutgers Cancer Institute from 2007-2008.



Dr. Bertino received numerous awards for his groundbreaking contributions to cancer research and treatment, including the American Cancer Society Medal of Honor; the Karnofsky Award (the American Society of Clinical Oncology); Joseph H. Burchenal Memorial Award for outstanding achievement in clinical cancer research (the American Association for Cancer Research); the Bob Pinedo Cancer Care Prize for exceptional contributions to improving the compassionate care of cancer patients (the Medical Knowledge Institute); John Ultman Award for contributions to Lymphoma Research, (International Congress on Hematologic Malignancies); Jeffrey A. Gottlieb Award for Outstanding achievements in therapeutic cancer research (the University of Texas/MD Anderson Cancer Center); the Distinguished Investigator Award (American College of Clinical Pharmacology); the 'OncLive Giants in Cancer Care' for drug development, and the AACR Lifetime Achievement Award.

Dr. Bertino was a translational researcher who sought to build bridges between the laboratory and the clinic, and an inspirational teacher who guided many of the current leaders in the field of cancer research. He was the Founding Editor-in-Chief of 'Journal of Clinical Oncology' and a Fellow of the American Association for Cancer Research. Together with Mr. Jerry Freundlich (a lymphoma patient) he founded The Cure for Lymphoma Foundation which is now The Lymphoma Research Foundation.

# Speaker Biographies

Lecture: *Anti-Cancer Drug Resistance, Gene Amplification & Beyond*



## Frederick W. Alt, PhD

Charles A. Janeway Professor of Pediatrics  
Professor of Genetics, Harvard Medical School  
Investigator, Howard Hughes Medical Institute  
Director, Program in Cellular & Molecular Medicine  
Boston Children's Hospital

Dr. Frederick W. Alt is a Howard Hughes Medical Institute investigator, director of the Program in Cellular and Molecular Medicine at Boston Children's Hospital, and the Charles A. Janeway Professor of Pediatrics and a professor of genetics at Harvard Medical School. His research in gene amplification in mammalian cancer cells established oncogene amplification as a mechanism of tumor progression and elucidated non-homologous DNA end joining, a pathway that repairs double-strand breaks in DNA. His findings have revolutionized scientific understanding of how genomic rearrangements occur and how they contribute to cancer.

Early in his career, Dr. Alt made a landmark discovery that would have a far-reaching and long-lasting impact on the cancer biology field. His discovery of dihydrofolate reductase (DHFR) gene amplification provided the first molecular demonstration of genomic instability in mammalian cancer cells. His work also provided a molecular basis for considering cancer genomes as distinctly different from normal cell genomes. His subsequent discovery of N-myc, based on observed amplification rates in human neuroblastomas, was critical in establishing oncogene amplification as a fundamental tumor-progression mechanism and provided several examples of cancer genomic instability. His discoveries revealed both a mechanism for how cancer cells acquire drug resistance and a mechanism for how they develop more potent oncogenes.

Dr. Alt's later discovery of key non-homologous DNA end joining, one of the two major mammalian DNA double-strand break repair pathways, played a major part in establishing its critical role in suppressing the rearrangements and amplifications that cause cancer. Building upon this discovery, Dr. Alt demonstrated alternative end-joining pathways and described their role in mediating chromosomal translocations.

Throughout his career, Dr. Alt has mentored over 150 students and research fellows, many of who have gone on to become prominent cancer researchers and leaders in the fields of immunology, genetics, and cancer biology.

**"Joe Bertino was the quintessential translational researcher before the term became trendy."**

## Speaker Biographies

Lecture: *Travels with Joe Along the Folate Highway*



### **Bruce A. Chabner, MD**

Allen Distinguished Investigator

Clinical Director Emeritus, Massachusetts General Hospital

Renowned for his research on the cellular mechanisms of antifolates and other antimetabolites, Dr. Bruce A. Chabner led the development of paclitaxel as well as high-dose chemotherapy regimens that are now the standard of care for the treatment of various cancers, including lymphoma.

Dr. Chabner first began investigating antifolates under the tutelage of Dr. Joseph R. Bertino. They identified the first folate-cleaving enzyme and pioneered research on chemotherapies such as leucovorin (folinic acid) and methotrexate. This research would lead to their discovery that leucovorin possesses the ability to alleviate methotrexate toxicity in a competitive process that is highly dependent on relative drug levels. His group established diagnostic assays and algorithms for monitoring plasma levels of methotrexate, allowing physicians to better gauge leucovorin usage, specifically in the bone marrow, and create more effective rescue drug strategies. They purified and demonstrated the effectiveness of now commercialized carboxypeptidase used for cleavage of methotrexate in patients with drug retention.

In collaboration with Drs. Patrick Elwood and Kenneth Cowan, his laboratory cloned the folate receptor 1 protein (folate receptor alpha; FRA), now known to be commonly overexpressed in several cancers. This discovery would contribute to the development of monoclonal antibodies capable of targeting cancer cells expressing specific cell surface markers such as FRA. His current research centers on the use of targeted therapeutics in solid tumor therapy

In addition to his own research, Dr. Chabner is also regarded for his time spent as the Director of the Division of Cancer Treatment at the National Cancer Institute (NCI), where for 13 years he guided the development of cell line screening, taxanes and platinum analogues, and the first AIDS antivirals.

**"Joseph Bertino was a devoted translational researcher in cancer and a stellar figure in the quest to design and implement novel therapies for cancer based on fundamental understanding of mechanism of disease and drugs. He served as a mentor, friend, and collaborator to many leading cancer researchers, thereby expanding his considerable personal contributions to the field."**

# Speaker Biographies

Lecture: *Engineered T-Cells as Cancer Therapy*



## Carl H. June, MD

Director, Center for Cellular Immunotherapies  
Director, Parker Institute for Cancer Immunotherapy  
Richard W. Vague Professor in Immunotherapy  
Professor of Medicine, University of Pennsylvania

A pioneer in the emerging field of immunotherapies, Dr. Carl H. June has led groundbreaking work in engineering chimeric antigen receptor (CAR) T-cells for the treatment of refractory and relapsed chronic lymphocytic leukemia. This technology, which involves the genetic re-engineering of a patient's own T-cells to combat his or her disease, represents the first gene transfer therapy technique that has demonstrated sustained success in patients. This form of precision medicine has shown tremendous promise for the treatment of hematologic malignancies and has recently received breakthrough therapy designation for the treatment of pediatric acute lymphoblastic leukemia.

Dr. June was the first to utilize leukapheresis and subsequent genetic reengineering of isolated T-cells to specifically recognize antigens overexpressed in B-cell malignancies such as the B-cell antigen CD19 (cluster of differentiation 19). He in turn named these modified T-cells CART-19 cells on account of their specificity for identifying and targeting CD19-expressing B-cells for T-cell mediated cell death. Response rates for patients receiving such CAR T-cell therapy have approached 90 percent for both adult and pediatric acute lymphoblastic leukemia and nearly 50 percent for chronic lymphocytic leukemia patients. Given the success of these preliminary results, additional ongoing studies have been devoted to utilizing CAR T-cell technology for the treatment of other hematologic malignancies including various forms of lymphoma and myeloma.

Dr. June's ongoing research continues to be centered on further understanding lymphocyte activation mechanisms and T-cell signaling in an effort to design novel immunotherapy-based treatments for viral infections as well as cancer.

**"I was first impacted by Dr. Bertino's work as an oncology fellow when we were taught to treat choriocarcinoma with single agent methotrexate based on his pioneering work."**

# A Trailblazer in the Field

Dr. Joseph Bertino began his remarkable career in research in Seattle in the late 1950s, where he worked with one of the great biochemists of that generation, Frank Huennikens.

Dr. Bertino discovered that methotrexate exposure led to a rapid increase in the intracellular level of its target, probably an effect on dihydrofolate reductase (DHFR) transcription, and later, with Bob Schimke at Stanford, he reported the quite remarkable observation of gene amplification of DHFR, opening a whole new era in drug resistance research and unveiling an unexpected aspect of the plasticity of the tumor genome.



Dr. Joseph Bertino (left) in 1972 at Yale with colleagues Dr. Bruce Chabner and Barbara Morrison.

Many other important observations followed, both in the laboratory and in the clinic, including the evolution of high-dose methotrexate therapy and other aspects of methotrexate pharmacology.

Largely as a result of his work, this drug has become the stalking horse for understanding how cancer drugs work and why they fail.

I could not end this note of admiration for Dr. Bertino without recognizing his accomplishments as an athlete! A talented collegiate basketball player in the era of 6'2" centers, Joe turned his attention to softball, tennis, and golf. His weekly tennis matches with Paul Marks at Memorial were legendary for their intensity and skill, and continued for many years, although no one but they knew the final score.

*-Bruce A. Chabner, MD, The Cancer Letter (October, 2021)*



Dr. Joseph Bertino in 2013 at the Rutgers-Eastern Michigan football game representing Rutgers and showing some Scarlet Knight spirit.

Credit: Nick Romanenko/Rutgers University

# American Society of Clinical Oncology (ASCO) Pioneer

Dr. Joseph Bertino played a pivotal role in ASCO's history. He served as the Society's president from 1975-1976 before becoming the founding editor-in-chief of the 'Journal of Clinical Oncology.'

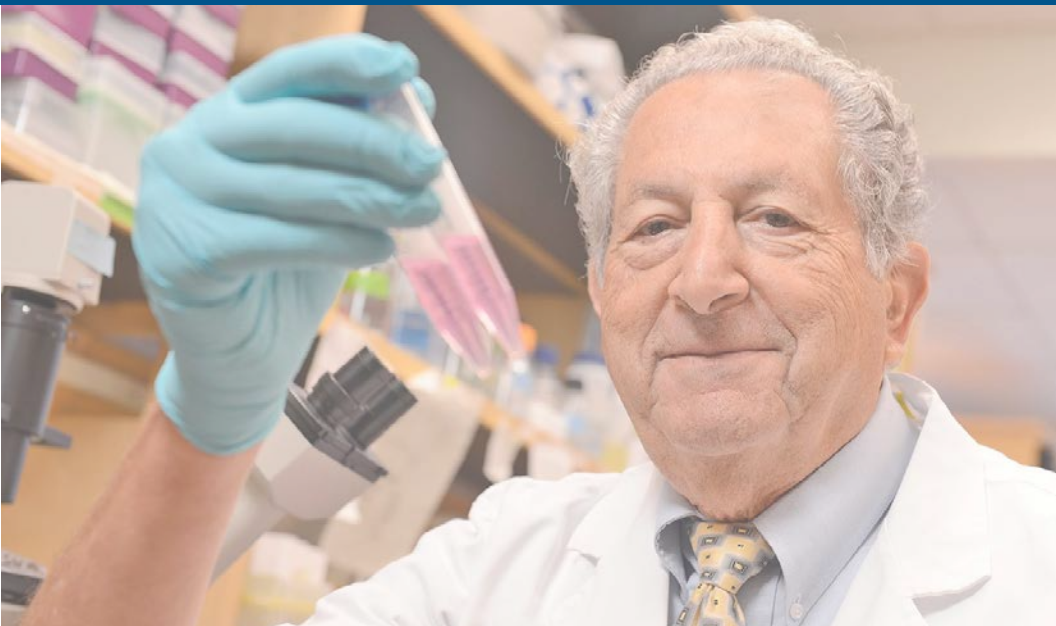
ASCO recognized Dr. Bertino's pioneering work in the field by awarding him the David A. Karnofsky Memorial Award in 1992 and the Distinguished Service Award for Scientific Achievement in 2008. In recognition of his exceptionally dedicated volunteer service to the Society, he was honored as a Fellow of ASCO (FASCO) in 2007.

He continuously focused on new drug development for the management of cancer and hematologic malignancies, elucidating mechanisms of action and resistance, and provided the foundation used for the rational design and development of anticancer agents.

*-American Society of Clinical Oncology (ASCO) Connection (October, 2021)*

**"Dr. Bertino did it all—major scientific discoveries, organization and professional leadership, teaching, and clinical care—with a rare grace and dignity. He made everyone feel respected and motivated everyone to contribute their best."**

*-ASCO CEO Clifford A. Hudis, MD, FACP, FASCO*





# American Association for Cancer Research (AACR) Advocate

Dr. Joseph Bertino joined AACR in 1962 and was a passionate supporter of many AACR initiatives. He served on numerous AACR standing and specialty committees.

From 1976 to 1979, Dr. Bertino served on the AACR Board of Directors. He was elected AACR President for the 1995-1996 term. During his presidency, he manifested his usual innovative spirit by initiating the AACR's fundraising efforts for grants to young investigators. He also launched the Education Program at the Annual Meeting, which continues to be a hallmark component of the meeting attended by thousands of researchers.



Credit: ©2008 AACR/Todd Buchanan

Among many career accolades, Dr. Bertino received the AACR Richard and Hinda Rosenthal Award in 1978, the AACR-Joseph H. Burchenal Memorial Award for Outstanding Achievement in Clinical Cancer Research in 2008, and the AACR Award for Lifetime Achievement in Cancer Research in 2018. He was elected to the inaugural class of Fellows of the AACR Academy in 2013. He also served as president of the American Society for Clinical Oncology (ASCO) in 1975, making him one of the few individuals to have served as President of both AACR and ASCO. He was later named an ASCO Fellow and was recognized with ASCO's David A. Karnofsky Memorial Award in 1992. He was also named a "Giant of Cancer Care" by 'OncLive' in 2018.

*-American Association for Cancer Research (AACR), Cancer History Project (October, 2021)*

**"Dr. Bertino was an early pioneer in the area of translational research. He sought to build bridges between the laboratory and the clinic, benefiting the lives of thousands of patients. His steadfast dedication to the AACR included tireless advocacy for the professional development and career advancement of women in the field. He will be sorely missed."**

*-AACR CEO Margaret Foti, PhD, MD (hc)*

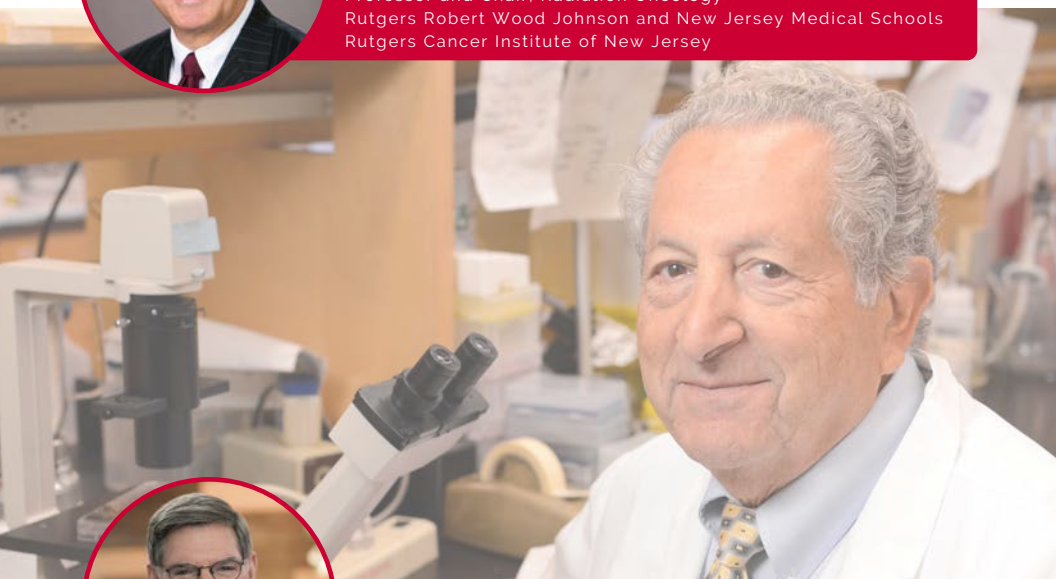
# Rutgers Cancer Institute Leader, Mentor and Friend

"I was introduced to Joe over 40 years ago, as a second-year medical student at Yale, where Joe served as my pharmacology course discussion leader. Like countless other medical students, doctoral candidates, residents, fellows and junior attendings, we were inspired by Joe's passion, dedication and commitment to cancer research and moving the field of oncology forward."



## **Bruce G. Haffty, MD, FACR, FASTRO, FASCO**

Associate Vice Chancellor, Cancer Programs  
Rutgers Biomedical & Health Sciences  
Professor and Chair, Radiation Oncology  
Rutgers Robert Wood Johnson and New Jersey Medical Schools  
Rutgers Cancer Institute of New Jersey



## **William N. Hait, MD, PhD**

Global Head, Johnson & Johnson External Innovation  
Founding Director, Rutgers Cancer Institute of New Jersey

"I was fortunate to be a fellow in Joe's Division of Medical Oncology at Yale, where he was a role model for us physician-scientist wannabees. He led by example -- a kind, compassionate physician, outstanding teacher and a brilliant investigator. His broad respect in the oncology community was exemplified by his election to the presidencies of both AACR and ASCO as well as being appointed the first editor-in-chief of ASCO's 'Journal of Clinical Oncology.'"

# Rutgers Cancer Institute Leader, Mentor and Friend



"My personal experience with Joe is highlighted by great respect for years of his scientific guidance, professional mentorship and friendship at Rutgers Cancer Institute of New Jersey.

I first familiarized myself with his scientific expertise and creativity when I was a graduate student in the late 1970s, admiring greatly his cell biology work on methotrexate resistance and gene amplification. When he was much later recruited to Rutgers Cancer Institute, we began interacting regularly at weekly clinical and research meetings, as well as at the American Society of Hematology annual meeting, Lymphoma Research Foundation meetings and several social outings including ventures to sporting events at Yankee Stadium or Madison Square Garden.

Joe will forever be remembered for his intelligence, collegiality, humor and friendship."



## **Roger Strair, MD, PhD**

Chief, Blood Disorders, Rutgers Cancer Institute of New Jersey  
Professor of Medicine, Rutgers Robert Wood Johnson Medical School

# Rutgers Cancer Institute Leader, Mentor and Friend

"To me personally, and to so many, Joe was a valued mentor and advisor. A dedicated physician, he had an incredible devotion to research – contributing his expertise toward establishing the foundation of modern oncology research. He was a giant in our field."



## **Steven K. Libutti, MD, FACS**

Director, Rutgers Cancer Institute of New Jersey  
Senior Vice President, Oncology Services, RWJBarnabas Health  
Vice Chancellor for Cancer Programs, Rutgers Biomedical & Health Sciences  
Professor of Surgery, Rutgers Robert Wood Johnson Medical School  
Affiliated Distinguished Professor in Genetics, Rutgers School of Arts & Sciences



## **Kathleen W. Scotto, PhD**

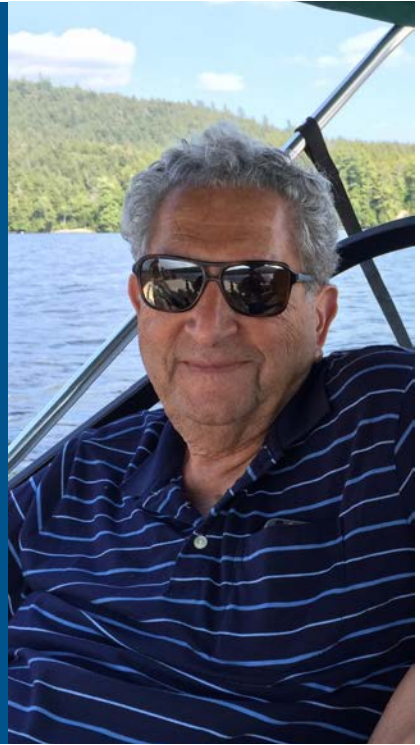
Vice Chancellor for Research & Research Training, Rutgers Biomedical & Health Sciences  
Vice Dean, School of Graduate Studies  
Director, NJACTS Fellows Program  
Professor of Pharmacology, Rutgers Robert Wood Johnson Medical School

"I was his first faculty recruit at the Memorial Sloan Kettering Cancer Center in New York and have remained a collaborator and friend throughout my career. Joe created a 'translational' research environment within the department long before it was in vogue, bringing together clinical oncologists and basic scientists to tackle key problems in the diagnosis and treatment of cancer. While a renowned researcher and compassionate and beloved clinician, Joe often said that his greatest accomplishment was training the next generation of cancer researchers; those of us privileged to be mentored by Joe are forever linked, to him and to each other by this experience."

# Rutgers Cancer Institute Leader, Mentor and Friend

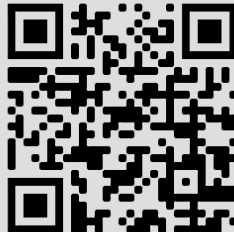
Having taken care of thousands of patients with lymphoma and other blood cancers, it is also at the laboratory bench where Dr. Joseph Bertino, MD, leaves an indelible impression. Motivated by the passing of a young nephew from leukemia and the patients he first cared for as a resident, Dr. Bertino has devoted most of his life to improving therapies for cancer and hematologic disorders. For more than 50 years he has contributed his expertise toward establishing the foundation of modern cancer research.

*-Rutgers Cancer Institute Oncolyte Newsletter (2013)*



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[www.give.rutgers.edu/bertino](http://www.give.rutgers.edu/bertino)



# The Joseph R. Bertino Memorial Lecture Series Planning Committee

## **Wadih Arap, MD, PhD**

Director, Rutgers Cancer Institute of New Jersey at University Hospital  
Chief, Division of Hematology/Oncology, Rutgers New Jersey Medical School

## **Amy and Fred Bertino**

Daughter and Son of Joseph R. Bertino

## **Sunita Chaudhary, PhD**

Director, Research Education, Rutgers Cancer Institute of New Jersey  
Associate Professor of Surgery, Rutgers Robert Wood Johnson Medical School

## **Peter Cole, MD**

Chief, Division of Pediatric Hematology/Oncology  
Embrace Kids Foundation Endowed Chair in Pediatric Hematology/Oncology  
Rutgers Cancer Institute of New Jersey  
Director of Hematology, Oncology & Cellular Therapies at Bristol-Myers Squibb Children's Hospital  
Professor of Pediatrics, Rutgers Robert Wood Johnson Medical School

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## **Michele Fisher**

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Associate Vice Chancellor, Cancer Programs, Rutgers Biomedical & Health Sciences  
Professor and Chair, Radiation Oncology, Rutgers Robert Wood Johnson and New Jersey Medical Schools, Rutgers Cancer Institute of New Jersey

## **William N. Hait, MD, PhD**

Global Head, Johnson & Johnson External Innovation  
Founding Director, Rutgers Cancer Institute of New Jersey

## **Audrea Henry**

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## **Edmund Lattime, PhD**

Associate Director for Research and Education Affairs, Rutgers Cancer Institute of New Jersey  
Professor of Surgery, Biochemistry & Molecular Biology, Rutgers Robert Wood Johnson Medical School

## **Kathleen W. Scotto, PhD**

Vice Chancellor, Research & Research Training, Rutgers Biomedical & Health Sciences  
Vice Dean, School of Graduate Studies  
Director, NJACTS Fellows Program  
Professor of Pharmacology, Rutgers Robert Wood Johnson Medical School

## **Roger Strair, MD, PhD**

Chief, Blood Disorders, Rutgers Cancer Institute of New Jersey  
Professor of Medicine, Rutgers Robert Wood Johnson Medical School

## **Allison Warzala**

Chief of Staff, Rutgers Cancer Institute of New Jersey

# About Rutgers Cancer Institute of New Jersey

As New Jersey's only National Cancer Institute (NCI) – designated Comprehensive Cancer Center, Rutgers Cancer Institute of New Jersey's team of internationally recognized physicians and researchers is driven by a singular focus and mission, to help individuals fight cancer. Through the transformation of laboratory discoveries into clinical practice, we target cancer with precision medicine, immunotherapy and clinical trials and provide the most advanced, comprehensive, and compassionate world-class cancer care to adults and children. This mission is being accomplished in partnership with RWJBarnabas Health. Rutgers Cancer Institute physicians and scientists work side by side to make sure the most sophisticated treatments are delivered to our patients quickly and safely - the future of cancer treatments today.



The coveted NCI Comprehensive Cancer Center designation, awarded to only an elite group of such centers nationwide, is granted competitively to institutions characterized by their scientific leadership, resources, and an outstanding track record of research discoveries in basic, clinical, and population science as well as the ability to translate these discoveries to benefit cancer patients. To gain a Comprehensive Cancer Center designation, the highest ranking given by the NCI, a center must meet rigorous criteria in cancer care, research, prevention and education and demonstrate an added depth and breadth of research, as well as substantial transdisciplinary research that bridges these scientific areas. Rutgers Cancer Institute operates as a consortium cancer center between Rutgers University and Princeton University, as identified by the NCI. Rutgers Cancer Institute brings together the top cancer researchers and clinicians throughout New Jersey to apply the latest technologies, therapies, and approaches to improve cancer diagnosis, treatment, and prevention.

Researchers from Rutgers Cancer Institute have made outstanding scientific contributions towards the national goal of reducing the incidence of cancer and improving the outcomes for cancer patients. Rutgers Cancer Institute coordinates basic, clinical and population research through five comprehensive research programs comprised of faculty who form cohesive, interdisciplinary groups supported by peer-reviewed grants and Rutgers Cancer Institute shared resources. Close to 250 Rutgers Cancer Institute faculty members garner more than \$100 million annually in federal, state and philanthropic grant support.

[www.cinj.org](http://www.cinj.org)



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